

**Drainage Reports** 



## PRELIMINARY DRAINAGE REPORT FOR RAINTREE DRIVE RESIDENTIAL

March 5, 2021 WP# 195063

Plan #						
Case #	1-DR	-2021				
Q-S #						
X Accepted						
C	orrections					
ale	Ans	03/29/2021				
Reviewe	ed By	Date				



EXPIRES 6-30-21

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EXHIBIT 5 Grading and Drainage Plan

EXHIBIT 6 Drainage Exhibit A from Final Drainage Report for Liberty Property Trust for Vanguard



59956 JOHN G. RITCHIE

**EXPIRES 6-30-21** 

#### 1.0 INTRODUCTION

The proposed Raintree Drive Residential project (Site) is an 8.24-acre site located in the southwest quarter of Section 12, Township 3 North, Range 4 East of the Gila and Salt River Meridian. More specifically, the Site is located at the south west corner of 87<sup>th</sup> Street and Raintree Drive in Scottsdale, Arizona. Refer to Exhibit 1 – *Vicinity Map* at the back of this report for project location. The project is located west of a private drive and includes a 5-story multi-family residential building and associated landscaping and hardscape. The Site is located within the previously approved Northsight Commercial Development.

This Preliminary Drainage Report has been prepared in accordance with Wood, Patel & Associates, Inc.'s (WOODPATEL's) understanding of the City of Scottsdale's technical drainage requirements and the Drainage Design Manuals for Maricopa County Hydrology and Hydraulics (2013), as applicable to Raintree Drive Residential, and is intended to support the Design Review Board (DRB) submittal for the project.

Prior to this Report the *Master Drainage Report for Northsight Commercial Development* and *Final Drainage Report for Liberty Property Trust for Vanguard* were completed by the Master Developer and submitted to the City of Scottdale for review. The Site is located within the study area of this Report. This Report is intended to conform to the findings and calculations as provided in that report.

#### 2.0 EXISTING DRIANAGE CONDITIONS AND CHARACTERISTICS

## 2.1 Offsite Hydrology (Pre-Development)

No offsite drainage is anticipated to impact the Raintree Office Development. The adjacent roadways all have existing storm drain infrastructure, and have been designed to retain the 100-year storm event. In addition, according to the Master Drainage Report by Gilbertson Associates Inc., most of the offsite runoff is intercepted by the CAP (Central Arizona Project) which is located approximately one mile north of the proposed Site. The area between the CAP and the Site is mostly developed, with existing stormwater retention onsite or conveyed to the Northsight Park regional retention basin by storm drain or street flow (refer to Appendix C – *Master Drainage Report for Northsight Commercial Development*, and Appendix D – *Final Drainage Report for Liberty Property Trust for Vanguard*).

## 2.2 Onsite Hydrology

The Site is currently part of a master planned development and includes a private drive with existing storm drain and catch basins (refer to Exhibit 2 – *Aerial Drainage Map*). There is an existing temporary retention basin located on the south side of the Site that accepts runoff. This retention basin is to be removed and the water rerouted as discussed below. The topography of the Site generally slopes from the northeast to the southwest from an approximate high elevation of 1464 to an approximate low elevation of 1458 at an approximate slope of 1.6% (Refer to Exhibit 3 – *Existing Drainage Map*).

#### 2.3 FEMA Regulated Flood Zones

The Federal Emergency Management Agency (FEMA) has published a 100-year floodplain, per Flood Insurance Rate Map (FIRM). The City of Scottsdale FEMA Firm panel number is 04013C1760L, effective date October 16, 2013, and indicates the site falls within Zone "X" (refer to Exhibit 3 – FEMA FIRM Map).

Zone "X" is defined by FEMA as follows:

"0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flow with average depth less than one foot or with drainage areas of less than one square mile".

#### 3.0 PROPOSED DRAINAGE PLAN

#### 3.1 Onsite Drainage Conditions (Post Development)

The Site currently contains four (4) retention basins for Phases 1 and 3. Basin C will not be disturbed or have additional stormwater sent to it. Additional runoff will be distributed to existing retention basins A and B, which have been designed with excess capacity (See *Drainage Exhibit A* in Appendix D - *Final Drainage Report for Liberty Property Trust for Vanguard*). Basin D will be regraded per proposed Site improvements. It will be split into two (2) separate surface basins connected via an equalizer pipe. Overall volume of Basin D will be increased in the proposed condition. All basins will still have adequate storage to capture and detain the post-construction condition.

All runoff for the Site will flow away from the buildings towards proposed conveyance structures that will ultimately outfall into existing or proposed retention basins. The drainage map for the Site is depicted in the attached Exhibit 4 – *Proposed Drainage Map*.

Drainage areas 1, 2A, & 3A as shown in *Drainage Exhibit A* from the *Final Drainage Report for Liberty Property Trust for Vanguard*, will not be disturbed. Area 2B is currently retained in a temporary retention basin. The proposed improvements will remove the temporary retention basin and grade to drain to basin A as proposed in the *Final Drainage Report for Liberty Property Trust for Vanguard* by DEI. 3B and 4 are to be split into smaller tributary areas to better align with the proposed development. The new proposed drainage areas will include 2C-2J, 3B, 3C and 4. Drainage areas 2C-2J will be directed to the existing storm drain system within the private drive, where they will outlet into existing Basin B. Drainage areas 3B, 3C, and 4 will be routed to Basin D via sheet flow, storm drain, or internal roof drain collection.

Onsite peak flow estimates for the proposed development were generated using the Rational Method, as outlined in the *Drainage Design Manual for Maricopa County, Arizona: Volume I – Hydrology* (Ref. 2). NOAA Atlas 14 precipitation data was obtained and utilized to develop Intensity-Duration-Frequency (I-D-F) curves for the Site. Rational Method peak flows were computed at concentration points within the Site at key design locations. Runoff coefficients were estimated to reflect post-development land use conditions for the 10-year and 100-year events (Refer to Appendix A – *Hydrology*).

## 3.2 Retention and Dissipation

A system of stormwater retention basins has already been developed throughout the Site to handle stormwater flows. The drainage *Design Manual for Maricopa County Volume I Hydrology* and *Design Standards and Policies Manual for the City of Scottsdale* are referenced for stormwater guidelines and requirements. The onsite stormwater storage facilities are retention basins designed to store the difference between the post-development discharges and pre-development discharge per the Final Drainage Report for Liberty Property Trust for Vanguard prepared by DEI Professional Services, L.L.C dated June 8, 2005. The 100-year precipitation depth utilized in previous reports was 2.82 inches. Per the *City of Scottsdale 2018 Design Standards and Policies Manual*, the current 100-year precipitation depth is 2.30 inches. The Site's existing hydrologic soil group, "B", correlates with an existing condition

runoff coefficient of 0.31. Using a post-development C coefficient of 0.90, the difference in the post-development and pre-development runoff coefficients is equal to 0.59.

The existing and proposed basins appear to have sufficient storage to retain additional runoff that occurs as a result of the proposed development conditions. (See calculations in Exhibit A – *Hydrology*)

#### 3.3 Outfall and Lowest Floor Elevation

Retention basins A and C, which are downstream outfalls for basins B and D, will drain through 18-inch bleed-off pipes located near the western property line and will ultimately outfall to the City of Scottsdale's Public storm drain system located in Northsight Boulevard through a shared 18-inch bleed-off pipe.

The surface drainage outfall for the Site is located at the southeast corner of the Site at a top of curb elevation of 58.58.

The finished floor elevation has been designed to be free from inundation during a 100-year, 2-hour storm event. The proposed building has been set with a finished floor elevation of 1462.00, approximately 3.5 feet above the Site outfall. The lowest finished floor is for a refuse area at the southeast corner of the Site and has been set to a floor elevation of 1459.50, approximately 1-foot above the Site outfall.

#### 3.4 Operation and Maintenance

Ongoing maintenance of the designed or recommended drainage systems is required to preserve the design integrity and purpose of the drainage system. Failure to provide maintenance can prevent the drainage system from performing to its intended design purpose and can result in reduced performance. Maintenance within the public right-of-way is the responsibility of the governing municipality. However, it is the responsibility of land owners (such as private developers or property owners' associations) for facilities on private property within drainage easements, including private streets. Prior to ultimate condition build-out upstream of drainage structures, additional maintenance may be required due to an increase in sedimentation build-up. A regular maintenance program is required to have drainage systems perform to the level of protection or service, as presented in this report and the projects' plans and specifications.

For this Report, storm drain rim and invert information is provided on Exhibit 5 – *Grading and Drainage Plan.* Hydraulic analysis of the proposed storm drain will be forthcoming in the case that the City approves the drainage concepts as detailed in this Report. The onsite storm drain system will be designed to accommodate the 100-year storm event. Bentley StormCAD Version 5.6 will be utilized to analyze the proposed storm sewer system. StormCAD printouts and storm drain profiles will be available. The maximum ponding depth of any area drain is 0.25 feet.

#### 4.0 SPECIAL CONDITIONS

Currently, there are no washes with 100-year flows greater than 50 cfs that traverse the project site. Also, there are no designated Section 404 washes within the site; therefore, no Section 404 permit is required.

#### 5.0 CONCLUSIONS

Based on our analysis of the Site, the following conclusions can be made:

- This Preliminary Drainage Report has been prepared in accordance with Wood, Patel & Associates, Inc.'s (WOODPATEL's) understanding of the City of Scottsdale's technical drainage requirements and the Drainage Design Manuals for Maricopa County Hydrology and Hydraulics (2013), as applicable to Raintree Drive Residential, and is intended to support the Design Review Board (DRB) submittal for the project.
- 2. The proposed improvements lie within a FEMA designated "Zone X" shaded.
- 3. The proposed improvements have been shown to conform to the proposed drainage concepts as provided for the overall master development.
- All stormwater retention will be provided by four (4) surface retention basins located within the master development.
- Stormwater runoff will ultimately outfall to the City of Scottsdale's Public storm drain system located in Northsight Boulevard.
- 6. Finished floor elevations have been designed to be free from inundation during a 100-year, 2-hour storm event.
- 7. Ongoing maintenance is required for all drainage systems in order to assure design performance. Maintenance is the responsibility of the private parties involved.

#### 6.0 REFERENCES

- Drainage Design Manual for Maricopa County, Arizona; Volume I-Hydrology, Flood Control District of Maricopa County, August 15, 2013.
- Drainage Design Manual for Maricopa County, Arizona; Volume II- Hydraulics, Flood Control District of Maricopa County, August 15, 2013.
- 3. Flood Insurance Rate Map, Maricopa County, Arizona, and Incorporated Areas Panel 1760, Federal Emergency Management Agency, Effective October 16, 2013.
- 4. Design Standards and Policies Manual, City of Scottsdale, January 2018.

APPENDIX A – HYDROLOGY





**Project** Raintree Drive Residential

Location Scottsdale AZ

Project Number 195063

Project Engineer John "Gordy" Ritchie, P.E.

ON-SITE WATERSHEDS					100 YEAR			10 YEAR			2 YEAR										
Drainage Subbasin ID	Longest Watercourse 'L'	Longest Watercourse 'L'	Drainage Area 'A'	Drainage Area 'A'	'K <sub>b</sub> '	Watershed Resistance Coefficient	•	Bottom Elevation	ISIONA 'S'	Calculated Q100 'Tc' (See Note 2)	100 YEAR Intensity 'i'	Runoff	Q100 Flow	Calculated Q10 'Tc' (See Note 2)	10 YEAR Intensity 'i'		Q10 Flow		Intensity	2 YR Runoff Coefficient	Q2 Flow
	(ft)	(mi)	(sf)	(Acres)		'K <sub>b'</sub>			(ft/mi)	(min)	(in/hr)	.c.	(cfs)	(min)	(in/hr)	'C'	(cfs)	(min)	(in/hr)	.c.	(cfs)
2B	294	0.056	33,870	0.78	Α	0.0407	1461.0	1456.0	90.7	3.9	5.81	0.90	4.1	4.6	3.70	0.78	2.3	5.5	2.29	0.72	1.3
2C	55	0.010	4,230	0.10	Α	0.0463	1462.0	1459.7	220.8	1.4	5.81	0.90	0.5	1.6	3.70	0.78	0.3	1.9	2.29	0.72	0.2
2D	22	0.004	641	0.01	Α	0.0515	1462.0	1461.0	240.0	0.9	5.81	0.90	0.1	1.0	3.70	0.78	0.0	1.3	2.29	0.72	0.0
2E	55	0.010	4,405	0.10	Α	0.0462	1462.0	1460.8	115.2	1.7	5.81	0.90	0.5	2.0	3.70	0.78	0.3	2.4	2.29	0.72	0.2
2F	37	0.007	1,528	0.04	Α	0.0491	1462.0	1460.4	235.5	1.1	5.81	0.90	0.2	1.3	3.70	0.78	0.1	1.6	2.29	0.72	0.1
2G	55	0.010	1,655	0.04	Α	0.0489	1462.0	1461.1	86.4	1.9	5.81	0.90	0.2	2.2	3.70	0.78	0.1	2.7	2.29	0.72	0.1
2H	100	0.019	6,769	0.16	Α	0.0451	1462.0	1461.9	5.3	5.7	5.81	0.90	0.8	6.8	3.70	0.78	0.4	8.2	2.29	0.72	0.3
21	100	0.019	6,262	0.14	Α	0.0453	1462.0	1461.9	5.3	5.8	5.81	0.90	0.8	6.8	3.70	0.78	0.4	8.2	2.29	0.72	0.2
2J	74	0.014	5,854	0.13	Α	0.0454	1462.0	1460.6	99.9	2.0	5.81	0.90	0.7	2.4	3.70	0.78	0.4	2.8	2.29	0.72	0.2
3B	20	0.004	15,760	0.36	Α	0.0428	1462.0	1456.0	1584.0	0.4	5.81	0.90	1.9	0.5	3.70	0.78	1.0	0.6	2.29	0.72	0.6
3C	47	0.009	854	0.02	Α	0.0507	1463.5	1461.0	280.9	1.2	5.81	0.90	0.1	1.4	3.70	0.78	0.1	1.7	2.29	0.72	0.0
4	100	0.019	46,800	1.07	Α	0.0398	1463.5	1462.7	42.2	2.8	5.81	0.90	5.6	3.4	3.70	0.78	3.1	4.0	2.29	0.72	1.8

#### Notes

1. Per Drainage Design Manual for Maricopa County, Vol. I, Hydrology (2013), Table 3.1: Equation for Estimating Kb in the Tc Equation

2. Minimum Tc is 10 minutes.



#### **RETENTION VOLUMES REQUIRED -DEI DRAINAGE AREA**

PRE V POST VOLUME - RAINFALL DEPTH CONVERSION

Raintree Drive Residential Project

Location Project Number Project Engineer Scottsdale AZ 195063

John "Gordy" Ritchie, P.E.

Old Rainfall Depth "P" = 2.80 inches
New Rainfall Depth "P" = 2.30 inches

	Drainage Subbasin ID	Retention Basin ID	Drainage Area "A"	100 YR Runoff Coefficient "C"	A*C	Required Retention (AF)	Required Retention (CF)
	1	A	0.23	0.59	0.14	0.03	1,157.29
PHASE I	2A	В	3.58	0.59	2.11	0.41	17,649.14
	3A	C/D	1.83	0.59	1.08	0.21	9,037.96
	2B	A/B	0.78	0.59	0.46	0.09	3,818.82
PHASE III	3B	C/D	1.12	0.59	0.66	0.13	5,511.00
	4	C/D	1.02	0.59	0.60	0.11	5,006.99
	TOTAL 100-YR 2-HR V	OLUME REQUIRED:				0.97	42,181

\*Calculated Values: Weighted "C" =  $C_{Post}$  -  $C_{Pre}$   $C_{Post}$ =0.90  $C_{Pre}$ =0.31

per "Final Drainage Report for Liberty Propoerty Trust for Vangaurd prepared by DEI Professional Services, L.L.c. on June 2005.

Weighted "C" = 0.90 - 0.31 = 0.59



#### **RETENTION VOLUMES REQUIRED -**WP DRAINAGE AREA PRE V POST VOLUME

Project Raintree Drive Residential

Location Scottsdale AZ Project Number 195063

Project Engineer John "Gordy" Ritchie, P.E.

Rainfall Depth "P" = 2.30 inches

	Drainage Subbasin ID	Retention Basin ID	Drainage Area "A" (Acres)	100 YR Runoff Coefficient "C"	A*C	•	Required Retention (CF)
	1	A	0.23	0.59	0.14	0.03	1,157.29
PHASE I	2A	В	3.58	0.59	2.11	0.41	17,649.14
	3A	C/D	1.83	0.59	1.08	0.21	9,037.96
	2B	A/B	0.78	0.59	0.46	0.09	3,818.82
PHASE III	2C,2D,2E,2F,2 G,2H,2I,2J		0.72	0.59	0.42	0.08	3,544.48
	3B, 3C	C/D	0.38	0.59	0.23	0.04	1,878.77
	4	C/D	1.07	0.59	0.63	0.12	5,292.30
	TOTAL 100-YR	2-HR VOLUME REQ	UIRED:			0.97	42,379

\*Calculated Values:

Weighted "C" =  $C_{Post}$  -  $C_{Pre}$   $C_{Post}$ =0.90  $C_{Pre}$ =0.31

per "Final Drainage Report for Liberty Propoerty Trust for Vangaurd prepared by DEI Professional Services, L.L.c. on June 2005.

Weighted "C" = 0.90 - 0.31 = 0.59



# RETENTION VOLUME PROVIDED ON-SITE RETENTION

Project Raintree Drive Residential

Location Scottsdale AZ
Project Number 195063

Project Engineer John "Gordy" Ritchie, P.E.

#### Volume Method Used Conic Approximation

Retention Basin ID	Total Volume Provided* - Pro Development	е-
	(CF)	
Α	1,700	
В	29,000	
С	21,000	
D	5,349	
TOTAL	57,049	

Drainage Subbasin ID	Retention Basin ID	Bottom Elevation	Top Elevation	Bottom Area	Top Area	Volume	Cumulative Volume	Total Volume Provided	Total Volume Provided
				(SF)	(SF)	(CF)	(AF)	(AF)	(CF)
	Basin D West	1,456.0	1,457.0	28	350		0.01	0.00	-
3B, 4		1,457.0	1,458.0	350	818	568	0.03	0.01	1,168
		1,458.0	1,459.0	818	1,517	1,150	0.06	0.04	2,685
3B, 4	Basin D East	1,459.0	1,460.0	641	1792		0.04	0.00	-
3D, 4		1,460.0	1,461.0	1,792	3,115	2,423	0.11	0.06	4,907
							VOLUME PR	ROVIDED BASIN 'D':	7,592

\*Volume from "Final Drainage Report for Liberty Propoerty Trust for Vangaurd prepared by DEI Professional Services, L.L.c. on June 2005.

#### Conic Approximation Method

The formula for calculating the volume of a frustum of a circular cone is used.

The Equation is V = 1/3 H (A1 + A2 + SQRT(A1xA2))

H = difference in depth between two successive contours;

A1 = outer contour being considered;

A2 = inner contour being considered





Project Location Project Number Project Engineer

Raintree Drive Residential Scottsdale AZ 195063 John "Gordy" Ritchie, P.E.

Drainage Subbasin ID	Retention Basin ID	Required Retention	Provided Retention
		(CF)	(CF)
1	A	1,157	1,700
DEI 2A, 2B, 2C, 2D, 2E, 2F, 2G, 2,H, 2I, 2J	В	25,012	29,000
3A	С	9,038	21,000
3B, 3C, 4	D	7,171	7,592
TOTAL		42.379	59.292

\*Calculated Values:

Weighted "C" = C<sub>Post</sub> - C<sub>Pre</sub>

APPENDIX B -	- MASTER DRAI DEVELOPMEN	FOR NORTHSIG	HT COMMERCIAI	L

# **MASTER DRAINAGE REPORT**

For

# NORTHSIGHT COMMERCIAL DEVELOPMENT

**GAI JOB NO. 100-106** 



Prepared by:

# Gilbertson Associates, Inc.

Consulting Civil Engineers and Land Surveyors 15974 North 77<sup>th</sup> Street Scottsdale, AZ 85260-1761

October 11, 2001

Revised December 4, 2001 Revised November 28, 2001

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APPENDIX II Precipitation Calculations

APPENDIX III Weighted Curve Number Calculations

APPENDIX IV Time of Concentration

APPENDIX V Storm Drain Analysis

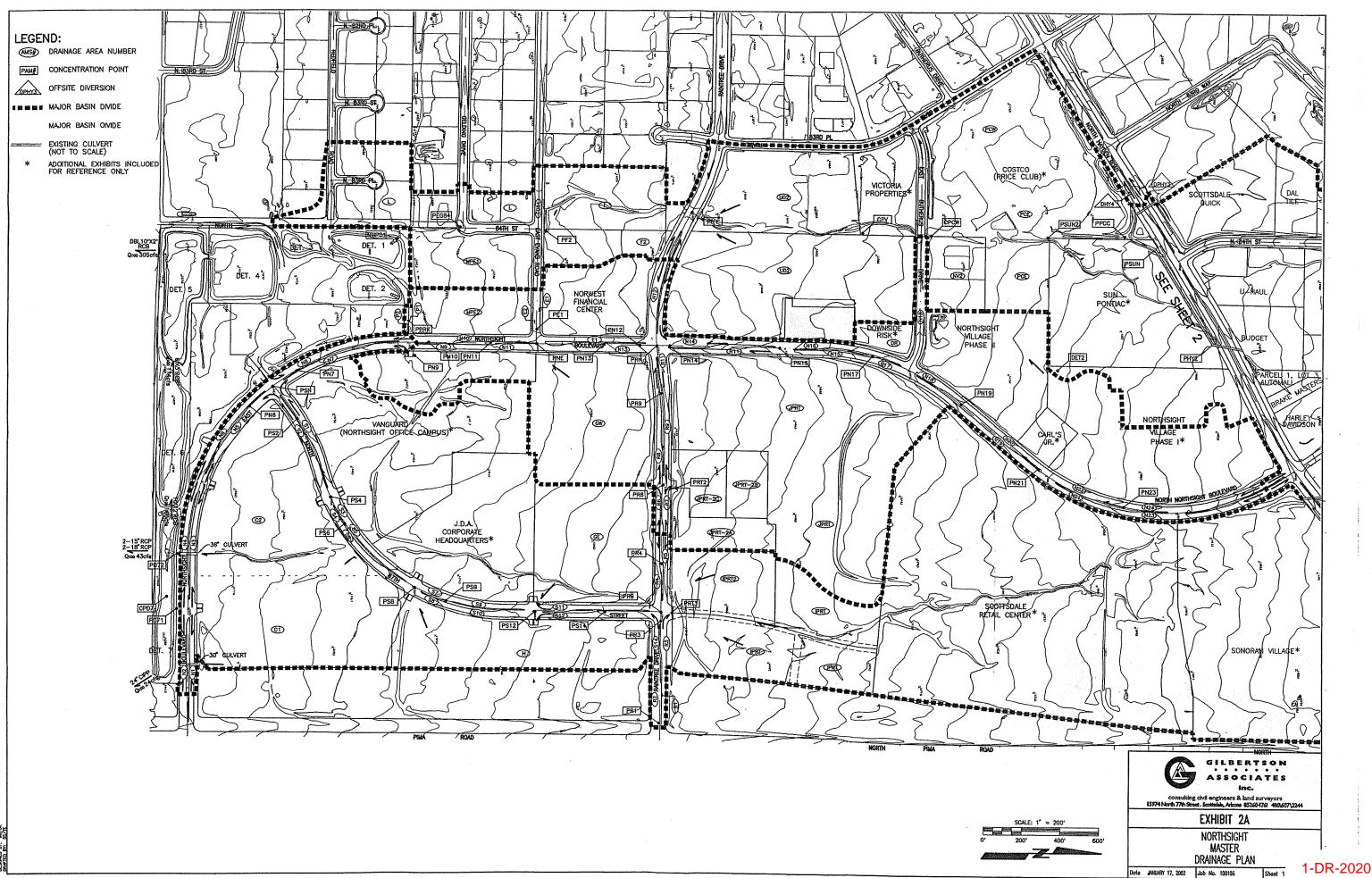
APPENDIX VI HEC-I Model

## **EXHIBIT**

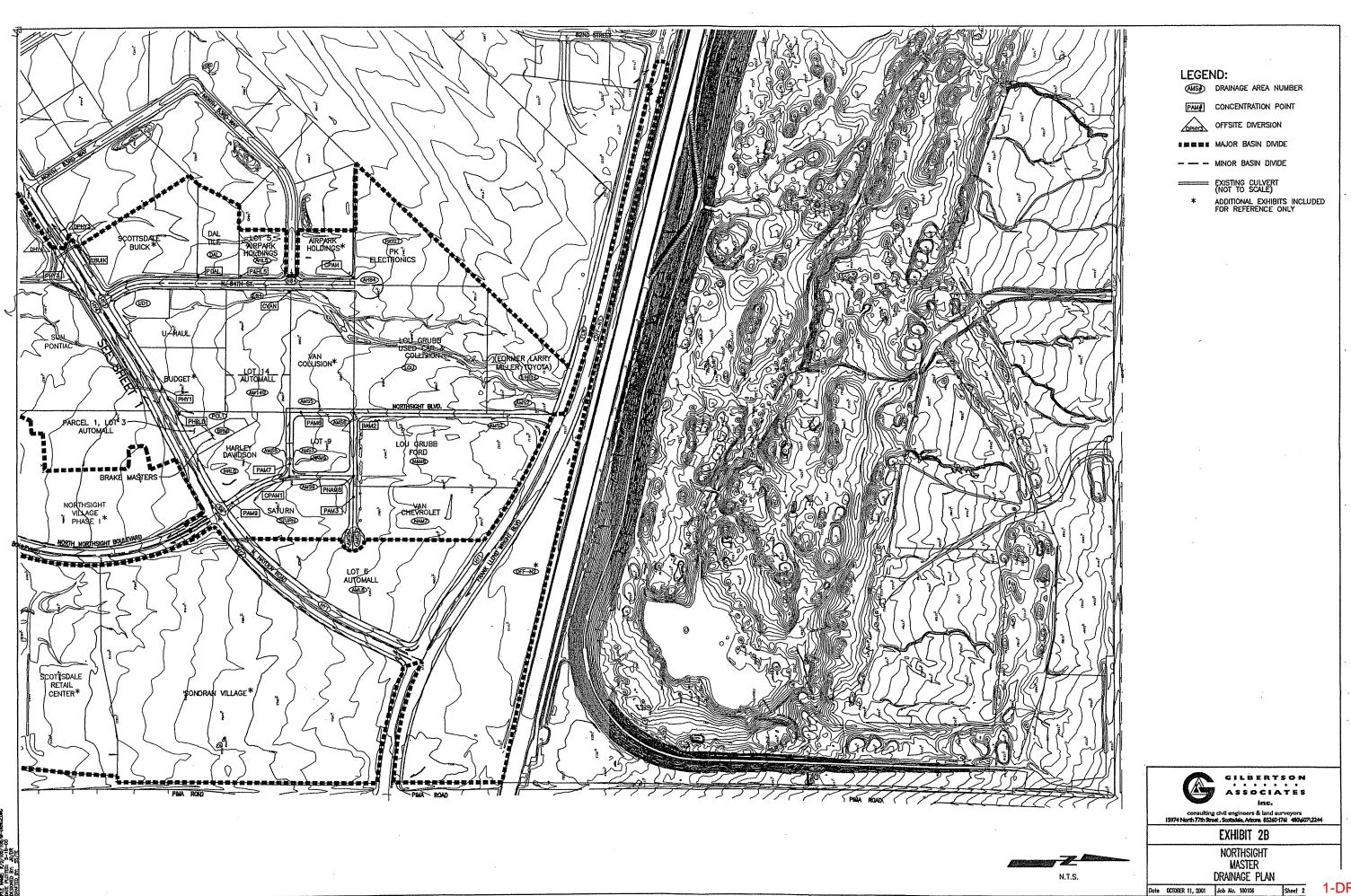
**EXHIBIT I** Vicinity Map

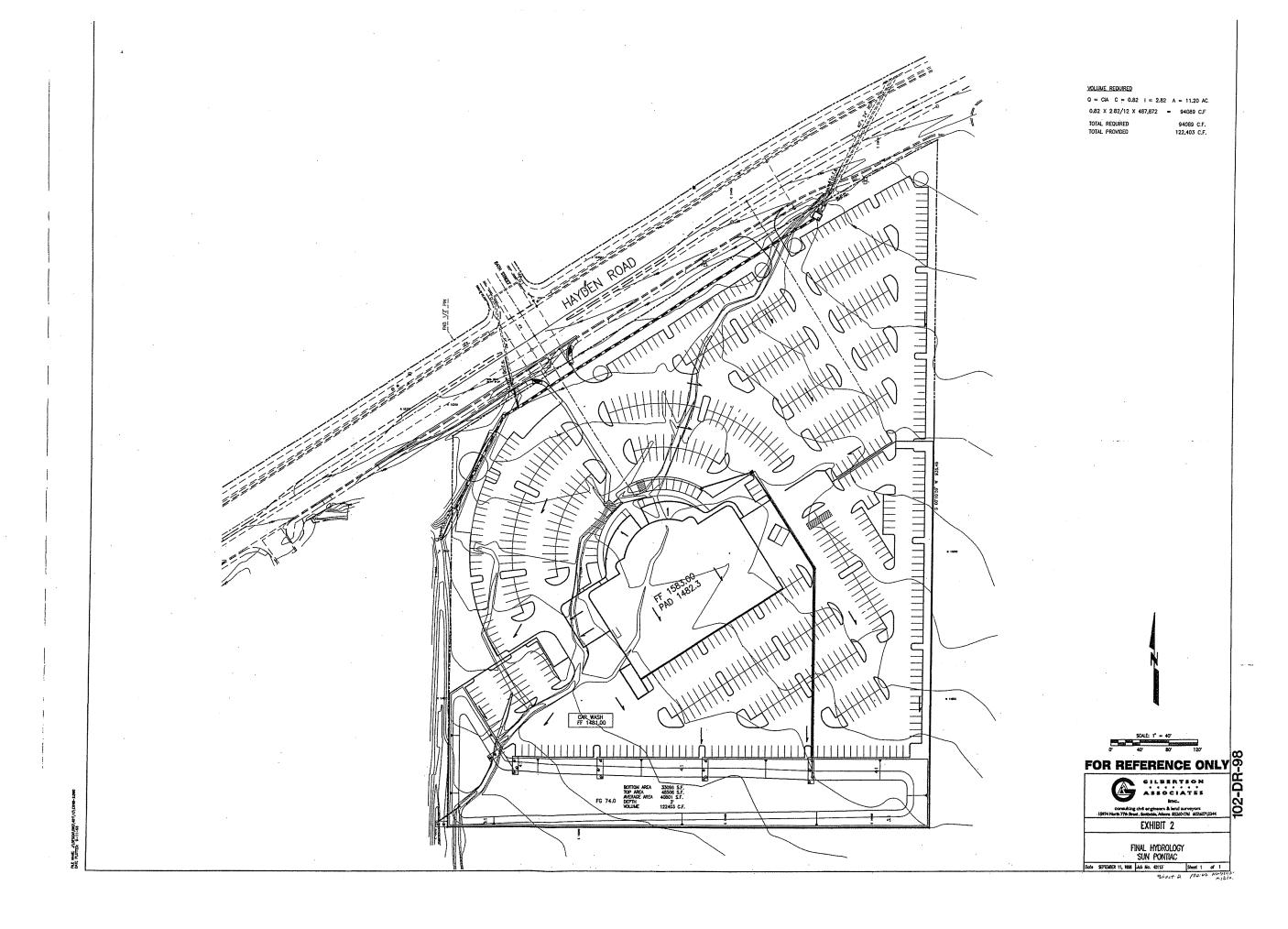
**EXHIBIT 2A** Master Drainage Plan

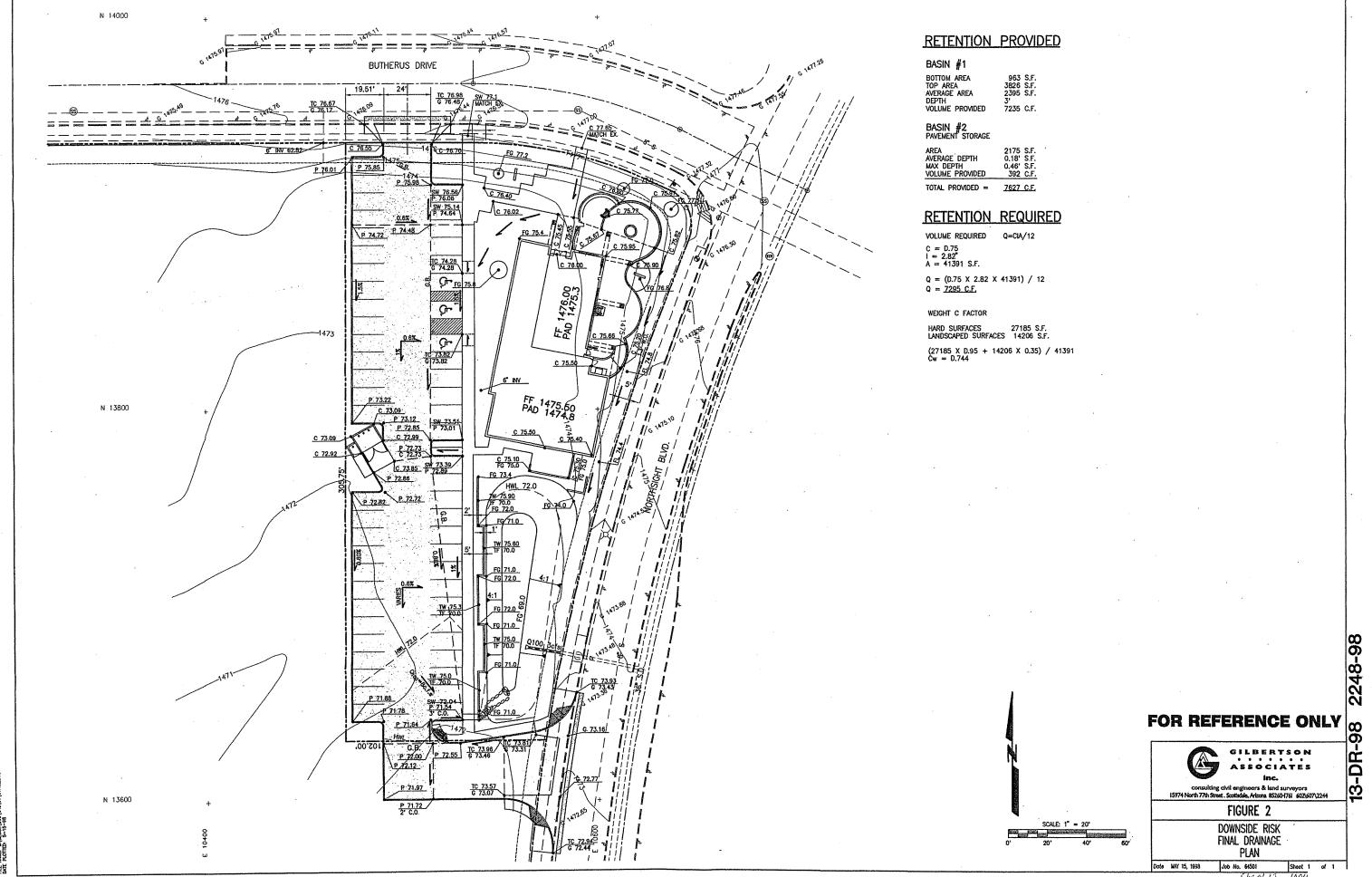
**EXHIBIT 2B** Master Drainage Plan

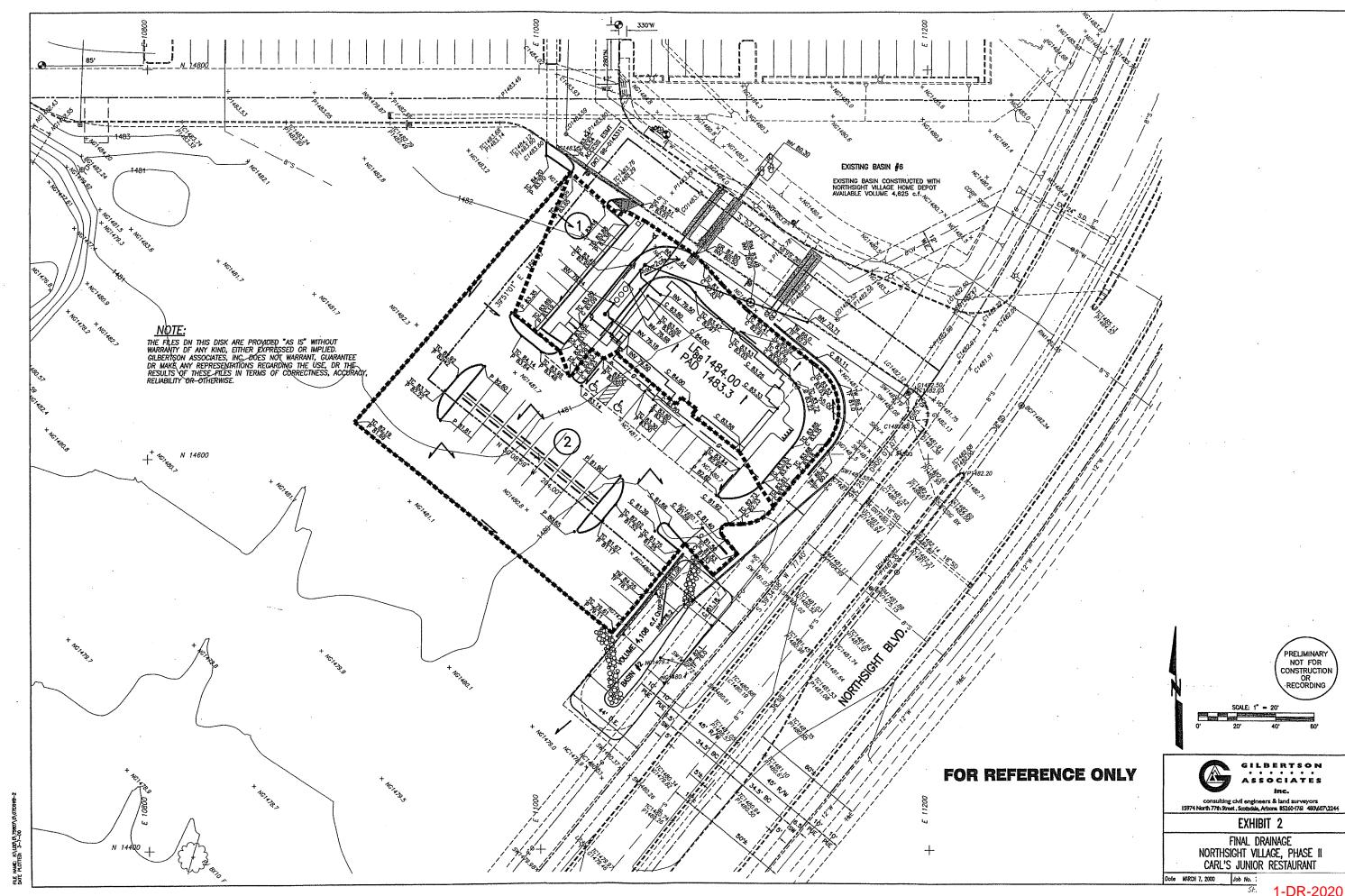


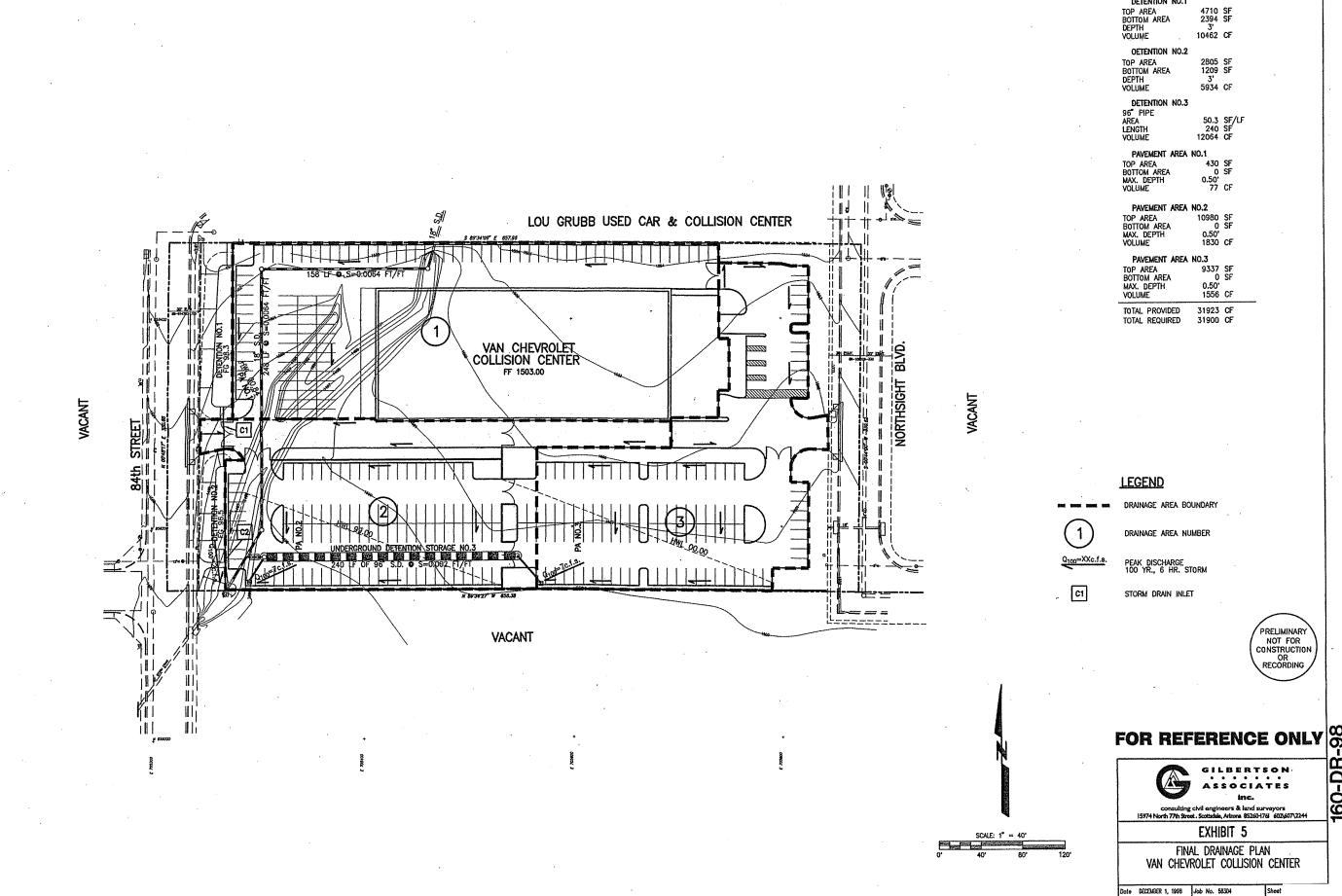
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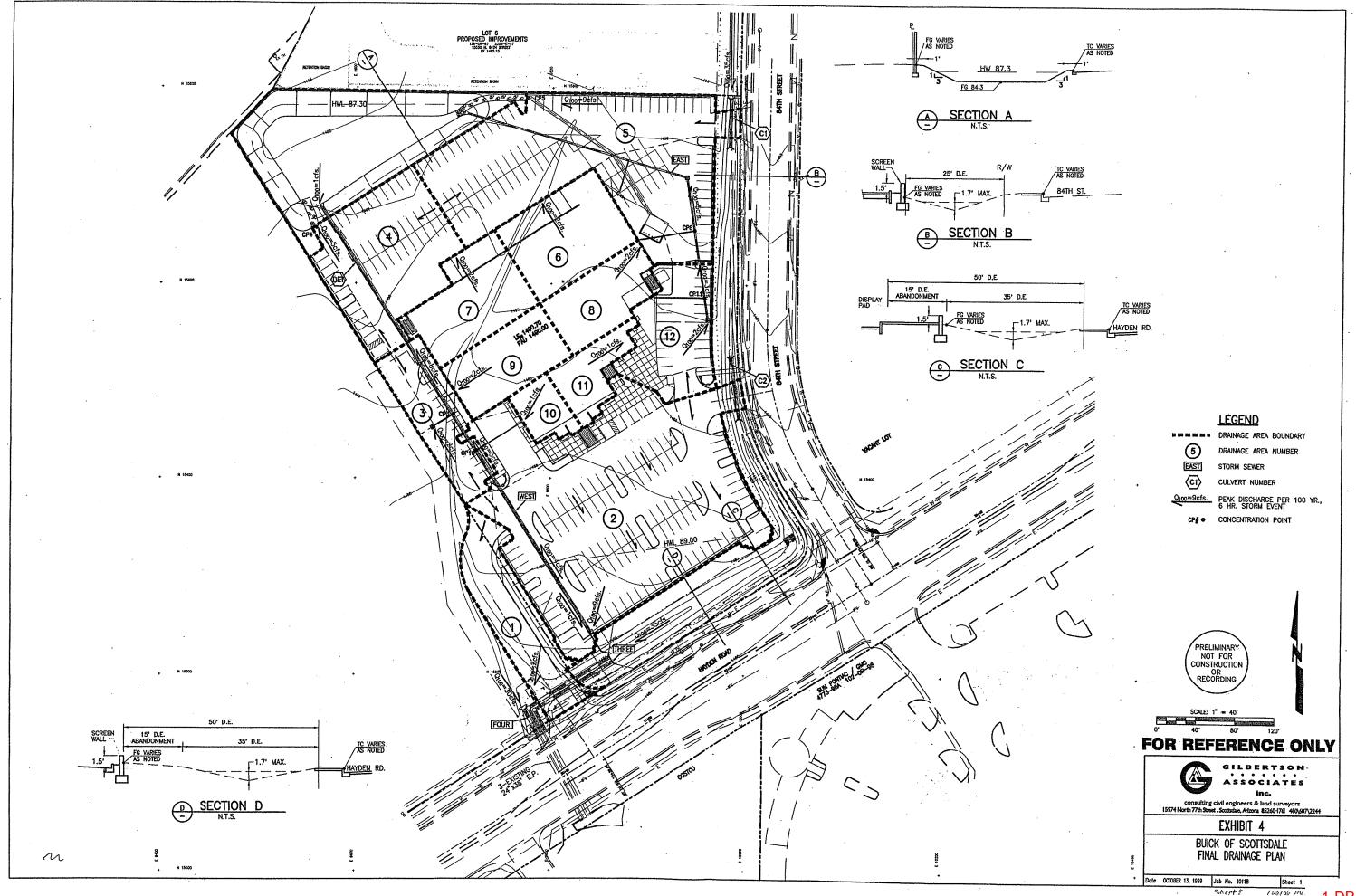


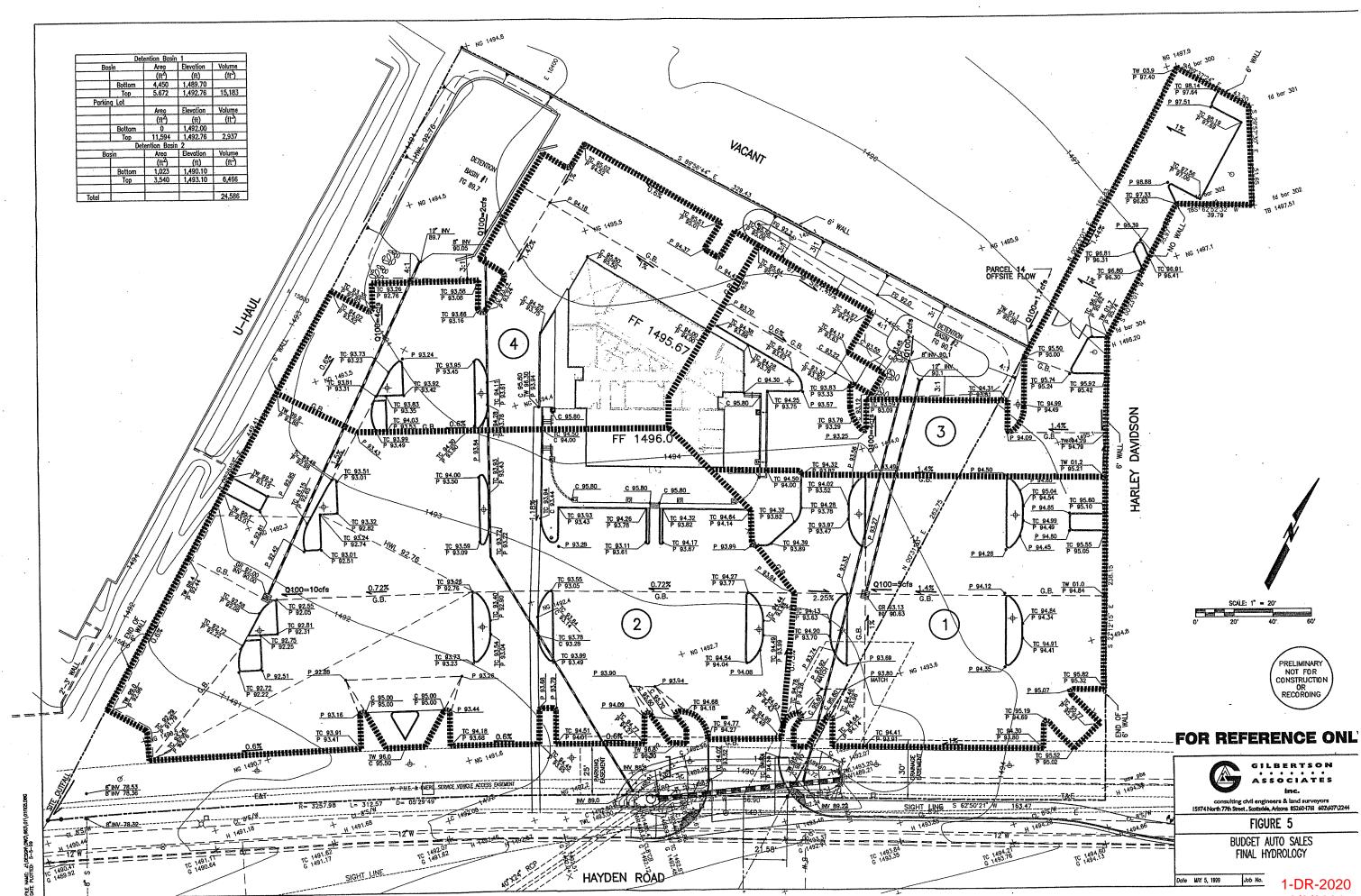


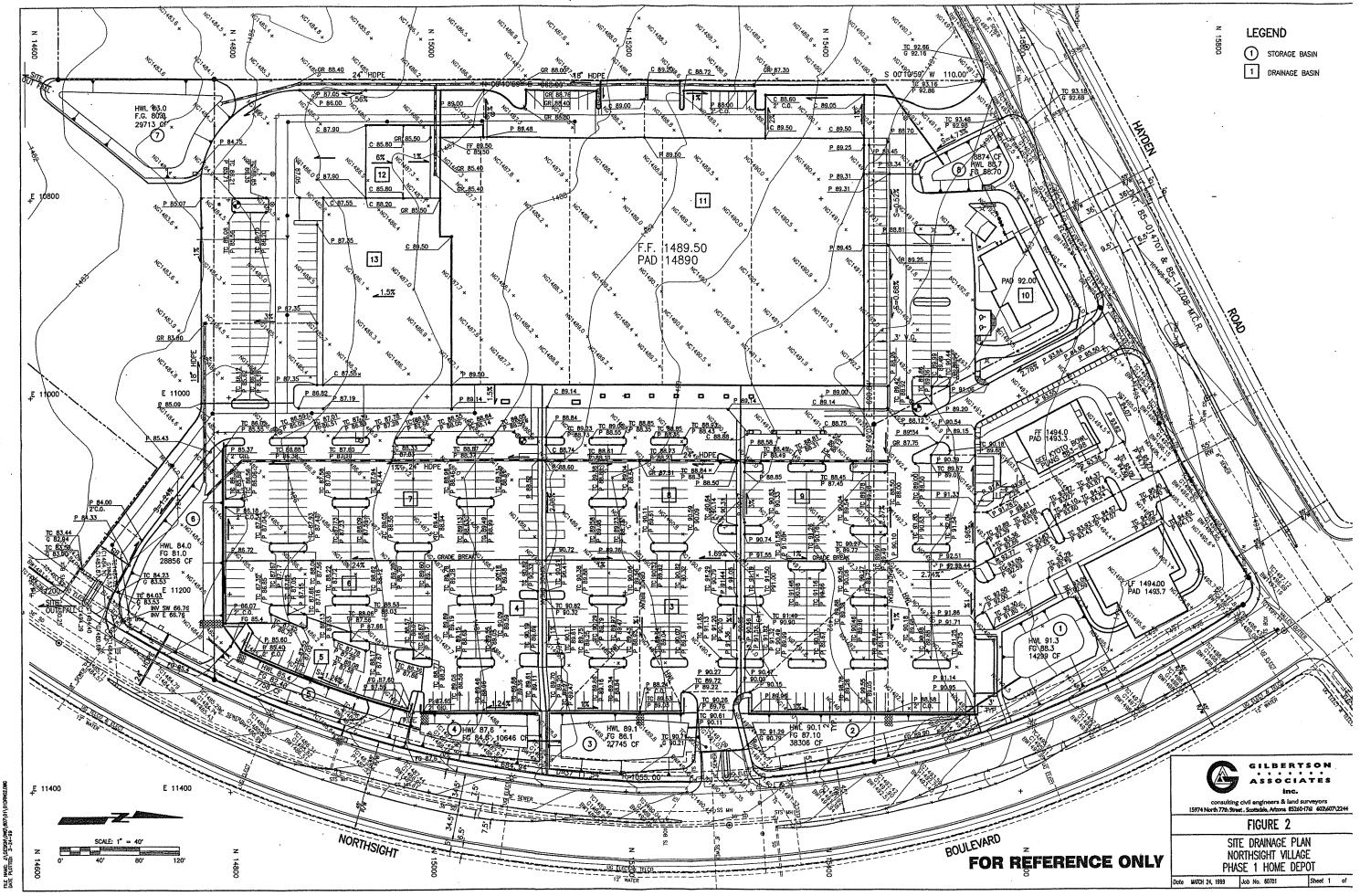
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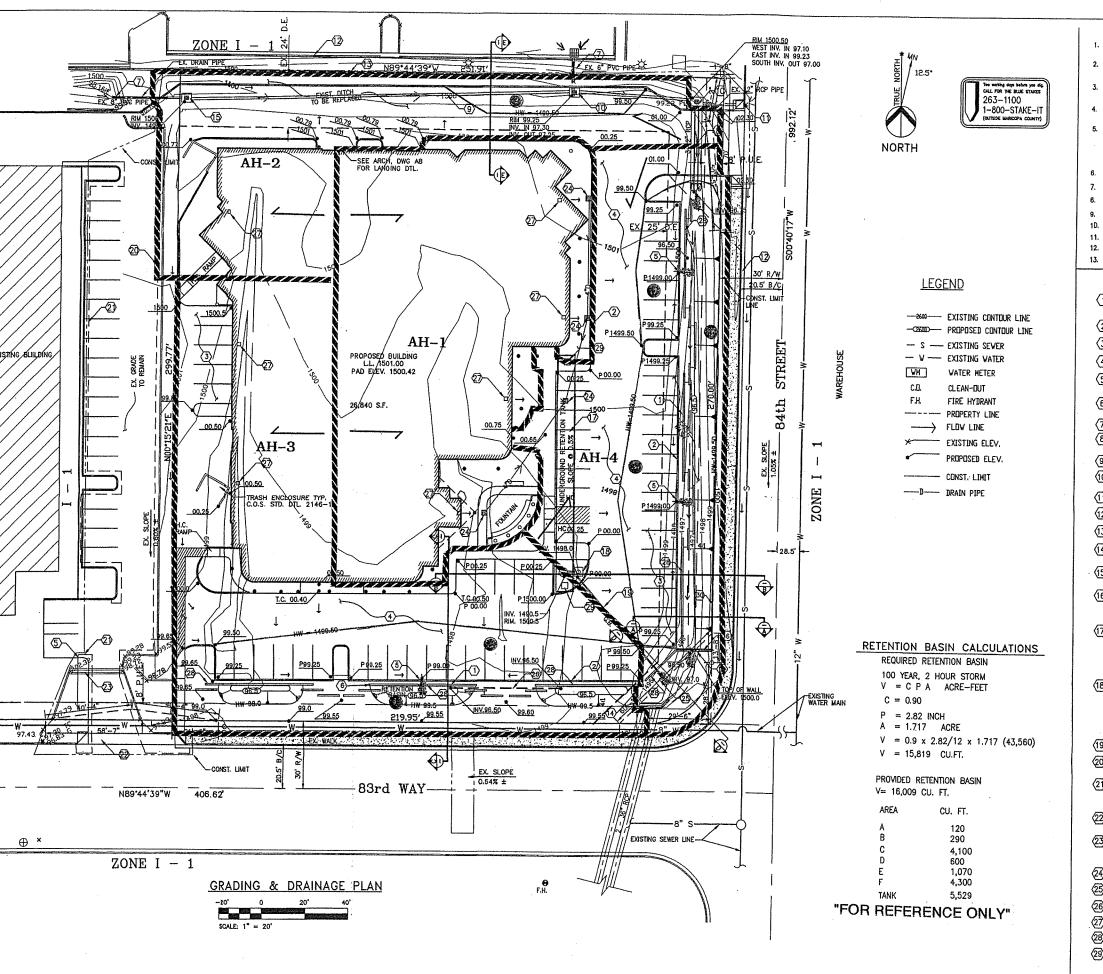
RETENTION CALCULATIONS

DETENTION NO.1









#### **GENERAL NOTES:**

- THE EXISTING UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES BEFORE EXCAVATION BEGINS.
- 2. SANITARY SEWER PIPE CROSSINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH
- 3. THE OEPTH OF COVER OF THE SERVICE SEWER AT THE PROPERTY LINE SHALL BE A MIN. OF 4' AND A MAX. OF 5' BELOW FINISH GRADE.
- WATER PIPE SHALL HAVE A MINIMUM COVER OF 3' AND MAX. COVER OF 4' FROM THE TOP OF PIPE TO THE TOP OF THE SUBGRADE.
- 5. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND CONFIRMING DEPTHS OF ALL OF THE EXISTING UTILITY LINE WITHIN PROPOSEO RETENTION BASIN AREAS. IF THE BASIN CAN NOT BE CONSTRUCTED FER PLAN BECAUSE OF CONFLICTS, THE CONTRACTOR SHOULD DISCUSS MODIFICATION OF BASIN CONFIGURATION WITH THE CITY INSPECTOR TO DETERMINE IF A PLAN REVISION OR A FIELD CHANGE IS REQUIRED.
- 6. COMPACTION SHALL COMPLY WITH M.A.G. SECTION 601.
- 7. MAXIMUM CUT AND FILL SLOPES ARE 4:1 EXCEPT AS NOTED.
- 6. SEE DRAINAGE REPORT FOR HYDRAULIC AND RETENTION CALCULATIONS.
- 9. FOUNTAIN WILL BE REVIEWED WITH THE LANDSCAPING PLAN.
- 1D. SCREEN WALLS WILL BE REVIEWED WITH SITE PLAN.
- 11. SIGHT DISTANCE TRIANGLE WILL BE SHOWN ON SITE PLAN
- 12. STORM WATER STORAGE FACILITIES SHALL HAVE A MAXIMUM DISCHARGE OF 1 CFS.
- 13. SIGNS REQUIRE SEPARATE PERMITS AND APPROVALS.

#### **CONSTRUCTION NOTES:**

- 1 CONSTRUCT SCREEN WALL (STEM WALL) PER ARCHITECT'S PLAN, TYPICAL.
- (2) INSTALL CURB AS SHOWN ON DTL. 4, SHEET C2.1
- (3) CONSTRICT 2' A.C. DN 4' A.B.C. SEE SHEET C2.1, DTL. I
- 4 CONSTRUCT 3' A.C. ON 6' A.B.C., SEE SHEET C2.I, DTL I.
- (5) CONSTRUCT CURB OPENING. SEE SHEET C2.1, DTL 2. INSTALL 5 SQ.YD 6'-9' RIP RAP 12' THICK, (TYP.)
- (6) CONSTRUCT 8' X 16' OPENING TO ALLOW FOR DRAIN
- EVERY IO' D.C. (TYP.) (7) EXISTING DRAINAGE PIPE
- (8) CONSTRUCT 3-12' RCP CULVERT. END SECTION PER MAG STD. DTL 545
- (9) CONSTRUCT I-12' DIA RCP DRAINAGE PIPE.
- (10) CONSTRUCT 3' X 3' CATCH BASIN PER MAG. STD., DTL 535 TYPE 'F' AS SHOWN ON DTL, 3, SHEET C2.1
- (1) EXISTING CURB INLET WITH 12' DIA RCP PIPE.
- (12) EXISTING CURB & GUTTER,
- (13) EXISTING CMU RETAINING WALL.
- (14) CONSTRUCT SOLID CONCRETE MASONRY WALL. VERTICAL REINFORCEMENT #5 @16' D.C.
- (5) CONSTRUCT CATCH BASIN WITH GRATE INLET SEE SHEET C2.I DTL 3.
- (16) CONSTRUCT CONCRETE VEIR TO ALLOW FOR CHANNEL RUN OFF AND TO RETEN THE DN-SITE WATER RUN OFF FOR 36 HRS.
- (17) CONSTRUCT 8 FT. DIA X 110 FT. LONG UNDER GROUND RETENTION TANK WITH DISCHARGE PUMP. MAG. SPC. 760, W/ WATER TIGHT JOINTS FULLY COAT PIPE, BITUMINOUS PER MAG. SPEC. 760 DR ALUMINIZED TYPE 2 PER ASTM A-819 AND AASHTU M-274
- (18) INSTALL DISCHARGE PUMP TO EMPTY THE TANK WITHIN 36 HR. SEE MECH./ ELEC. DVG. FOR DTL. PUMP TO BE INSTALLED WITH AUTOMATIC SWITCH. INSTALL 'GRAINGER' I/3 HP PUMP. CONTROL WITH VERTICAL FLOAT CONTROLLED MECHANISM CONSTRUCT 4.5'X 4.5' X 5' DEEP PUMP BOX PER MAG. STD. DTL. 504
- (19) INSTALL 58' LONG, 4' DIA. BLEED-OFF PIPE, SLOPE 80.5%
- 20 SAVCUT 2' VIDE BEYOND EXIST. CURB. REMOVE CURB AND PAVEMENT, GRADE TO MATCH EXISTING.
- (21) SAVCUT AND REMOVE EXISTING CURB & PAVEMENT. CONSTRUCT CURB AS SHOWN ON THIS SHEET CLI AND C2.1. DTI 4.
- 22 CONSTRUCT DRIVEWAY PER THE CITY OF SCOTTSDALE STANDARD TYPE CL-1, DTL. #2256 (TYP.)
- (23) RELOCATE EXIST. TRENCH GRATE TO MATCH\_THE PROPOSED DRIVEWAY. INSTALL IZ' SDR DRAIN PIPE TO CONNECT THE TRENCH GRATE TO EX.
- (24) INSTALL 18'x18' CATCH BASIN WITH GRATE. SEE SHEET C2.1, DTL. 3.
- (25) EXISTING GROUTED RIPRAP TO REMAIN
- 26 INSTALL 4' SDR-35 PVC STURM DRAIN PIPE.
- (27) ROOF DUTFALL
- (28) RETAINING VALL. SEE STRUCTURAL DWG. FOR DTL.
- (29) INSTALL SIGN. THE SIGN SHALL READ 'NOTICE UNDERGROUND STORM WATER STURAGE TANK."

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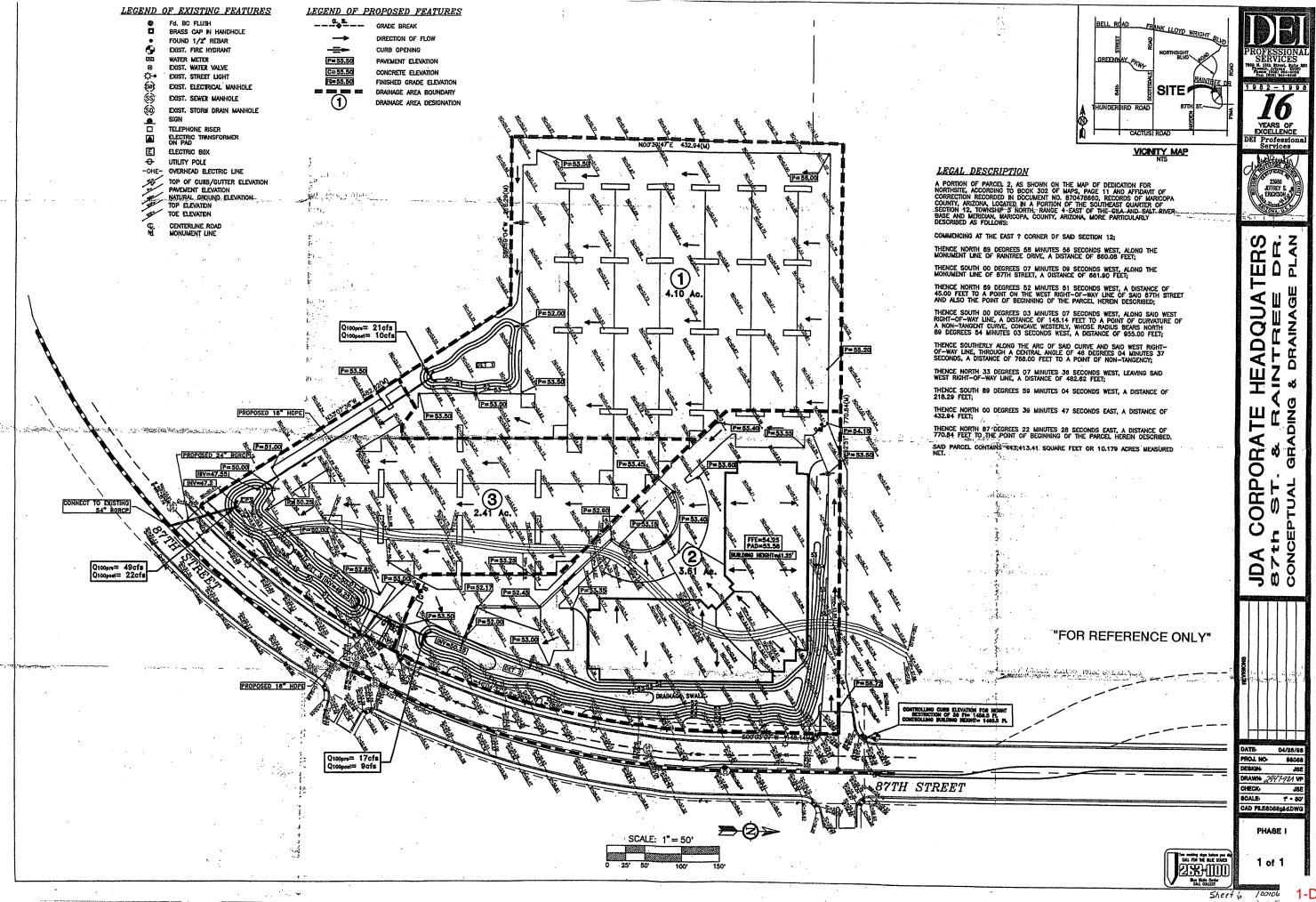
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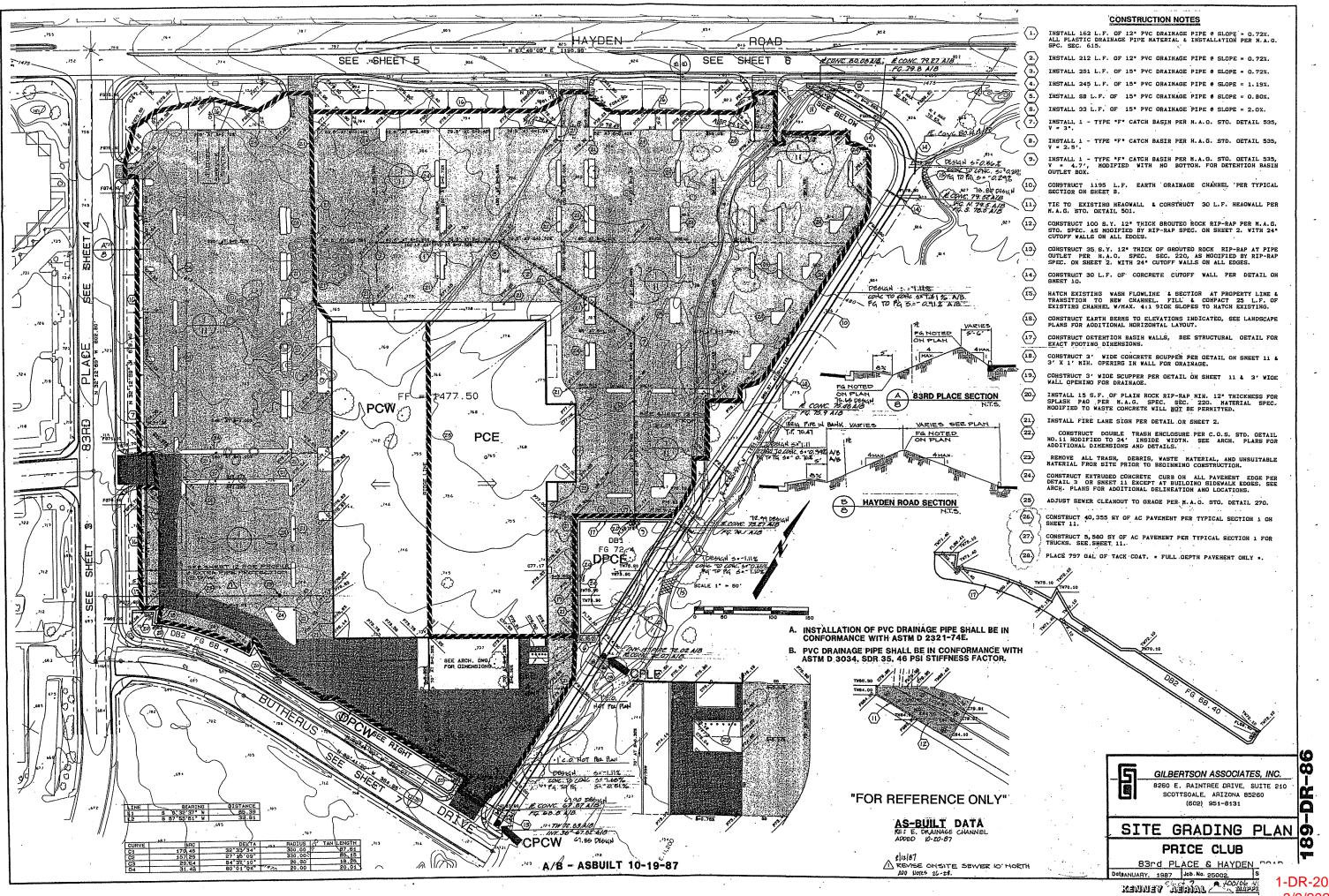
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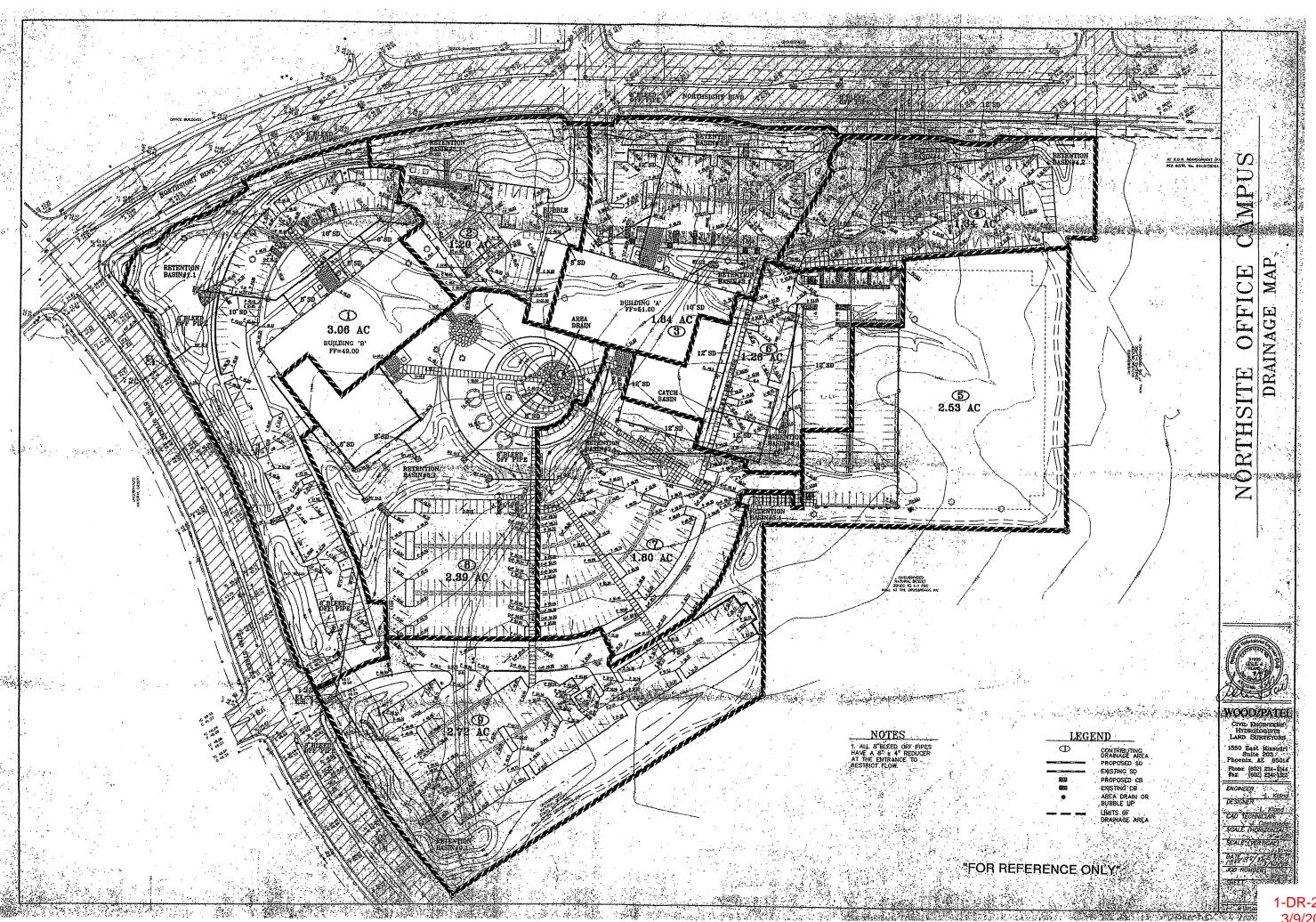
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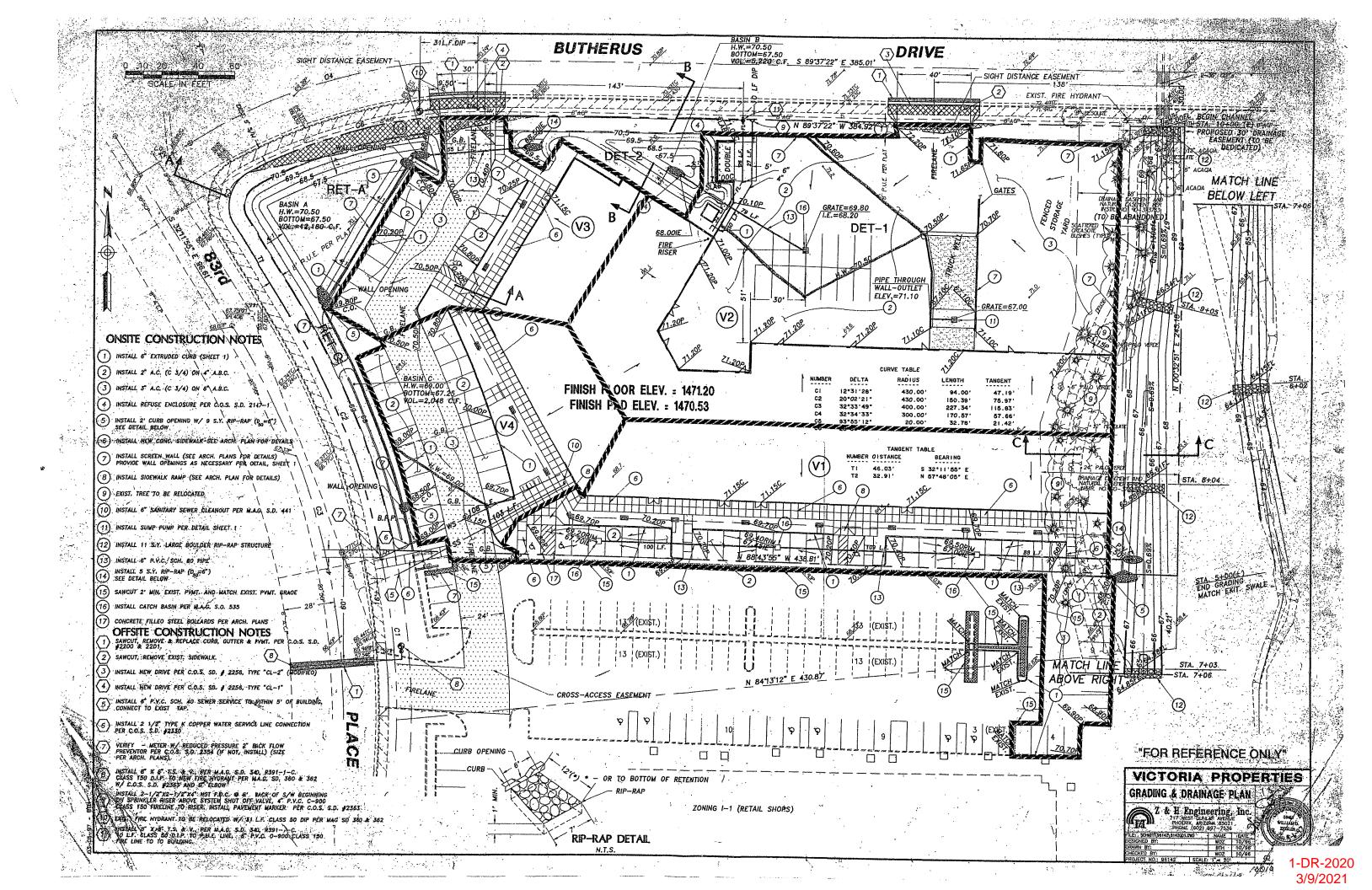
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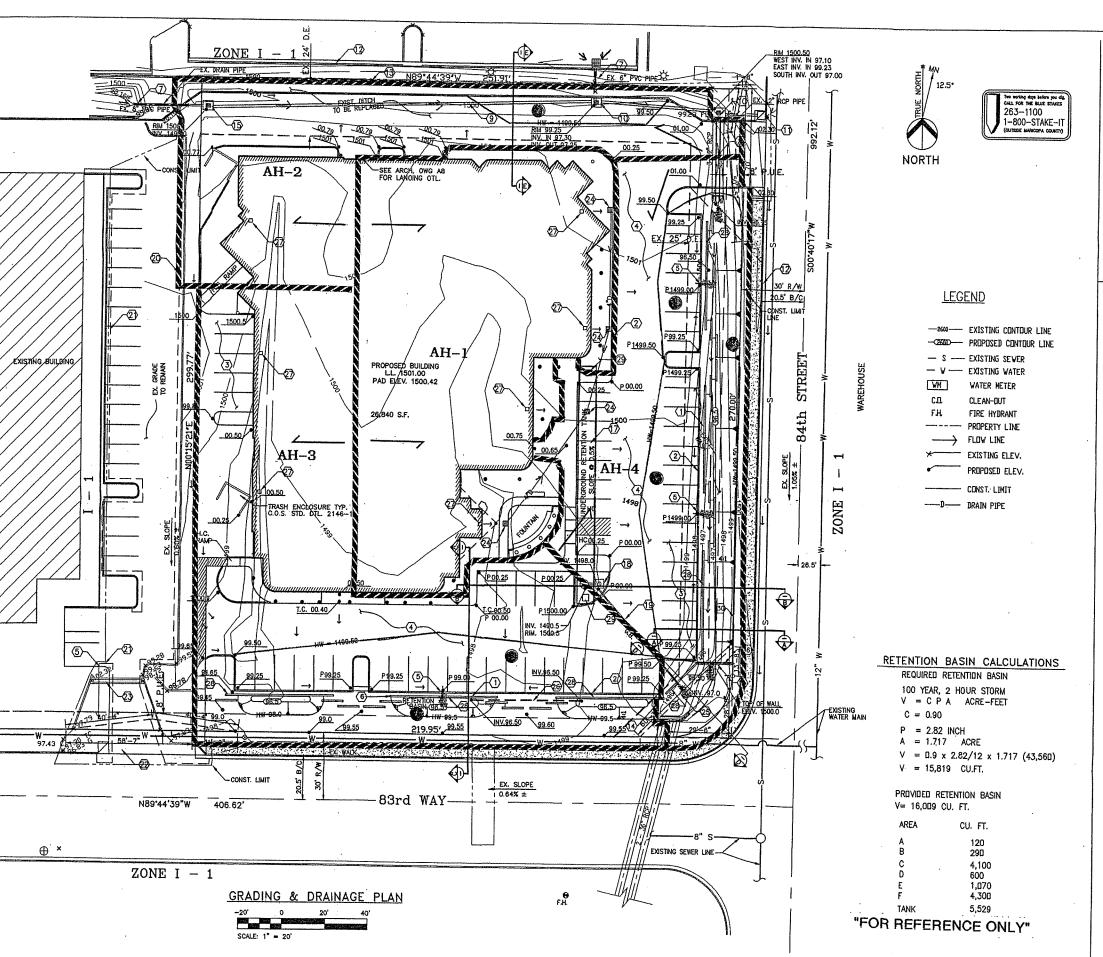
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#### **GENERAL NOTES:**

- THE EXISTING UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES BEFORE EXCAVATION BEGINS.
- 2. SANITARY SEWER PIPE CROSSINGS SHALL BE CONSTRUCTED IN ACCORDANCE WITH M.A.G. STD. SPECIFICATIONS.
- 3. THE OEPTH OF COVER OF THE SERVICE SEWER AT THE PROPERTY LINE SHALL BE A MIN. OF 4' ANO A MAX. OF 5' BELOW FINISH GRADE.
- WATER PIPE SHALL HAVE A MINIMUM COVER OF 3' AND MAX. COVER OF 4' FROM THE TOP OF PIPE TO THE TOP OF THE SUBGRADE.
- 5. CONTRACTOR IS RESPONSIBLE FOR LOCATING AND CONFIRMING DEPTHS OF ALL OF THE EXISTING UTILITY LINE WITHIN PROPOSED RETENTION BASIN AREAS. IF THE BASIN CAN NOT BE CONSTRUCTED FOR PLAN BECAUSE OF CONFLICTS, THE CONTRACTOR SHOULD DISCUSS MODIFICATION OF BASIN CONFIGURATION WITH THE CITY INSPECTOR TO OCTEDITUDE IS A DEAD PROPOSED OF A SETUL OPPLIANCE IS BEFORED. TO DETERMINE IF A PLAN REVISION OR A FIELD CHANGE IS REQUIRED.
- 6. COMPACTION SHALL COMPLY WITH M.A.G. SECTION 601.
- 7. MAXIMUM CUT AND FILL SLOPES ARE 4:1 EXCEPT AS NOTED.
- B. SEE DRAINAGE REPORT FOR HYDRAULIC AND RETENTION CALCULATIONS.
- 9. FOUNTAIN WILL BE REVIEWED WITH THE LANDSCAPING PLAN. 10. SCREEN WALLS WILL BE REVIEWED WITH SITE PLAN.
- 11. SIGHT DISTANCE TRIANGLE WILL BE SHOWN ON SITE PLAN.
- 12. STORM WATER STORAGE FACILITIES SHALL HAVE A MAXIMUM DISCHARGE OF 1 CFS.
- 13. SIGNS REQUIRE SEPARATE PERMITS AND APPROVALS.

# **CONSTRUCTION NOTES:**

- (1) CONSTRUCT SCREEN WALL (STEM WALL) PER ARCHITECT'S PLAN, TYPICAL.
- (2) INSTALL CURB AS SHOWN ON DTL. 4, SHEET C2.1
- (3) CONSTRICT 2' A.C. ON 4' A.B.C. SEE SHEET C2.I, DTL. I
- 4 CONSTRUCT 3' A.C. DN 6' A.B.C., SEE SHEET C2.1, DTL I.
- (5) CONSTRUCT CURB OPENING. SEE SHEET C2.I, DTL 2. INSTALL 5 SQ.YD 6'-9' RIP RAP 12' THICK. (TYP.)
- 6 CONSTRUCT 8' X 16' DPENING TO ALLOW FOR DRAIN
- EVERY IO' D.C. (TYP.)
- (7) EXISTING DRAINAGE PIPE
- (8) CONSTRUCT 3-12' RCP CULVERT, END SECTION PER MAG STB. DTL 545
- (9) CONSTRUCT 1-12' DIA RCP DRAINAGE PIPE.
- (10) CONSTRUCT 3' X 3' CATCH BASIN PER MAG. STD., DTL 535 TYPE 'F' DR AS SHOWN ON DTL. 3, SHEET C2,1
- 11) EXISTING CURB INLET WITH 12' DIA RCP PIPE.
- (12) EXISTING CURB & GUTTER.
- (13) EXISTING CMU RETAINING WALL.
- (14) CONSTRUCT SOLID CONCRETE MASONRY WALL, VERTICAL REINFORCEMENT #5 @16' D.C.
- (5) CONSTRUCT CATCH BASIN WITH GRATE INLET SEE SHEET C2.1 DTL 3.
- (6) CONSTRUCT CONCRETE VEIR TO ALLOW FOR CHANNEL RUN OFF AND TO RETEN THE ON-SITE WATER RUN OFF FOR 36 HRS.
- (17) CONSTRUCT 8 FT. DIA X 110 FT. LONG UNDER GROUND RETENTION TANK WITH DISCHARGE PUMP. MAG, SPC. 760, W/ WATER TIGHT JUINTS FULLY COAT PIPE, BITUMINOUS PER MAG. SPEC. 760 DR ALUMINIZED TYPE 2 PER ASTM A-819 AND AASHTD M-274
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- (19) INSTALL 58' LONG, 4' DIA. BLEED-OFF PIPE, SLOPE @0.5%
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- (26) INSTALL 4' SDR-35 PVC STURM DRAIN PIPE.
- 27 ROOF DUTFALL
- 28 RETAINING WALL. SEE STRUCTURAL DWG. FOR DTL.
- (29) INSTALL SIGN. THE SIGN SHALL READ "NOTICE UNDERGROUND STORM WATER STURAGE TANK."



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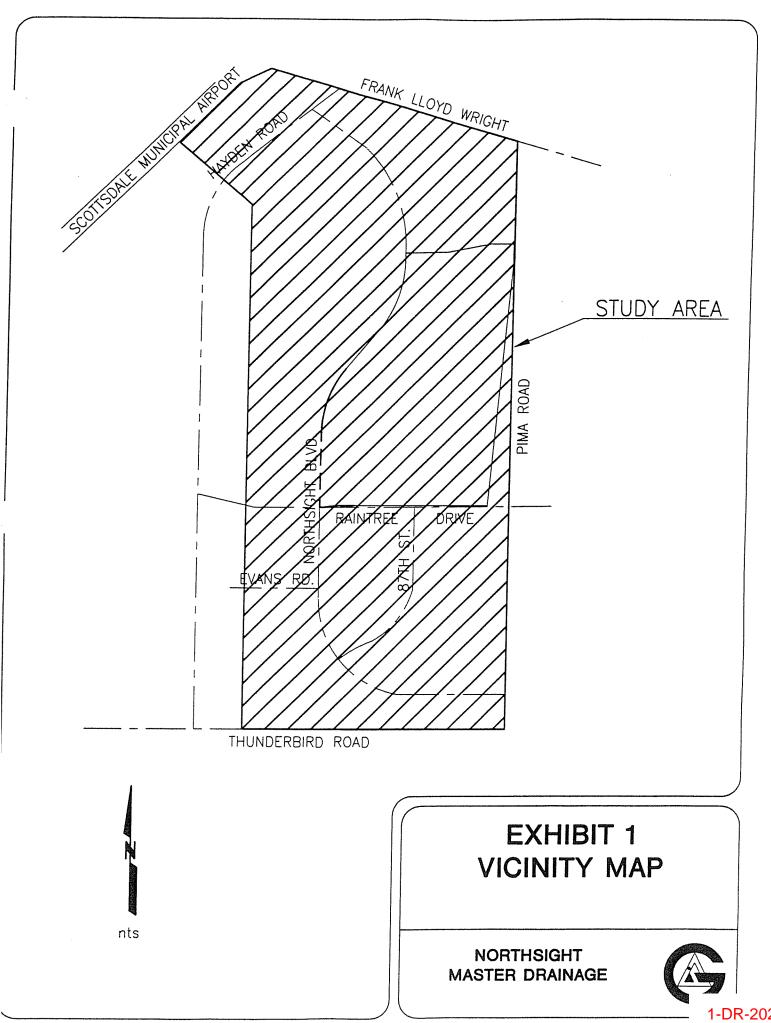
Northsight GAI 100-106

#### INTRODUCTION

This report is a revision of the Master Drainage Plan for the Northsight commercial development. The original Master Drainage plan was completed on May 12, 1986. The updated Master Plan will include a new hydrologic analysis for the Northsight property and its associated tributary area, and a hydraulic analysis of a portion of the existing storm sewer system. The purpose of this report is to determine if additional discharges from currently undeveloped areas may be discharged to the existing storm sewer and detention basin system without increasing the discharge from the park site detention facilities above the historic peak discharge. It is hoped that the storage provided in the tributary area, in excess of that assumed by the original master plan, will permit the direct discharge of additional storm water runoff.

Northsight is a master planned commercial development located in North Scottsdale North of Thunderbird Road and West of Pima Road. A Vicinity map of the study area is shown in Exhibit 1. The hydrology in the original Master Drainage Plan is based on the following five points:

- Storm water runoff from all parcels within the project would be conveyed to detention basins located along the southern and western boundaries on the property.
- 2. Areas south of Raintree Drive, with the exception of the area between Northsight Boulevard and 87<sup>th</sup> Street, would <u>not</u> be required to retain or detain storm water runoff onsite, storage is provided in Northsight Park.
- The property between Northsight Boulevard and 87<sup>th</sup> Street was to provide detention for storm water runoff in excess of that generated under the existing conditions.
- 4. Storm water entering Northsight from areas North of Raintree Drive are to be equal to historic flows, since development plans for this area are unknown.



5. The detention basins would discharge below the historic peak flows that currently leave Northsight.

Two items have changed the conditions upon which the original Master Drainage plan was based. The two items are, The City of Scottsdale instituted the 100-year, 2-hour storm water storage requirement for new developments and construction on the Pima freeway has removed additional land from the Northsight Drainage area.

The City of Scottsdale's current drainage standards require development to provide storm water storage for all runoff from the disturbed area of the site resulting from the 100-year, 2-hour storm event. The majority of the area tributary to the Northsight park detention basins has been constructed under the current City drainage standards. The effect of this policy is that projects constructed under it have generally provided more storage than was anticipated in the original Master Drainage Plan.

It is the purpose of this report to determine the effect of the additional storage introduced by the current City of Scottsdale storm water storage requirements and the decrease in the land area contributing runoff to the Northsight detention facility on the discharge from the detention facilities and to determine if the direct discharge of additional storm water runoff from undeveloped parcels within the Northsight development can be allowed without exceeding the capacity of the storm water conveyance system or increasing the peak discharge from the park site detention basin above the historic peak discharge.

#### **METHODS**

# Hydrology

The hydrology for the Northsight study area is modeled with The U.S. Army Corps of Engineer's HEC-I (Hydrologic Engineering Center) computer program, version 4.0.1E, dated May 1991. The information contained in the HEC-I model is derived from several sources. These sources include final drainage reports submitted with improvement plans, available grading and drainage plans from the individual commercial developments, City of Scottsdale topographic mapping and existing master drainage plans. Where a master drainage plan or other information is not available, the existing conditions were modeled. A table showing the physical parameters of the drainage areas developed in this study is located in Appendix I. Several of the developments covered by this study, Buick of Scottsdale, Budget Auto Sales, Phase I of the Home Depot, Van Collision Center, the Scottsdale Retail Site, and the JDA Corporate Headquarters, have had final drainage reports containing HEC-I models. These HEC-I Models have used in this study. The Basin parameters and other supporting data for these models are not contained in this report. However, Exhibits showing the drainage areas used in these studies are included for reference.

#### Basin Area

The areas of the sub-basins were determined by planimetering the available mapping.

### Precipitation Event

The rainfall event utilized for the HEC-I model is the 100-year, 6-hour storm. As required in the January 1993 revision of the City of Scottsdale *Drainage Design Standards and Policies* the above storm event is modeled using HEC-I's built-in hypothetical storm distribution. The precipitation depths associated with this storm event are taken from the original Master Drainage plan. The precipitation calculations, from the original Master Drainage plan, are contained in Appendix II.

#### Rainfall Losses

The Soil Conservation Service (SCS) Curve Number is used in the HEC-I models to estimate the precipitation losses. A weighted Curve Number was determined based Hydrologic Soil Group (HSG) of the soils found in the area and the quantity of impervious surface in a drainage area. A curve number of 77 was used for undeveloped area and landscaped areas. A curve number of 98 was used for impervious surface. An example calculation is shown below. Appendix III contains a table showing the weighted curve number.

Equation used to calculate a Weighted Curve Number

$$C_{w} = \frac{A_{I} * 98 + A_{L} * 77}{A_{I}}$$

where:  $C_w = Weighted Curve Number$ 

 $A_L = Landscaped Area$ 

 $A_1 = Impervious Area$ 

 $A_t = Total Area$ 

 $C_b = Landscaped Curve Number$ 

 $C_c = Impervious Curve Number$ 

Example: (See Price Club West Basin)

$$95 = \frac{1.04 * 77 + 5.30 * 98}{6.34}$$

## Time of Concentration

The Time of Concentration for the drainage areas is calculated by the method of Papadakis and Kazan as described in the "Drainage Design Manual for Maricopa

County, Arizona, Volume I, Hydrology". This method utilizes physical parameters of the drainage area to calculate the time for excess rainfall to reach the basin outlet from the hydraulically most remote point of the basin. Appendix IV contains the Time of Concentration calculations.

#### **HYDRAULICS**

The storm sewer is modeled with the StormCad computer program by Haestad Methods. The input data is derived from as-built plans where available. Improvement plans are used where as-built plans are not available. The peak flows used in the hydraulic model of the storm sewer are the peak discharges from the 100-year, 6-hour storm hydrologic model. The results of the storm drain analysis are located with the Appendix V.

# **DISCUSSION**

The goal of this Study is to determine if additional runoff from developed areas JPRT and/or IPRT can be conveyed by the storm drain system, thereby reducing or eliminating on-site storm water storage in those areas, without increasing total discharge from park detention basins. Basin designated JPRT will contribute to the Northsight Boulevard storm drain. Basin designated IPRT discharges to the 87<sup>th</sup> Street storm drain.

Analysis of the Northsight storm drain system indicates it can not accept any additional runoff from Basin JPRT. Basin JPRT must comply with assumptions of the original Master Plan and provide sufficient storage on-site to maintain undeveloped conditions discharge rates to the storm drain system. Results of the HEC-I Model and associated storm sewer calculations are located in Appendix VI.

Analysis of 87<sup>th</sup> Street storm drain indicates it can accept developed conditions runoff from Basin IPRT. This change is possible due to reduction the in contributory drainage area by additional Freeway acquisition and construction of more storm water storage within the Scottsdale Retail Center, Sonoran Village, Home Depot, Sun Pontiac, Costco, Basin GE and

Northsight

J.A.D. properties than was anticipated in the original Master Drainage Plan. HEC-I model allows discharge of developed flows within Basin IPRT to the 87<sup>th</sup> Street storm drain. Model indicates total peak discharge from park detention basins to be 370 cfs or 52 cfs lower than 422 cfs calculated by original Master Plan. Results of this HEC-I Model and associated storm sewer calculations are located in Appendix V.

Northsight

# **CONCLUSIONS**

The results of the Analysis show:

• Requirements for Basin JPRT are unchanged from the original Master Drainage Plan. Northsight Boulevard does not have capacity for additional runoff, Basin JRPT must provide on-site storage for developed conditions to limit discharge equal to or less than undeveloped conditions.

- Developed conditions peak discharge from Basin IPRT cfs, can be conveyed by the existing 87<sup>th</sup> Street storm sewer eliminating on-site detention within Basin IPRT.
- The HEC-I Model calculated a peak discharge from Northsight Park detention basins of 370 cfs or a reduction of 52 cfs from the 422 cfs calculated by original Master Plan including the additional developed condition runoff from Basin IPRT.

GAI 100-106

**Appendix I**Drainage Basin Parameters

		Basin	Basin	MaxImum	Minimum	Drainage	Basin
		Area	Area	Elevation	Elevation	Length	
Parcel	Basin	(acre)	(mi.²)	(ft.)	(ft.)	(ft.)	Slope
Price Club West	PCW	6.34	0.0099	1476,58	1471.87	812	(ft./ft.)
Price Club East	PCE	7.61	0.0119	1478.1	1471.87	796	0.0058
Dal Tile	DAL	1.85	0.0029	1494.75	1475.14		0.0037
Sun Pontiac	SUNP	11.2	0.0175	1489	1475	532	0.0014
Victoria Properties	V1	0.64	0.0010	1470.5	1466.5	1060 365	0.0132
Victoria Properties	V2	1	0.0016	1471.15			0.0110
Victoria Properties	V3	0.62	0.0010	1471.13	1469.8	222	0.0061
Lot 6 Automall	AML6	8.28	0.0129	1510	1409.0	255	0.0039
Lot 7 Automall	AML7	6.41	0.0129	1510		1120	0.0125
Lot 8 Automall	AML8	5.70	0.0089	1514	1502	850	0.0094
Lot 9 Automall	AML9	1.80	0.0009	1502	1502	1000	0.0120
Lot 14 Automall	14A	3.31	0.0028	1499	1498	380	0.0105
Lot 14 Automall	14B	1.46	0.0032	1499	1494	550	0.0091
U-Haul	A	0.86	0.0023	1491.75	1494	370	0.0135
U-Haul	В	0.95	0.0015	1491.75	1488	250	0.0150
U-Haul	C	0.88	0.0013	1492.3	1490.75 1485	500	0.0045
Budget Auto Sales	1	0.53	0.0014	1492.3	1493.1	240	0.0304
Budget Auto Sales	2	1.12	0.0008	1493.8	1493.1	120	0.0058
Budget Auto Sales	3	0.49	0.0008	1495.9	1492.1	270	0.0070
Budget Auto Sales	4	0.46	0.0007	1493.4	1493.1	129 76	0.0163
Hacienda Harley <sup>1</sup>	HRLD	3.2	0.0050	1508			0.0079
Downside Risk	DR	0.95	0.0030	1477	1503	580	0.0086
Former Larry Miller Toyota	L1011	7.42	0.0015	1515	1471.5	312	0.0176
Lou Grubb Used Ford	LGU	6.48		Weighted A	1506	400	0.0225
Lou Grubb Used Ford	LGU1	0.48	0.00101	vveignted A			
Lou Grubb Used Ford	LGU2	0.52	0.0010		15.5	190	0.0053
Lou Grubb Used Ford	LGU3	0.52	0.0008	15.5 15	14.5	173	0.0058
Lou Grubb Used Ford	LGU4	0.52	0.0008	13.5	13.5	194	0.0077
Lou Grubb Used Ford	LGU5	0.35	0.0005	17.5	12.5	193	0.0052
Lou Grubb Used Ford	LGU6	0.33	0.0005	17.5	13	135	0.0333
Lou Grubb Used Ford	LGU7	0.32	0.0005		13.9	145	0.0248
Lou Grubb Used Ford	LGU8	0.34	0.0005	17.5	15	130	0.0192
Lou Grubb Used Ford	LGU9	0.31		15.8	14	145	0.0124
Lou Grubb Used Ford	LGU10	0.28	0.0004	14.8	12.9	145	0.0131
	LGOID	0.51	0.0008	14.1	12	145	0.0145

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		Basin	Basin	Maximum	Minimum	Drainage	Basin
Doroni	<b>.</b> .	Area	Are <b>a</b>	Elevation	Elevation	Length	Slope
Parcel	Basin	(acre)	(mi.²)	(ft.)	(ft.)	(ft.)	(ft./ft.)
Lou Grubb Used Ford	LGU11	0.21	0.0003	13.2		. 88	0.0057
Lou Grubb Used Ford	LGU12	0.86	0.0013	13.5	12.5	242	0.0041
Lou Grubb Used Ford	LGU13	0.68	0.0011	13.7	12.7	240	0.0042
Lou Grubb Used Ford	LGU14	0.31	0.0005	13.7	12.5	164	0.0073
Lou Grubb Used Ford	LGU15	0.15	0.0002	13.5	12.12	169	0.0082
Saturn	Sturn	3.10	0.0049	Weighted A	verage		
Saturn	S1	0.57	0.0009	11	9	260	0.0077
Satum	S2	0.30	0.0005	9.8	9	124	0.0065
Saturn	S3	0.20	0.0003	10.1	8	112	0.0188
Saturn	S4	0.31	0.0005	8.87	7	112	0.0167
Saturn	S5	0.57	0.0009	9.37	7	237	0.0100
Saturn	S6	0.66	0.0010	10.3	8	269	0.0086
Saturn	S7	0.49	0.0008	9.1	8.15	220	0.0043
Saturn	S8	0.21	0.0003	8.75	6.1	130	0.0204
P K Electronics	PKE	4.8	0.0075	5.93	2.95	365	0.0082
NW 83 <sup>RD</sup> WAY & 84 <sup>TH</sup> ST	AH1	0.47	0.0007	1501	1500	215	0.0047
NW 83 <sup>RD</sup> WAY & 84 <sup>TH</sup> ST	AH2	0.31	0.0005	1501	1499.25	294	0.0047
NW 83 <sup>RD</sup> WAY & 84 <sup>TH</sup> ST	AH3	0.61	0.0009	1501	1499	333	
NW 83 <sup>RD</sup> WAY & 84 <sup>TH</sup> ST	AH4	0.42	0.0007	1500.25	1496	283	0.0060 0.0150
84TH St. Airpark Holdings	AH84	0.17	0.0003	1503.76	1500.69	140	0.0130
Northsight Automall Streets	AMS1	0.51	0.0008	1512.94	1503.1	1026	0.0219
Northsight Automall Streets	AMS2	0.53	0.0008	1512.94	1502.6	1124	0.0096
Northsight Automall Streets	AMS3	0.31	0.0005	1502.6	1500.55	380.5	0.0092
Northsight Automall Streets	AMS4	0.13	0.0002	1501.84	1500.55	278	0.0034
Northsight Automall Streets	AMS5	0.26	0.0004	1503.1	1498.12	331	
Northsight Automall Streets	AMS6	0.22	0.0003	1502.46	1498.12	270	0.0150
Northsight Automall Streets	AMS7	0.35	0.0005	1501.78	1498.32		0.0161
Northsight Automall Streets	AMS8	0.27	0.0004	1498.71	1495.56	584 520	0.0059
Northsight Automall Streets	AMS9	0.34	0.0005	1500,91	1495.55		0.0061
Raintree Street Inlets	R1	0.27	0.0004	1463.98	1495.55	621	0.0086
Raintree Street Inlets	R2	0.45	0.0007	1463.96		332	0.0050
Raintree Street Inlets	R3	0.43	0.0007	1463.98	1461.72	320	0.0070
Raintree Street Inlets	R4	0.34	0.0004		1462.76	190	0.0064
	1 117	0.34	0.0005	1463.5	1461.71	210	0.0085

		Basin	Basin	Maximum	Minimum	Drainage	Basin
		Area	Area	Elevation	Elevation	Length	Slope
Parcel	Basin	(acre)	(mi. <sup>2</sup> )	(ft.)	(ft.)	(ft.)	(ft./ft.)
Raintree Street Inlets	R5	0.34	0.0005	1463.5	1461.71		0.0085
Raintree Street Inlets	R6	0.23	0.0004	1463.5	1461.59	295	0.0065
Raintree Street Inlets	R7	0.28	0.0004	1463.5	1461.62	295	0.0064
Raintree Street Inlets	R8	0.47	0.0007	1462.43	1459.8	545	0.0048
Raintree Street Inlets	R9	0.44	0.0007	1462.43	1459.44	545	0.0055
Raintree Street Inlets	R11	0.71	0.0011	1466.5	1458.87	530	0.0144
Northsight Blvd Inlets	N1	0.43	0.0007	1441.6	1440.7	355	0.0025
Northsight Blvd Inlets	N2	0.48	0.0007	1442.12	1440.7	320	0.0044
Northsight Blvd Inlets	N3	0.60	0.0009	1442.35	1440.6	365	0.0048
Northsight Blvd Inlets	N4	0.67	0.0010	1442.55	1440.6	365	0.0053
Northsight Blvd Inlets	N5	0.79	0.0012	1442.35	1440.05	460	0.0050
Northsight Blvd Inlets	N6	0.63	0.0010	1442.35	1440.22	460	0.0046
Northsight Blvd Inlets	N7	0.91	0.0014	1447.21	1440.92	636	0.0099
Northsight Blvd Inlets	N8	0.81	0.0013	1447.21	1440.92	636	0.0099
Northsight Blvd Inlets	N9	0.35	0.0005	1450.58	1446.18	435	0.0101
Northsight Blvd Inlets	N10	0.67	0.0010	1453.2	1447.06	613	0.0100
Northsight Blvd Inlets	N11	0.72	0.0011	1456.69	1449.71	645	0.0108
Northsight Blvd Inlets	N12	0.63	0.0010	1462.5	1458.15	450	0.0097
Northsight Blvd Inlets	N13	0.56	0.0009	1460.43	1455.64	430	0.0037
Northsight Blvd Inlets	N14	0.95	0.0015	1466.3	1459.28	496	0.0142
Northsight Blvd Inlets	N15	0.50	0.0008	1471.98	1465.75	500	0.0125
Northsight Blvd Inlets	N16	0.54	0.0008	1471.98	1465.75	500	0.0125
Northsight Blvd Inlets	N17	0.54	0.0008	1477.54	1471.98	556	0.0100
Northsight Blvd Inlets	N18	1.57	0.0025	1474	1471.98	945	0.0021
Northsight Blvd Inlets	N19	0.49	0.0008	1480.6	1477.54	514	0.0060
Northsight Blvd Inlets	N20	0.46	0.0007	1480.6	1477.54	514	0.0060
Northsight Blvd Inlets	N21	0.42	0.0007	1484.6	1480.6	490	0.0082
Northsight Blvd Inlets	N22	0.46	0.0007	1484.6	1480.6	490	0.0082
Northsight Blvd Inlets	N23	0.97	0.0015	1496.55	1484.6	814	0.0147
Northsight Blvd Inlets	N24	0.88	0.0014	1496.55	1484.6	814	0.0147
Northsight Blvd Inlets	N25		INL	ET NOT US			0.0147
87 <sup>TH</sup> Street Inlets	S1	0.40	0.0006	1447.6	1443.01	495	0.0093
87 <sup>TH</sup> Street Inlets	S2	0.40	0.0006	1447.6	1443.01	495	0.0093

	·	Basin	Basin	Maximum	Minimum	Drainage	Basin
		Area	Area	Elevation	Elevation	Length	Slope
Parcel	Basin	(acre)	(mi. <sup>2</sup> )	(ft.)	(ft.)	(ft.)	(ft./ft.)
87 <sup>TH</sup> Street Inlets	S3	0.15	0.0002	1448.29	1446.61	165	0.0102
87 <sup>TH</sup> Street Inlets	S4	0.12	0.0002	1448.29	1446.53	165	0.0107
87 <sup>TH</sup> Street Inlets	S5	0.40	0.0006	1451.64	1447.6	515	0.0078
87 <sup>TH</sup> Street Inlets	S <b>6</b>	0.45	0.0007	1451.64	1447.6	515	0.0078
87 <sup>TH</sup> Street Inlets	S <b>7</b>	0.20	0.0003	1453.39	1450.8	210	0.0123
87 <sup>TH</sup> Street Inlets	S <b>8</b>	0.17	0.0003	1453.39	1450.78	210	0.0124
87 <sup>TH</sup> Street Inlets	S9	0.35	0.0006	1457.86	1452.7	500	0.0103
87 <sup>TH</sup> Street Inlets	S10	0.40	0.0006	1457.86	1452.7	500	0.0103
87 <sup>TH</sup> Street Inlets	S11	0.54	0.0008	1463	1456.98	686	0.0088
87 <sup>TH</sup> Street Inlets	S12	0.29	0.0005	1463.96	1457.92	860	0.0070
87 <sup>TH</sup> Street Inlets	S14	0.48	0.0007	1463.96	1459.82	490	0.0084
Park Entrance Inlets	P1	0.05	0.0001	1447.88	1445.14	205	0.0134
Park Entrance Inlets	P2	0.06	0.0001	1446.78	1445.03	75	0.0233
Evans Road Inlets	E1	0.64	0.0010	1485.55	1451.94	623	0.0539
Evans Road Inlets	E2	0.18	0.0003	1453.24	1451.94	200	0.0065
Carl's Junior	CJN	0.28	0.0004	83.7	82.8	180	0.0050
Carl's Junior	CJS	0.55	0.0009	83.7	78.1	287	0.0195
Northsight Financial Center	NFC	4.80	0.0075	63.3	53.3	763	0.0131
Frank Lloyd Wright Blvd.	FLW	4.42	0.0069	16.85	12.93	3265	0.0012
84th Street (west)	W84	0.73	0.0011	1503.71	1488	1300	0.0121
84th Street (East)	E84	0.91	0.0014	1503.76	1488	1500	0.0105
Air Park Holdings Lot 5	AHL5	1.57	0.0025	1498.3	1494	350	0.0123
Parcel NE of Hayden and 84th St.	UD84	0.92	0.0014	91	86.8	300	0.0120
West Hayden Road & FLW Blve	HY1	4.61	0.0072	1512.93	1492.12	3300	0.0063
East Hayden Rd. to Sun Pontiac	HY2	2.51	0.0039	1508	1492	1900	0.0084
West Hayden Budget to Price Club	HY3	1.29	0.0020	1492.12	1484	980	0.0083
East Hayden Sun Pontiac to Price Club	HY4	1.16	0.0018	1492	1484	880	0.0003
Northsight Village Phase II	NV2	15.83	0.0247	1482	1474	1430	0.0056
Undeveloped Pcl S of Butherus	UD2	24.21	0.0378	1474	1463	1500	0.0030
83RD PLACE AND RAINTREE Dr.	83RD	3.02	0.0047	1477.4	1461.34	2194	0.0073
Northsight Master Plan Area E1	MPE1	4	0.0063	1453	1446	630	0.0073
Northsight Master Plan Area E2	MPE2	3.5	0.0055	1451.5	1445	600	0.0108

		Basin	Basin	Maximum	Minimum	Drainage	Basin
		Area	Area	Elevation	Elevation	Length	Slope
Parcel	Basin	(acre)	(mi. <sup>2</sup> )	(ft.)	(ft.)	(ft.)	(ft./ft.)
Northsight Master Plan Area F2	F2	2.4338843	0.0038				0.0108
Evans, Gelding, and 84th St.	EG84	1.74	0.0027	62.5			0.0201
Northsight Master Plan Portion of Area I	IPRT	16.87	0.0264	1474	1467	1110	0.0063
Northsight Master Plan Portion of Area J	JPRT	32.25	0.0504	1474	1464		0.0056
Northsight Master Plan Portion of Area G	GE	8.75	0.0137	1464	1458		0.0063
Northsight Master Plan Portion of Area G	GW	10.02	0.0157	1462	1454	1090	0.0073
Northsight Master Plan Area H	I	8.40	0.0131	1463	1450	1350	0.0096
Northsight Master Plan Area C1	C1	9.60	0.0150	1450	1441	1000	0.0090
Northsight Master Plan Area C2	C2	11.70	0.0183	1449	1441	950	0.0084
Northsight Master Plan Area L (- EG84)	L	12.15	0.0190	1462	1442	2000	0.0100
Vanguard Basin 1	V1	3.06	0.0048	1449	1444	460	0.0109
Vanguard Basin 2	V2	1.2	0.0019	1451	1445.5	280	0.0196
Vanguard Basin 3	V3	1.84	0.0029	1451	1445	453	0.0132
Vanguard Basin 4	V4	1.34	0.0021	1453	1450	245	0.0122
Vanguard Basin 5	V5	2.53	0.0040	1453	1450	517	0.0058
Vanguard Basin 6	V6	1.26	0.0020	1451	1446	246	0.0203
Vanguard Basin 7	V7	1.8	0.0028	1451.2	1445	357	0.0174
Vanguard Basin 8	V8	2.39	0.0037	1451	1444.5	675	0.0096
Vanguard Basin 9	V9	2.72	0.0043	1452.2	1445	668	0.0108
Breakmasters	BRM	0.5509642	0.0009	1506.2	1503.5	372	0.0073
Parcel 1 Lot 3 Northsight Automall	PCL1	0.6410652	0.0010	1508.51	1499	400	0.0238

**Appendix II**Precipitation Calculations

VISULTING CIVIL ENGINEERS  VAR 12/19/23 CLIENT	SCOTTSDALE	SHEET NO. 35 OF 37
	SCOTTSDACE AIRPORT	
JECT STORM D	RAIN HYDROLOGY	

# PRECIPITATION VALUES FOR SCOTTSPALE AIRPORT

	PRECIPITATION VALUES (INCHES)							
RETURN PERIOD (yrs)	0-Hr. 1.	DURATION	24-Hr. DURATION					
	MAP	CORRECTED	MAP	CORRECTED				
2	1.25	1.25	1.00	1.50				
5	1.75	1.75	2.15	2.19				
10	2.07	2.10	7.55	2.00				
25	2.00	2,53	3.20	5.12				
50	2.91	2.92	3.52	3.0/				
	3.28	. 3.3/	4.10	4.09				

# ADOT APRIL 1975 METHOD

CALCULATION OF I HOUR VALUES

$$Y_2 = -0.011 + 0.942(X,^2/X_2)$$

$$X_1 = 2yr, 0 hr Uxlue = 1.25 in.$$

$$X_2 = 2yr, 74 hr. Value = 1.50 in.$$

$$Y_2 = -0.011 + 0.942(1.25)^2/1.50 in.$$

$$Y_2 = 0.93 inches = 2yr, 1 hr Value$$

$$Y_{100} = 0.494 + 0.755(X_3^2/X_4)$$

$$X_3 = 100 yr, 6 hr Uxlue = 3.31 in.$$

$$X_4 = 100 yr, 24 hr Uxlue = 4.09 in.$$

$$Y_{100} = 0.494 + 0.755(3.31)^2/4.09$$

$$Y_{100} = 2.510 = 2.52 inches = 100 yr, 1 hr Uxlue$$

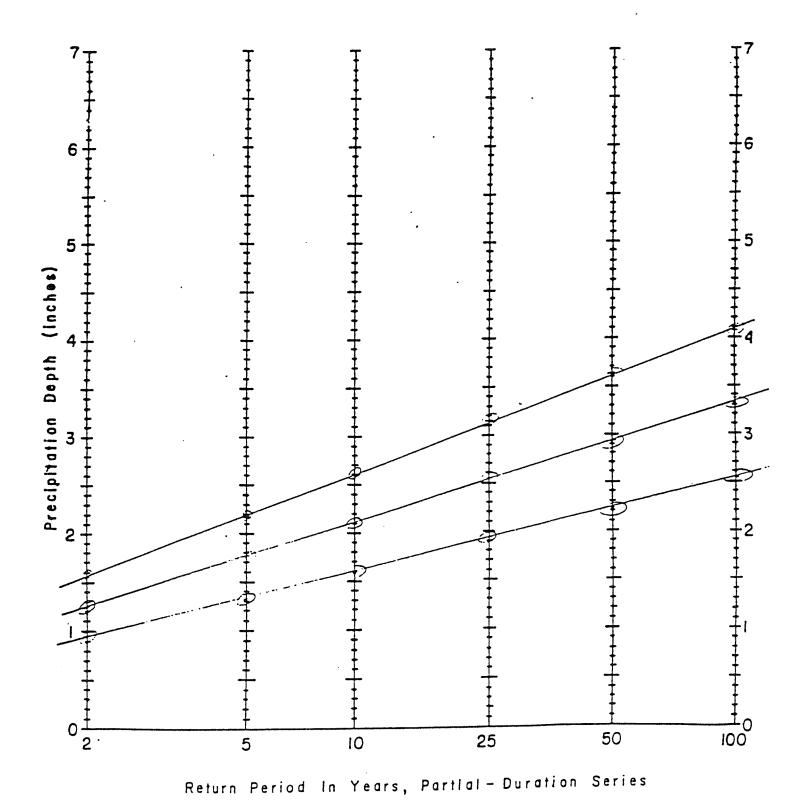


Figure | Precipitation Depth Versus Return Period for Partial — Duration Series

NSULTING	CIVIL	. Engineers				~			
· IJHE	DATE	/2/19/83 CLIENT _	<del></del>	500772	SPALE	_ SHEET NO.	37	OF	37
םי.	DATE	LOCATION_							
_		STARM C							

PRECIPITATION VALUES FOR SCOTTSDALE AIRPORT

RETURN	PRECIPITATION DEPTH, INCHES								
PERIOC, YRS	1 HOUR	2 HOUR	O HOUR	12 HOUR	24 HOUR				
2	0.93	1.04	1.25	1,40	1.50				
5	1.3/	1.40	1.75	1.97	2.19				
10 .	1.59	1.70	2.10	2.35	2.00				
25	1.91	2.12	2.53	2.82	3./2				
50	2.21	2.45	2.92	3.20	3.0i				
100	2.52	2.79	3.3/	3.09	4.09				

P	PRECIPITATION DEPTH, INCHES								
RETURIS PERIOD, Y.ES	511,N,	10 MIN.	15 MIN.	30 MIN.					
2	0.27	0.42	0.53	0.75					
5	0.38	0.59	0.75	1.03					
10	0.40	0.72	0.01	1.20					
25	0.55	0.80	1.09	1.5/					
50	0.04	0.99	1.20	1.75					
195	0.73	1.13	1.44	1.99					

FOR DESIGN, USE 5 YEAR, I HOUR PRECIPITATION DEPTH OF 1.31 INCHES WITH STANDARD DURATION RAINFALL-INTENSITY CURVES IN FIG 3-2, PAGE 34.

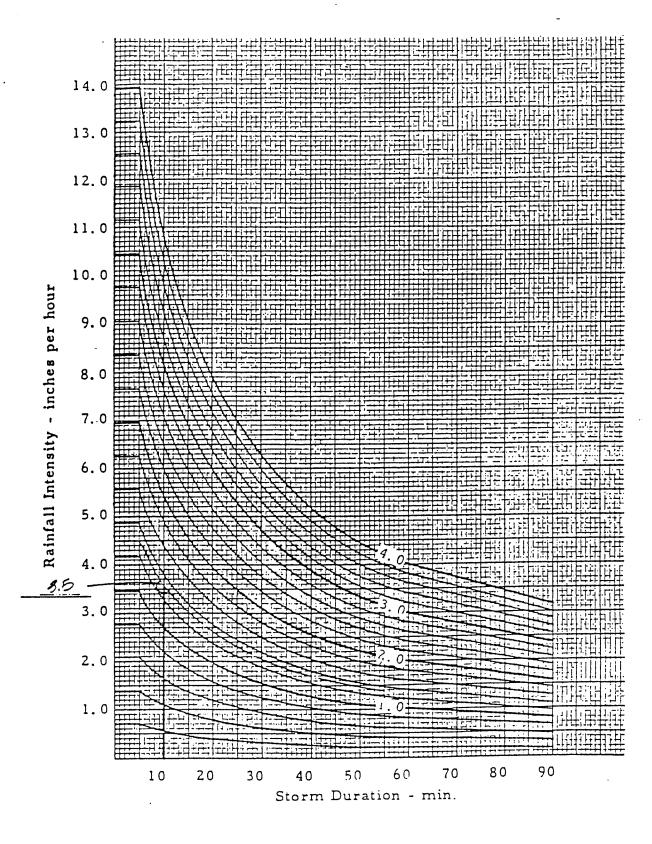


Fig. 3-2
STANDARD DURATION RAINFALL INTENSITY CURVES

Based on: Weather Bureau Technical Paper

Appendix III
Weighted Curve
Number Calculations

		Natural or				<u> </u>
	Basin	Landscape	Landscape		Impervious	Weighted
	Area	Area	Curve	Impervious	Curve	Curve
Basin	(acre)	(acre)	Number	Area	Number	Number
Price Club West	6.34	0.37	77	5.97	98	1
Price Club East	7.61	0.53	77	7.07	98	97
Dal Tile	1.85	0.00	77	1.85	98	
Victoria Properties "V1"	0.64	0.00	77	0.64	98	98
Victoria Properties "V2"	1.00	0.00	77	1.00	98	98
Victoria Properties "V3"	0.62	0.00	77	0.62	98	98
Lot 6 Automall "AML6"*	8.28	0.82	77	7.46	98	96
Lot 7 Automall "AML7"*	6.41	0.64	77	5.77	98	96
Lot 8 Automall "AML8"*	5.70	0.57	77	5.13	98	96
Lot 9 Automall "AML9"*	1.80	0.18	77	1.62	98	96
Lot 14 Automall "14A"	3.31	0.00	77	3.31	98	98
Lot 14 Automall "14B"	1.46	0.00	77	1.46	98	98
U-Haul "A"	0.86	0.23	77	0.63	98	92
U-Haul "B"	0.95	0.27	77	0.68	98	92
U-Haul "C"	0.88	0.34	77	0.54	98	90
Budget 1	0.53	0.00	77	0.53	98	98
Budget 2	1.12	0.00	77	1.12	98	98
Budget 3	0.49	0.00	77	0.49	98	98
Budget 4	0.46	0.00	77	0.46	98	98
Hacienda Harley H1	2.52	0.48	77	2.04	98	94
Hacienda Harley H2	0.68	0.42	77	0.26	98	85
Hacienda Harley H1+H2	3.20	0.90	77	2.30	98	92
Downside Risk DR	0.95	0.33	77	0.62	98	91
Northsight Financial Center (NFC)*	4.80	0.48	77	4.32	98	96
Total Lou Grubb Used	6.48	0.60	77	5.88	98	96
Total Saturn	3.10	0.15	77	2.95	98	97
Saturn Basin S8	0.21	0.16	77	0.05	98	82
P. K. Electronics	4.80	0.75	77	4.05	98	95
Air Park Holdings AH1	0.47	0.07	77	0.40	98	95
Air Park Holdings AH2	0.31	0.03	77	0.28	98	96
Air Park Holdings AH3	0.61	0.13	77	0.47	98	93
Air Park Holdings AH4	0.42	0.13	77	0.30	98	92
Air Park Holdings AH84	0.17	0.00	77	0.17	98	98

		Natural or		T T		l
	Basin	Landscape	Landscape		Impervious	Weighted
	Area	Area	Curve	Impervious	Curve	Curve
Basin	(acre)	(acre)	Number	Area	Number	Number
Frank Lloyd Wright Blvd.	4.42	0.35	77		98	96
84th Street (west)	0.73	0.00	77			98
84th Street (East)	0.91	0.00	77		98	98
Air Park Holdings Lot 5 AHL5	1.57	0.16	77	1.41	98	96
Parcel NE of Hayden and 84th St. (UD84)	0.92	0.92	77	0.00	98	77
West Hayden Road & FLW Blve (HY1)	4.61	0.00	77	4.61	98	98
East Hayden Rd. to Sun Pontiac (HY2)	2.51	0.00	77	2.51	98	98
West Hayden Budget to Price Club (HY3)	1.29	0.00	77	1.29	98	98
East Hayden Sun Pontiac to Price Club (HY4)	1.16	0.00	77	1.16	98	98
Northsight Village Phase II (NV2)	15.83	13.65	<b>7</b> 7	2,18		80
Undeveloped Pcl S of Butherus (UD2)	24.21	24.21	77	0,00	98	77
83rd Place and Raintree Dr.(83RD)	3.02	0.50	77	2.52	98	95
Northsight Master Plan Area E1	4.00	Curve Number	per original			97
Northsight Master Plan Area E2	3.50	Curve Number	per original	Northsight Ma	ster Plan	97
Northsight Master Plan Area F2	2.43	Curve Number	per original	Northsight Ma	ster Plan	97
Northsight Master Plan Area L (MINUS EG84)	12.15	Original Norths	ight Master I	Plan + 1.76 ac	r pavement	85
Evans, Gelding, and 84th St. (EG84)	1.74	0.00	77	1.74	98	98
Northsight Master Plan Portion of Area I (IPRT)	16.87	16.87	77	0.00	98	77
Northsight Master Plan Portion of Area J (JPRT)	32.25	32.25	77	0.00	98	<b>7</b> 7
Northsight Master Plan Portion of Area G (GE)	8.75	Curve Number	per original	Northsight Ma	ster Plan	96
Northsight Master Plan Portion of Area G (GW)		Curve Number				96
Northsight Master Plan Area H	8.40	Curve Number	per original	Northsight Ma	ster Plan	97
Northsight Master Plan Area C1	9.60	Curve Number	per original	Northsight Ma	ster Plan	97
Northsight Master Plan Area C2	11.70	Curve Number	per original	Northsight Ma	ster Plan	97
Northsight Master Plan Area (MPE2)	3.50	Curve Number	per original	Northsight Ma	ster Plan	97
Vanguard Basin 1	3.06	1.03	77	2.03	98	91
Vanguard Basin 2	1.20	0.46	77	0.74	98	90
Vanguard Basin 3	1.84	0.49	77	1.35	98	92
Vanguard Basin 4	1.34	0.39	<b>7</b> 7	0.95	98	92
Vanguard Basin 5	2.53	0.26	<b>7</b> 7	2.27	98	96
Vanguard Basin 6	1.26	0.16	77	1.10	98	95
Vanguard Basin 7	1.80	0.21	77	1.59	98	96
Vanguard Basin 8	2.39	0.72	77	1.67	98	92

		Natural or				
	Basin	Landscape	Landscape		Impervious	Weighted
	Area	Area .	Curve	Impervious	Curve	Curve
Basin	(acre)	(acre)	Number	Area	Number	Number
Vanguard Basin 9	2.72	1.20	77	1.52	98	89
Breakmasters (BRM)	0.55	0.13	77	0.42	98	93
Parcel 1 Lot 3 Northsight Automall (PCL1)	0.64	0.64	77	0.00	98	77
Former Larry Miller Toyota (I1011)	7.42	0.91	77	6.51	98	95
Northsight Blvd Inlets (N1)	0.43	0.00	77	0.43	98	98
Northsight Blvd Inlets (N2)	0.48	0.00	77	0.48	98	98
Northsight Blvd Inlets (N3)	0.60	0.00	77	0.60	98	98
Northsight Blvd Inlets (N4)	0.67	0.00	77	0.67	98	98
Northsight Blvd Inlets (N5)	0.79	0.00	77	0.79	98	98
Northsight Blvd Inlets (N6)	0.63	0.00	77	0.63	98	98
Northsight Blvd Inlets (N7)	0.91	0.00	77	0.91	98	98
Northsight Blvd Inlets (N8)	0.81	0.00	77	0.81	98	98
Northsight Blvd Inlets (N9)	0.35	0.00	77	0.35	98	98
Northsight Blvd Inlets (N10)	0.67	0.00	77	0.67	98	98
Northsight Blvd Inlets (N11)	0.72	0.00	77	0.72	98	98
Northsight Blvd Inlets (N12)	0.63	0.00	77	0.63	98	98
Northsight Blvd Inlets (N13)	0.56	0.00	77	0.56	98	98
Northsight Blvd Inlets (N14)	0.95	0.00	77	0.95	98	98
Northsight Blvd Inlets (N15)	0.50	0.00	77	0.50	98	98
Northsight Blvd Inlets (N16)	0.54	0.00	77	0.54	98	98
Northsight Blvd Inlets (N17)	0.54	0.00	77	0.54	98	98
Northsight Blvd Inlets (N18)	1.57	0.00	77	1.57	98	98
Northsight Blvd Inlets (N19)	0.49	0.00	77	0.49	98	98
Northsight Blvd Inlets (N20)	0.46	0.00	77	0.46	98	98
Northsight Blvd Inlets (N21)	0.42	0.00	77	0.42	98	98
Northsight Blvd Inlets (N22)	0.46	0.00	77	0.46	98	98
Northsight Blvd Inlets (N23)	0.97	0.00	77	0.97	98	98
Northsight Blvd Inlets (N24)	0.88	0.00	77	0.88	98	98
Raintree Street Inlets (R1)	0.27	0.00	77	0.27	98	98
Raintree Street Inlets (R2)	0.45	0.00	77	0.45	98	98
Raintree Street Inlets (R3)	0.27	0.00	77	0.27	98	
Raintree Street Inlets (R4)	0.34	0.00	77	0.34	98	98 98
Raintree Street Inlets (R5)	0.34	0.00	77	0.34	98	98

			<del> </del>			·
	Davis	Natural or				
	Basin	Landscape	Landscape		Impervious	Weighted
	Area	Area	Curve	Impervious	Curve	Curve
Basin	(acre)	(acre)	Number	Area	Number	Number
Raintree Street Inlets (R6)	0.23	0.00	77	0.23	98	98
Raintree Street Inlets (R7)	0.28	0.00	77	0.28	98	98
Raintree Street Inlets (R8)	0.47	0.00	<b>7</b> 7	0.47	98	98
Raintree Street Inlets (R9)	0.44	0.00	77	0.44	98	
87 <sup>TH</sup> Street Inlets (S1)	0.4	0.00	77	0.40	98	
87 <sup>TH</sup> Street Inlets (S2)	0.4	0.00	77	0.40	98	98
87 <sup>TH</sup> Street Inlets (S3)	0.15	0.00	<b>7</b> 7	0.15	98	98
87 <sup>TH</sup> Street Inlets (S4)	0.15	0.00	77	0.15	98	98
87 <sup>TH</sup> Street Inlets (S5)	0.4	0.00	77	0.40	98	98
87 <sup>TH</sup> Street Inlets (S6)	0.45	0.00	77	0.45	98	98
87 <sup>TH</sup> Street Inlets (S7)	0.2	0.00	77	0.20	98	98
87 <sup>TH</sup> Street Inlets (S8)	0.17	0.00	77	0.17	98	98
87 <sup>TH</sup> Street Inlets (S9)	0.35	0.00	77	0.35	98	98
87 <sup>TH</sup> Street Inlets (S10)	0.4	0.00	<b>7</b> 7	0.40	98	98
87 <sup>TH</sup> Street Inlets (S11)	0.54	0.00	77	0.54	98	98
87 <sup>TH</sup> Street Inlets (S12)	0.29	0.00	77	0.29	98	98
87 <sup>TH</sup> Street Inlets (S14)	0.48	0.00	77	0.48	98	
Park Entrance Inlets (P1)	0.05	0.00	<b>7</b> 7	0.05	98	98
Park Entrance Inlets (P2)	0.06	0.00	77	0.06	98	98
Evans Road Inlets (E1)	0.64	0.00	77	0.64	98	98
Evans Road Inlets (E2)	0.18	0.00	77	0.18	98	

Appendix IV
Time of Concentration

Basin Name (Price Club)	PCW	Basin Name (Price Club)	PCE
Basin Area (acres)	6.34	Basin Area (acres)	7.61
Upper Elevation (ft.)	1476.58	Upper Elevation (ft.)	1478.1
Lower Elevation (ft.)	1471.87	Lower Elevation (ft.)	1475.14
Drainage Length (ft.)	812	Drainage Length (ft.)	796
Basin Slope (ft./ft.)	0.005800493	Basin Slope (ft./ft.)	0.003718593
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.004
Kb (watershed resistance factor)	0.034986942	Kb (watershed resistance factor)	0.034491346
Rainfall Intensity (in./hr.)	7.7	Rainfall Intensity (in./hr.)	7.4
Tc (min.)	7.478098211	Tc (min.)	8.563730644
Tc (hr.)	0.12463497	Tc (hr.)	0.142728844
T1 (hr.)	0.074780982	T1 (hr.)	0.085637306
Basin Name (Dal Tile)	Dal	Basin Name (U-Haul)	U-Haul "A"
Basin Area (acres)	1.85	Basin Area (acres)	0.86
Upper Elevation (ft.)	1494.75	Upper Elevation (ft.)	1491.75
Lower Elevation (ft.)	1494	Lower Elevation (ft.)	1491.75
Drainage Length (ft.)	532	Drainage Length (ft.)	250
Basin Slope (ft./ft.)	0.001409774	Basin Slope (ft./ft.)	0.015
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.038330177	Kb (watershed resistance factor)	0.040409385
Rainfall Intensity (in./hr.)	7.3	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	10.04200874	Tc (min.)	3.113405782
Tc (hr.)	0.167366812	Tc (hr.)	0.051890096
Tl (hr.)	0.100420087	T1 (hr.)	0.031134058
		Use Tc (hr.)	0.06
			0.00

Basin Name (Air Park Holdings Lot 5)	AHL5	Parcel NE of Hayden and 84th St.	(UD84)
Basin Area (acres)	1.57	Basin Area (acres)	0.092
Upper Elevation (ft.)	1498.3	Upper Elevation (ft.)	91
Lower Elevation (ft.)	1494	Lower Elevation (ft.)	86.8
Drainage Length (ft.)	350	Drainage Length (ft.)	300
Basin Slope (ft./ft.)	0.012285714	Basin Slope (ft./ft.)	0.014
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.0023
Kb (watershed resistance factor)	0.038775627	Kb (watershed resistance factor)	0.046476326
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	3.835780411	Tc (min.)	3.747181396
Tc (hr.)	0.063929674	Tc (hr.)	0.062453023
T1 (hr.)	0.038357804	Tl (hr.)	0.037471814
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06
Basin Name (U-Haul)	U-Haul "B"	Basin Name (U-Haul)	U-Haul "C"
Basin Area (acres)	0.95	Basin Area (acres)	0.88
Upper Elevation (ft.)	1493	Upper Elevation (ft.)	1492.3
Lower Elevation (ft.)	1490.75	Lower Elevation (ft.)	1492.5
Drainage Length (ft.)	500	Drainage Length (ft.)	240
Basin Slope (ft./ft.)	0.0045	Basin Slope (ft./ft.)	0.030416667
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.0023
Kb (watershed resistance factor)	0.040139227	Kb (watershed resistance factor)	0.040346983
Rainfall Intensity (in./hr.)	8.5	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	6.567323967	Tc (min.)	2.448195103
Tc (hr.)	0.109455399	Tc (hr.)	0.040803252
Tl (hr.)	0.06567324	Tl (hr.)	0.024481951
		Use Tc (hr.)	0.06

Basin Name (Automall Lot 14)	Automall 14A	Basin Name (Automall Lot 14)	Automali 14B
Basin Area (acres)	3.31	Basin Area (acres)	1 46
Upper Elevation (ft.)	1499	Upper Elevation (ft.)	1.46
Lower Elevation (ft.)	1494	Lower Elevation (ft.)	1499
Drainage Length (ft.)	550	Drainage Length (ft.)	1494 370
Basin Slope (ft./ft.)	0.009090909	Basin Slope (ft./ft.)	=
m (Kb parameter)	-0.00625	m (Kb parameter)	0.013513514
b (Kb parameter)	0.04	b (Kb parameter)	-0.00625
Kb (watershed resistance factor)	0.036751075	Kb (watershed resistance factor)	0.04
Rainfall Intensity (in./hr.)	9.1	Rainfall Intensity (in./hr.)	0.038972795
Tc (min.)	5.155139207	To (min.)	9.2
Tc (hr.)	0.085918987	Tc (hr.)	3.839210731
Tl (hr.)	0.051551392	Tl (hr.)	0.063986846
Use Tc (hr.)	0.06	Use Tc (hr.)	0.038392107
			0.06
Basin Name (Budget Auto Sales)	1	Basin Name (Budget Auto Sales)	2
Basin Area (acres)	0.53	Basin Area (acres)	
Upper Elevation (ft.)	1493.8	Upper Elevation (ft.)	1.12
Lower Elevation (ft.)	1493.1	Lower Elevation (ft.)	1493.9
Drainage Length (ft.)	120	Drainage Length (ft.)	1492
Basin Slope (ft./ft.)	0.005833333	Basin Slope (ft./ft.)	270
m (Kb parameter)	-0.00625	m (Kb parameter)	0.007037037
b (Kb parameter)	0.04	b (Kb parameter)	-0.00625
Kb (watershed resistance factor)	0.041723276	Kb (watershed resistance factor)	0.04
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	0.039692387
Tc (min.)	2.939249374	Tc (min.)	9.2
Tc (hr.)	0.04898749	Tc (hr.)	4.053237366
Tl (hr.)	0.029392494	Tl (hr.)	0.067553956
Use Tc (hr.)	0.06	Use Tc (hr.)	0.040532374
	2.00	550 TO (III.)	0,06

Basin Name (Budget Auto Sales)	3	Basin Name (Budget Auto Sales)	4
Basin Area (acres)	0.49	Basin Area (acres)	0.46
Upper Elevation (ft.)	1495.2	Upper Elevation (ft.)	1493.4
Lower Elevation (ft.)	1493.1	Lower Elevation (ft.)	1492.8
Drainage Length (ft.)	129	Drainage Length (ft.)	76
Basin Slope (ft./ft.)	0.0163	Basin Slope (ft./ft.)	0.0079
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0419	Kb (watershed resistance factor)	0.0421
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	2.2229	Tc (min.)	2.1399
Tc (hr.)	0.0370	Tc (hr.)	0.0357
Tl (hr.)	0.0222	Tl (hr.)	0.0214
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06
Basin Name (Downside Risk)	DR	Basin Name (Victoria Properties)	V1
Basin Area (acres)	0.95	Basin Area (acres)	0.64
Upper Elevation (ft.)	1477	Upper Elevation (ft.)	1470.5
Lower Elevation (ft.)	1471.5	Lower Elevation (ft.)	1466.5
Drainage Length (ft.)	312	Drainage Length (ft.)	365
Basin Slope (ft./ft.)	0.0176	Basin Slope (ft./ft.)	0.0110
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0401	Kb (watershed resistance factor)	0.0412
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	3.2968	Tc (min.)	4.1890
Tc (hr.)	0.0549	Tc (hr.)	0.0698
Tl (hr.)	0.0330	Tl (hr.)	0.0419
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06

Basin Name (Victoria Properties)	V2	Basin Name (Victoria Properties)	V3
Basin Area (acres)	1	Basin Area (acres)	0.60
Upper Elevation (ft.)	1471.15	Upper Elevation (ft.)	0.62
Lower Elevation (ft.)	1469.8	Lower Elevation (ft.)	1470.8
Drainage Length (ft.)	222	Drainage Length (ft.)	1469.8
Basin Slope (ft./ft.)	0.0061	Basin Slope (ft./ft.)	255
m (Kb parameter)	-0.00625	m (Kb parameter)	0.0039
b (Kb parameter)	0.04	b (Kb parameter)	-0.00625
Kb (watershed resistance factor)	0.0400	Kb (watershed resistance factor)	0.04
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	. 0.0413
Tc (min.)	3.8610	Tc (min.)	9.2
Tc (hr.)	0.0643	Tc (hr.)	4.8202
T1 (hr.)	0.0386	Tl (hr.)	0.0803
Use Tc (hr.)	0.06	Use Tc (hr.)	0.0482
		333 (3 ()	0.06
Basin Name (Saturn of Scottsdale)	Saturn-1	Basin Name (Saturn of Scottsdale)	Saturn-2
Basin Area (acres)	0.57	Basin Area (acres)	0.2
Upper Elevation (ft.)	11	Upper Elevation (ft.)	0.3
Lower Elevation (ft.)	9	Lower Elevation (ft.)	9.8
Drainage Length (ft.)	260	Drainage Length (ft.)	9
Basin Slope (ft./ft.)	0.0077	Basin Slope (ft./ft.)	124
m (Kb parameter)	-0.00625	m (Kb parameter)	0.0065
b (Kb parameter)	0.04	b (Kb parameter)	-0.00625
Kb (watershed resistance factor)	0.0415	Kb (watershed resistance factor)	0.04
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	0.0433
Tc (min.)	3.9611	Tc (min.)	9.2
Tc (hr.)	0.0660	Tc (hr.)	2.9512
Tl (hr.)	0.0396	T1 (hr.)	0.0492
Use Tc (hr.)	0.06	Use Tc (hr.)	0.0295
		. AA.	0.06

Basin Name (Saturn of Scottsdale)	Saturn-3	Basin Name (Saturn of Scottsdale)	Satum-4
Basin Area (acres)	0.2	Basin Area (acres)	0.31
Upper Elevation (ft.)	10.1	Upper Elevation (ft.)	8.87
Lower Elevation (ft.)	8	Lower Elevation (ft.)	7
Drainage Length (ft.)	112	Drainage Length (ft.)	112
Basin Slope (ft./ft.)	0.0188	Basin Slope (ft./ft.)	0.0167
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.00023
Kb (watershed resistance factor)	0.0444	Kb (watershed resistance factor)	0.0432
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	2.0415	Tc (min.)	2.0865
Tc (hr.)	0.0340	Tc (hr.)	0.0348
Tl (hr.)	0.0204	Tl (hr.)	0.0209
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06
Basin Name (Saturn of Scottsdale)	Saturn-5	Basin Name (Saturn of Scottsdale)	Satum-6
Basin Area (acres)	0.57	Basin Area (acres)	0.66
Upper Elevation (ft.)	9.37	Upper Elevation (ft.)	10.3
Lower Elevation (ft.)	7	Lower Elevation (ft.)	8
Drainage Length (ft.)	237	Drainage Length (ft.)	269
Basin Slope (ft./ft.)	0.0100	Basin Slope (ft./ft.)	0.0086
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0415	Kb (watershed resistance factor)	
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	0.0411 9.2
Tc (min.)	3.4864	Tc (min.)	
Tc (hr.)	0.0581	Tc (hr.)	3.8797
Tl (hr.)	0.0349	T1 (hr.)	0.0647
Use Tc (hr.)	0.06	Use Tc (hr.)	0.0388
		· •	0.06

Basin Name (Saturn of Scottsdale)	Saturn-7	Basin Name (Saturn of Scottsdale)	Saturn-8
Basin Area (acres)	0.49	Basin Area (acres)	0.21
Upper Elevation (ft.)	9.1	Upper Elevation (ft.)	8.75
Lower Elevation (ft.)	8.15	Lower Elevation (ft.)	6.1
Drainage Length (ft.)	220	Drainage Length (ft.)	130
Basin Slope (ft./ft.)	0.0043	Basin Slope (ft./ft.)	0.0204
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.00023
Kb (watershed resistance factor)	0.0419	Kb (watershed resistance factor)	0.0442
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	4.3802	Tc (min.)	2.1398
Tc (hr.)	0.0730	Tc (hr.)	0.0357
Tl (hr.)	0.0438	T1 (hr.)	0.0337
Use Tc (hr.)	0.06	Use Tc (hr.)	0.0214
Basin Name (Northsight Automall)	AML6		
Basin Area (acres)	8.28		
Upper Elevation (ft.)	1510		
Lower Elevation (ft.)	1496		
Drainage Length (ft.)	1120		
Basin Slope (ft./ft.)	0.0125		
m (Kb parameter)	-0.00625		
b (Kb parameter)	0.04		
Kb (watershed resistance factor)	0.0343		
Rainfall Intensity (in./hr.)	8.5		
Tc (min.)	6.5950		
Tc (hr.)	0.1099		
T1 (hr.)	0.0660		

Basin Name (Lou Grubb Used Ford)	LGU1	Basin Name (Lou Grubb Used Ford)	LGU2
Basin Area (acres)	0.62	Basin Area (acres)	0.52
Upper Elevation (ft.)	16.5	Upper Elevation (ft.)	15.5
Lower Elevation (ft.)	15.5	Lower Elevation (ft.)	14.5
Drainage Length (ft.)	190	Drainage Length (ft.)	173
Basin Slope (ft./ft.)	0.0053	Basin Slope (ft./ft.)	0.0058
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0413	Kb (watershed resistance factor)	0.0418
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	3.7980	Tc (min.)	3.5414
Tc (hr.)	0.0633	Tc (hr.)	0.0590
Tl (hr.)	0.0380	Tl (hr.)	0.0354
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06
Basin Name (Lou Grubb Used Ford)	LGU3	Basin Name (Lou Grubb Used Ford)	LGU4
Basin Area (acres)	0.52	Basin Area (acres)	0.5
Upper Elevation (ft.)	15	Upper Elevation (ft.)	13.5
Lower Elevation (ft.)	13.5	Lower Elevation (ft.)	12.5
Drainage Length (ft.)	194	Drainage Length (ft.)	193
Basin Slope (ft./ft.)	0.0077	Basin Slope (ft./ft.)	0.0052
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0418	Kb (watershed resistance factor)	0.0419
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	3.4268	Tc (min.)	3.8747
Tc (hr.)	0.0571	Tc (hr.)	0.0646
T1 (hr.)	0.0343	Tl (hr.)	0.0387
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06

Basin Name (Lou Grubb Used Ford)	LGU5	Basin Name (Lou Grubb Used Ford)	LGU6
Basin Area (acres)	0.35	Basin Area (acres)	0.32
Upper Elevation (ft.)	17.5	Upper Elevation (ft.)	17.5
Lower Elevation (ft.)	13	Lower Elevation (ft.)	13.9
Drainage Length (ft.)	135	Drainage Length (ft.)	145
Basin Slope (ft./ft.)	0.0333	Basin Slope (ft./ft.)	0.0248
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0428	Kb (watershed resistance factor)	0.0431
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	1.8415	Tc (min.)	2.0971
Tc (hr.)	0.0307	Tc (hr.)	0.0350
Tl (hr.)	0.0184	T1 (hr.)	0.0210
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06
Basin Name (Lou Grubb Used Ford)	LGU7	Basin Name (Lou Grubb Used Ford)	LGU8
Basin Area (acres)	0.34	Basin Area (acres)	0.31
Upper Elevation (ft.)	17.5	Upper Elevation (ft.)	15.8
Lower Elevation (ft.)	15	Lower Elevation (ft.)	14
Drainage Length (ft.)	130	Drainage Length (ft.)	145
Basin Slope (ft./ft.)	0.0192	Basin Slope (ft./ft.)	0.0124
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0429	Kb (watershed resistance factor)	0.0432
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	2.1451	Tc (min.)	2.6025
Tc (hr.)	0.0358	Tc (hr.)	0.0434
Tl (hr.)	0.0215	T1 (hr.)	0.0260
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06

Basin Name (Lou Grubb Used Ford)	LGU9	Basin Name (Lou Grubb Used Ford)	LGU10
Basin Area (acres)	0.28	Basin Area (acres)	0.51
Upper Elevation (ft.)	14.8	Upper Elevation (ft.)	14.1
Lower Elevation (ft.)	12.9	Lower Elevation (ft.)	12
Drainage Length (ft.)	145	Drainage Length (ft.)	145
Basin Slope (ft./ft.)	0.0131	Basin Slope (ft./ft.)	0.0145
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0435	Kb (watershed resistance factor)	0.0418
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	2.567B	Tc (min.)	2.4404
Tc (hr.)	0.042B	Tc (hr.)	0.0407
T1 (hr.)	0.0257	Tl (hr.)	0.0244
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06
Basin Name (Lou Grubb Used Ford)	LGU11	Basin Name (Lou Grubb Used Ford)	LGU12
Basin Area (acres)	0.21	Basin Area (acres)	0.86
Upper Elevation (ft.)	13.2	Upper Elevation (ft.)	13.5
Lower Elevation (ft.)	12.7	Lower Elevation (ft.)	12.5
Drainage Length (ft.)	88	Drainage Length (ft.)	242
Basin Slope (ft./ft.)	0.0057	Basin Slope (ft./ft.)	0.0041
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0442	Kb (watershed resistance factor)	0.0404
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	2.6160	Tc (min.)	4.5682
Tc (hr.)	0.0436	Tc (hr.)	0.0761
T1 (hr.)	0.0262	Tl (hr.)	0.0457
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06

Basin Name (Lou Grubb Used Ford)	LGU13	Basin Name (Lou Grubb Used Ford)	LGU14
Basin Area (acres)	0.68	Basin Area (acres)	0.31
Upper Elevation (ft.)	13.7	Upper Elevation (ft.)	13.7
Lower Elevation (ft.)	12.7	Lower Elevation (ft.)	12.5
Drainage Length (ft.)	190	Drainage Length (ft.)	164
Basin Slope (ft./ft.)	0.0053	Basin Slope (ft./ft.)	0.0073
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0410	Kb (watershed resistance factor)	0.0432
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	3.7860	Tc (min.)	3.2606
Tc (hr.)	0.0631	Tc (hr.)	0.0543
Tl (hr.)	0.0379	Tl (hr.)	0.0326
Use Tc (hr.)	0.06	Use Tc (hr.)	0.0326
Basin Name (Lou Grubb Used Ford)	LGU15	Basin Name (Lots 10/part of 11 Automall)	L1011
Basin Area (acres)	0.15	Basin Area (acres)	7 40
Upper Elevation (ft.)	13.5	Upper Elevation (ft.)	7.42 1515
Lower Elevation (ft.)	12.12	Lower Elevation (ft.)	1515
Drainage Length (ft.)	169	Drainage Length (ft.)	400
Basin Slope (ft./ft.)	0.0082	Basin Slope (ft./ft.)	0.0225
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0451	Kb (watershed resistance factor)	0.0346
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	3.2744	Tc (min.)	3.2018
Tc (hr.)	0.0546	Tc (hr.)	0.0534
Tl (hr.)	0.0327	Tl (hr.)	0.0320
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06

Basin Name (P K Electronics)	PKE	Basin Name (NW Corner 84 St & 83rd Way)	AH2
Basin Area (acres)	4.8	Basin Area (acres)	0.31
Upper Elevation (ft.)	5.93	Upper Elevation (ft.)	1501
Lower Elevation (ft.)	2.95	Lower Elevation (ft.)	1499.25
Drainage Length (ft.)	365	Drainage Length (ft.)	294
Basin Slope (ft./ft.)	0.0082	Basin Slope (ft./ft.)	0.0060
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0357	Kb (watershed resistance factor)	0.0432
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	4.2617	Tc (min.)	4.6542
Tc (hr.)	0.0710	Tc (hr.)	0.0776
Tl (hr.)	0.0426	Tl (hr.)	0.0465
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06
Basin Name (NW Corner 84 St & 83rd Way)	AH1	Basin Name (NW Corner 84 St & 83rd Way)	AH4
Basin Area (acres)	0.47	Basin Area (acres)	0.42
Upper Elevation (ft.)	1501	Upper Elevation (ft.)	1500.25
Lower Elevation (ft.)	1500	Lower Elevation (ft.)	1496
Drainage Length (ft.)	215	Drainage Length (ft.)	283
Basin Slope (ft./ft.)	0.0047	Basin Slope (ft./ft.)	0.0150
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0420	Kb (watershed resistance factor)	0.0424
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	4.2375	Tc (min.)	3.3933
Tc (hr.)	0.0706	Tc (hr.)	0.0566
Tl (hr.)	0.0424	Tl (hr.)	0.0339
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06

Basin Name (NW Corner 84 St & 83rd Way)	AH3	Basin Name (Harley-Davidson)	HRLD
Basin Area (acres)	0.61	Basin Area (acres)	3.2
Upper Elevation (ft.)	1501	Upper Elevation (ft.)	1508
Lower Elevation (ft.)	1499	Lower Elevation (ft.)	1503
Drainage Length (ft.)	33 <b>3</b>	Drainage Length (ft.)	580
Basin Slope (ft./ft.)	0.0060	Basin Slope (ft./ft.)	0.0086
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0413	Kb (watershed resistance factor)	0.0368
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	8.6
Tc (min.)	4.8291	Tc (min.)	5.5057
Tc (hr.)	0.0805	Tc (hr.)	0.0918
Tl (hr.)	0.0483	Tl (hr.)	0.0551
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06
Basin Name (NW Corner 84 St & 83rd Way)	AH84	Basin Name (Automall Streets)	AMS2
Basin Area (acres)	0.17	Basin Area (acres)	0.53
Upper Elevation (ft.)	1503.76	Upper Elevation (ft.)	1512.94
Lower Elevation (ft.)	1500.69	Lower Elevation (ft.)	1502.6
Drainage Length (ft.)	140	Drainage Length (ft.)	1124
Basin Slope (ft./ft.)	0.0219	Basin Slope (ft./ft.)	0.0092
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0448	Kb (watershed resistance factor)	0.0417
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	7.6
Tc (min.)	2.1855	Tc (min.)	8.3990
Tc (hr.)	0.0364	Tc (hr.)	0.1400
Tl (hr.)	0.0219	Tl (hr.)	0.0840
Use Tc (hr.)	0.06		0.0040

Basin Name (Automall Streets)	AMS1	Basin Name (Automall Streets)	AMS4
Basin Area (acres)	0.51	Basin Area (acres)	0.13
Upper Elevation (ft.)	1512.94	Upper Elevation (ft.)	1501.84
Lower Elevation (ft.)	1503.1	Lower Elevation (ft.)	1500.55
Drainage Length (ft.)	1026	Drainage Length (ft.)	278
Basin Slope (ft./ft.)	0.0096	Basin Slope (ft./ft.)	0.0046
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0418	Kb (watershed resistance factor)	0.0455
Rainfall Intensity (in./hr.)	7.8	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	7.8540	Tc (min.)	5.0261
Tc (hr.)	0.1309	Tc (hr.)	0.0838
Tl (hr.)	0.0785	Tl (hr.)	0.0503
		Use Tc (hr.)	0.06
Basin Name (Automall Streets)	AMS3	Basin Name (Automall Streets)	AMS6
Basin Area (acres)	0.31	Basin Area (acres)	0.22
Upper Elevation (ft.)	1502.6	Upper Elevation (ft.)	1502.46
Lower Elevation (ft.)	1500.5	Lower Elevation (ft.)	1498.12
Drainage Length (ft.)	380.5	Drainage Length (ft.)	270
Basin Slope (ft./ft.)	0.0055	Basin Slope (ft./ft.)	0.0161
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0432	Kb (watershed resistance factor)	0.0441
Rainfall Intensity (in./hr.)	8.7	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	5.5366	Tc (min.)	3.3146
Tc (hr.)	0.0923	Tc (hr.)	0.0552
Tl (hr.)	0.0554	Tl (hr.)	0.0331
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06

Basin Name (Automall Streets)	AMS5	Basin Name (Automall Streets)	AMS8
Basin Area (acres)	0.26	Basin Area (acres)	0.27
Upper Elevation (ft.)	1503.1	Upper Elevation (ft.)	1498.71
Lower Elevation (ft.)	1498.12	Lower Elevation (ft.)	1495.56
Drainage Length (ft.)	331	Drainage Length (ft.)	520
Basin Slope (ft./ft.)	0.0150	Basin Slope (ft./ft.)	0.0061
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0437	Kb (watershed resistance factor)	0.0436
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	8.4
Tc (min.)	3.7259	Tc (min.)	6.4014
Tc (hr.)	0.0621	Tc (hr.)	0.1067
Tl (hr.)	0.0373	Tl (hr.)	0.0640
Use Tc (hr.)	0.06	· ·	0.0040
Basin Name (Automall Streets)	AMS7	Basin Name (Northsight Streets)	N2
Basin Area (acres)	0.35	Basin Area (acres)	0.48
Upper Elevation (ft.)	1501.78	Upper Elevation (ft.)	1442.12
Lower Elevation (ft.)	1498.32	Lower Elevation (ft.)	1440.7
Drainage Length (ft.)	584	Drainage Length (ft.)	320
Basin Slope (ft./ft.)	0.0059	Basin Slope (ft./ft.)	0.0044
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
<pre>Kb (watershed resistance factor)</pre>	0.0428	Kb (watershed resistance factor)	0.0420
Rainfall Intensity (in./hr.)	8.2	Rainfall Intensity (in./hr.)	9.1
Tc (min.)	6.8354	Tc (min.)	5.2638
Tc (hr.)	0.1139	Tc (hr.)	0.0877
Tl (hr.)	0.0684	Tl (hr.)	0.0526
		Use Tc (hr.)	0.0326
		• ,	0.00

Basin Name (Automall Streets)	AMS9	Basin Name (Northsight Streets)	N4
Basin Area (acres)	0.34	Basin Area (acres)	0.67
Upper Elevation (ft.)	1500.91	Upper Elevation (ft.)	1442.55
Lower Elevation (ft.)	1495.55	Lower Elevation (ft.)	1440.6
Drainage Length (ft.)	621	Drainage Length (ft.)	365
Basin Slope (ft./ft.)	0.0086	Basin Slope (ft./ft.)	0.0053
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0429	Kb (watershed resistance factor)	0.0411
Rainfall Intensity (in./hr.)	8.5	Rainfall Intensity (in./hr.)	9.1
Tc (min.)	6.1935	Tc (min.)	5.2476
Tc (hr.)	0.1032	Tc (hr.)	0.0875
Tl (hr.)	0.0619	Tl (hr.)	0.0525
		Use Tc (hr.)	0.06
Basin Name (Northsight Streets)	N1	Basin Name (Northsight Streets)	N6
Basin Area (acres)	0.43	Basin Area (acres)	0.63
Upper Elevation (ft.)	1441.6	Upper Elevation (ft.)	1442.35
Lower Elevation (ft.)	1440.7	Lower Elevation (ft.)	1440.22
Drainage Length (ft.)	355	Drainage Length (ft.)	460
Basin Slope (ft./ft.)	0.0025	Basin Slope (ft./ft.)	0.0046
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0423	Kb (watershed resistance factor)	0.0413
Rainfall Intensity (in./hr.)	8.5	Rainfall Intensity (in./hr.)	8.6
Tc (min.)	6.7930	Tc (min.)	6.3051
Tc (hr.)	0.1132	Tc (hr.)	0.1051
Tl (hr.)	0.0679	Tl (hr.)	0.0631

Basin Name (Northsight Streets)	N3	Basin Name (Northsight Streets)	N8
Basin Area (acres)	0.6	Basin Area (acres)	0.81
Upper Elevation (ft.)	1442.35	Upper Elevation (ft.)	1447.21
Lower Elevation (ft.)	1440.6	Lower Elevation (ft.)	1440.92
Drainage Length (ft.)	365	Drainage Length (ft.)	636
Basin Slope (ft./ft.)	0.0048	Basin Slope (ft./ft.)	0.0099
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0414	Kb (watershed resistance factor)	0.0406
Rainfall Intensity (in./hr.)	9.1	Rainfall Intensity (in./hr.)	9
Tc (min.)	5.4471	Tc (min.)	5.7096
Tc (hr.)	0.0908	Tc (hr.)	0.0952
Tl (hr.)	0.0545	T1 (hr.)	0.0571
Use Tc (hr.)	0.06		33372
Basin Name (Northsight Streets)	N5	Basin Name (Northsight Streets)	N10
Basin Area (acres)	0.79	Basin Area (acres)	0.67
Upper Elevation (ft.)	1442.35	Upper Elevation (ft.)	1453.2
Lower Elevation (ft.)	1440.05	Lower Elevation (ft.)	1447.06
Drainage Length (ft.)	460	Drainage Length (ft.)	613
Basin Slope (ft./ft.)	0.0050	Basin Slope (ft./ft.)	0.0100
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0406	Kb (watershed resistance factor)	0.0411
Rainfall Intensity (in./hr.)	8.9	Rainfall Intensity (in./hr.)	9
Tc (min.)	6.0299	Tc (min.)	5.6201
Tc (hr.)	0.1005	Tc (hr.)	0.0937
Tl (hr.)	0.0603	Tl (hr.)	0.0562
		Use Tc (hr.)	0.06

Basin Name (Northsight Streets)	N7	Basin Name (Northsight Streets)	N12
Basin Area (acres)	0.91	Basin Area (acres)	0.63
Upper Elevation (ft.)	1447.21	Upper Elevation (ft.)	1462.5
Lower Elevation (ft.)	1440.92	Lower Elevation (ft.)	1458.15
Drainage Length (ft.)	636	Drainage Length (ft.)	450
Basin Slope (ft./ft.)	0.0099	Basin Slope (ft./ft.)	0.0097
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0403	Kb (watershed resistance factor)	0.0413
Rainfall Intensity (in./hr.)	9	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	5.6864	Tc (min.)	4.8383
Tc (hr.)	0.0948	Tc (hr.)	0.0806
Tl (hr.)	0.0569	T1 (hr.)	0.0484
		Use Tc (hr.)	0.06
Basin Name (Northsight Streets)	N9	Basin Name (Northsight Streets)	N14
Basin Area (acres)	0.35	Basin Area (acres)	0.95
Upper Elevation (ft.)	1450.58	Upper Elevation (ft.)	1466.3
Lower Elevation (ft.)	1446.18	Lower Elevation (ft.)	1459.28
Drainage Length (ft.)	435	Drainage Length (ft.)	496
Basin Slope (ft./ft.)	0.0101	Basin Slope (ft./ft.)	0.0142
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0428	Kb (watershed resistance factor)	0.0401
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	4.7841	Tc (min.)	4.4495
Tc (hr.)	0.0797	Tc (hr.)	0.0742
Tl (hr.)	0.0478	T1 (hr.)	0.0445
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06

Basin Name (Northsight Streets)	N11	Basin Name (Northsight Streets)	N16
Basin Area (acres)	0.72	Basin Area (acres)	0.54
Upper Elevation (ft.)	1456.69	Upper Elevation (ft.)	1471.98
Lower Elevation (ft.)	1449.71	Lower Elevation (ft.)	1465.75
Drainage Length (ft.)	645	Drainage Length (ft.)	500
Basin Slope (ft./ft.)	0.0108	Basin Slope (ft./ft.)	0.0125
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.00323
Kb (watershed resistance factor)	0.0409	Kb (watershed resistance factor)	0.0417
Rainfall Intensity (in./hr.)	9	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	5.6145	Tc (min.)	4.7389
Tc (hr.)	0.0936	Tc (hr.)	0.0790
Tl (hr.)	0.0561	Tl (hr.)	0.0474
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06
Basin Name (Northsight Streets)	N13	Basin Name (Northsight Streets)	N18
Basin Area (acres)	0.56	Basin Area (acres)	1.57
Upper Elevation (ft.)	1460.43	Upper Elevation (ft.)	1474
Lower Elevation (ft.)	1455.64	Lower Elevation (ft.)	1471.98
Drainage Length (ft.)	430	Drainage Length (ft.)	945
Basin Slope (ft./ft.)	0.0111	Basin Slope (ft./ft.)	0.0021
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.0023
Kb (watershed resistance factor)	0.0416	Kb (watershed resistance factor)	0.0388
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	6.8
Tc (min.)	4.5444	Tc (min.)	12.1580
Tc (hr.)	0.0757	Tc (hr.)	0.2026
Tl (hr.)	0.0454	Tl (hr.)	0.1216
Use Tc (hr.)	0.06		0.1210

Basin Name (Northsight Streets)	N15	Basin Name (Northsight Streets)	N20
Basin Area (acres)	0.5	Basin Area (acres)	0.46
Upper Elevation (ft.)	1471.98	Upper Elevation (ft.)	1480.6
Lower Elevation (ft.)	1465.75	Lower Elevation (ft.)	1477.54
Drainage Length (ft.)	500	Drainage Length (ft.)	514
Basin Slope (ft./ft.)	0.0125	Basin Slope (ft./ft.)	0.0060
m (Kb parameter)	-0.00625	m (Kb parameter)	
b (Kb parameter)	0.04	b (Kb parameter)	-0.00625
Kb (watershed resistance factor)	0.0419	Kb (watershed resistance factor)	0.04 0.0421
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	
Tc (min.)	4.7513	Tc (min.)	8.7
Tc (hr.)	0.0792	Tc (hr.)	6.2041
Tl (hr.)	0.0475	Tl (hr.)	0.1034
Use Tc (hr.)	0.06	()	0.0620
Basin Name (Northsight Streets)	N17	Basin Name (Northsight Streets)	N22
Basin Area (acres)	0.54	Basin Area (acres)	0.46
Upper Elevation (ft.)	1477.54	Upper Elevation (ft.)	1484.6
Lower Elevation (ft.)	1471.98	Lower Elevation (ft.)	1484.6
Drainage Length (ft.)	556	Drainage Length (ft.)	490
Basin Slope (ft./ft.)	0.0100	Basin Slope (ft./ft.)	0.0082
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0417	Kb (watershed resistance factor)	0.0421
Rainfall Intensity (in./hr.)	9.1	Rainfall Intensity (in./hr.)	9.1
Tc (min.)	5.3721	Tc (min.)	
Tc (hr.)	0.0895	Tc (hr.)	5.3998
T1 (hr.)	0.0537	T1 (hr.)	0.0900
Use Tc (hr.)	0.06	Use Tc (hr.)	0.0540 0.06

Basin Name (Northsight Streets)	N19	Basin Name (Northsight Streets)	N24
Basin Area (acres)	0.49	Basin Area (acres)	0.88
Upper Elevation (ft.)	1480.6	Upper Elevation (ft.)	1496.55
Lower Elevation (ft.)	1477.54	Lower Elevation (ft.)	1484.6
Drainage Length (ft.)	514	Drainage Length (ft.)	814
Basin Slope (ft./ft.)	0.0060	Basin Slope (ft./ft.)	0.0147
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0419	Kb (watershed resistance factor)	0.0403
Rainfall Intensity (in./hr.)	8.75	Rainfall Intensity (in./hr.)	9
Tc (min.)	6.1775	Tc (min.)	5.6984
Tc (hr.)	0.1030	Tc (hr.)	0.0950
T1 (hr.)	0.0618	T1 (hr.)	0.0570
Basin Name (Northsight Streets)	N21	Basin Name (Northsight Streets)	R2
Basin Area (acres)	0.42	Basin Area (acres)	0.45
Upper Elevation (ft.)	1484.6	Upper Elevation (ft.)	0.45 1463.96
Lower Elevation (ft.)	1480.6	Lower Elevation (ft.)	1463.96
Drainage Length (ft.)	490	Drainage Length (ft.)	320
Basin Slope (ft./ft.)	0.0082	Basin Slope (ft./ft.)	0.0070
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0424	Kb (watershed resistance factor)	0.0422
Rainfall Intensity (in./hr.)	9.1	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	5.4162	Tc (min.)	4.5611
Tc (hr.)	0.0903	Tc (hr.)	0.0760
Tl (hr.)	0.0542	T1 (hr.)	0.0456
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06

Basin Name (Northsight Streets)	N23	Basin Name (Northsight Streets)	R4
Basin Area (acres)	0.97	Basin Area (acres)	0.34
Upper Elevation (ft.)	1496.55	Upper Elevation (ft.)	1463.5
Lower Elevation (ft.)	1484.6	Lower Elevation (ft.)	1461.71
Drainage Length (ft.)	814	Drainage Length (ft.)	210
Basin Slope (ft./ft.)	0.0147	Basin Slope (ft./ft.)	0.0085
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0401	Kb (watershed resistance factor)	0.0429
Rainfall Intensity (in./hr.)	9	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	5.6790	Tc (min.)	3.5085
Tc (hr.)	0.0946	Tc (hr.)	0.0585
Tl (hr.)	0.0568	Tl (hr.)	0.0351
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06
Basin Name (Northsight Streets)	R1	Basin Name (Northsight Streets)	R6
Basin Area (acres)	0.27	Basin Area (acres)	0.23
Upper Elevation (ft.)	1463.98	Upper Elevation (ft.)	1463.5
Lower Elevation (ft.)	1462.33	Lower Elevation (ft.)	1461.59
Drainage Length (ft.)	332	Drainage Length (ft.)	295
Basin Slope (ft./ft.)	0.0050	Basin Slope (ft./ft.)	0.0065
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0436	Kb (watershed resistance factor)	0.0440
Rainfall Intensity (in./hr.)	9.1	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	5.2757	Tc (min.)	4.5863
Tc (hr.)	0.0879	Tc (hr.)	0.0764
T1 (hr.)	0.0528	Tl (hr.)	0.0459
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06

Basin Name (Northsight Streets)	R3	Basin Name (Northsight Streets)	R8
Basin Area (acres)	0.27	Basin Area (acres)	0.47
Upper Elevation (ft.)	1463.98	Upper Elevation (ft.)	1462.43
Lower Elevation (ft.)	1462.76	Lower Elevation (ft.)	1459.8
Drainage Length (ft.)	190	Drainage Length (ft.)	545
Basin Slope (ft./ft.)	0.0064	Basin Slope (ft./ft.)	0.0048
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0436	Kb (watershed resistance factor)	0.0420
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	8.4
Tc (min.)	3.6711	Tc (min.)	6.9047
Tc (hr.)	0.0612	Tc (hr.)	0.1151
Tl (hr.)	0.0367	Tl (hr.)	0.0690
Use Tc (hr.)	0.06		
Basin Name (Northsight Streets)	R5	Basin Name (Northsight Streets)	R11
Basin Area (acres)	0.34	Basin Area (acres)	0.71
Upper Elevation (ft.)	1463.5	Upper Elevation (ft.)	1466.5
Lower Elevation (ft.)	1461.71	Lower Elevation (ft.)	1458.87
Drainage Length (ft.)	210	Drainage Length (ft.)	530
Basin Slope (ft./ft.)	0.0085	Basin Slope (ft./ft.)	0.0144
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0429	Kb (watershed resistance factor)	0.0409
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	3.5085	Tc (min.)	4.6219
Tc (hr.)	0.0585	Tc (hr.)	0.0770
Tl (hr.)	0.0351	Tl (hr.)	0.0462
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06

Basin Name (Northsight Streets)	R7	Basin Name (Northsight Streets)	S2
Basin Area (acres)	0.28	Basin Area (acres)	0.4
Upper Elevation (ft.)	1463.5	Upper Elevation (ft.)	1447.6
Lower Elevation (ft.)	1461.62	Lower Elevation (ft.)	1443.01
Drainage Length (ft.)	295	Drainage Length (ft.)	495
Basin Slope (ft./ft.)	0.0064	Basin Slope (ft./ft.)	0.0093
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0435	Kb (watershed resistance factor)	0.0425
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.1
Tc (min.)	4.5796	Tc (min.)	5.2414
Tc (hr.)	0.0763	Tc (hr.)	0.0874
Tl (hr.)	0.0458	Tl (hr.)	0.0524
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06
Basin Name (Northsight Streets)	R9	Basin Name (Northsight Streets)	<b>S4</b>
Basin Area (acres)	0.44	Basin Area (acres)	0.12
Upper Elevation (ft.)	1462.43	Upper Elevation (ft.)	1448.29
Lower Elevation (ft.)	1459.44	Lower Elevation (ft.)	1446.53
Drainage Length (ft.)	545	Drainage Length (ft.)	165
Basin Slope (ft./ft.)	0.0055	Basin Slope (ft./ft.)	0.0107
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0422	Kb (watershed resistance factor)	0.0458
Rainfall Intensity (in./hr.)	8.5	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	6.6204	Tc (min.)	2.9989
Tc (hr.)	0.1103	Tc (hr.)	0.0500
Tl (hr.)	0.0662	Tl (hr.)	0.0300
		Use Tc (hr.)	0.06

Basin Name (Northsight Streets)	<b>S</b> 1	Basin Name (Northsight Streets)	<b>S6</b>
Basin Area (acres)	0.4	Basin Area (acres)	0.45
Upper Elevation (ft.)	1447.6	Upper Elevation (ft.)	1451.64
Lower Elevation (ft.)	1443.01	Lower Elevation (ft.)	1447.6
Drainage Length (ft.)	495	Drainage Length (ft.)	515
Basin Slope (ft./ft.)	0.0093	Basin Slope (ft./ft.)	0.0078
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0425	Kb (watershed resistance factor)	0.0422
Rainfall Intensity (in./hr.)	9.1	Rainfall Intensity (in./hr.)	9
Tc (min.)	5.2414	Tc (min.)	5.6323
Tc (hr.)	0.0874	Tc (hr.)	0.0939
Tl (hr.)	0.0524	Tl (hr.)	0.0563
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06
Basin Name (Northsight Streets)	S3	Basin Name (Northsight Streets)	S8
Basin Area (acres)	0.15	Basin Area (acres)	0.17
Upper Elevation (ft.)	1448.29	Upper Elevation (ft.)	1453.39
Lower Elevation (ft.)	1446.61	Lower Elevation (ft.)	1450.78
Drainage Length (ft.)	165	Drainage Length (ft.)	210
Basin Slope (ft./ft.)	0.0102	Basin Slope (ft./ft.)	0.0124
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0451	Kb (watershed resistance factor)	0.0448
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	3.0215	Tc (min.)	3.1918
Tc (hr.)	0.0504	Tc (hr.)	0.0532
T1 (hr.)	0.0302	Tl (hr.)	0.0319
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06

Basin Name (Northsight Streets)	S5	Basin Name (Northsight Streets)	S10
Basin Area (acres)	0.4	Basin Area (acres)	0.4
Upper Elevation (ft.)	1451.64	Upper Elevation (ft.)	1457.86
Lower Elevation (ft.)	1447.6	Lower Elevation (ft.)	1452.7
Drainage Length (ft.)	515	Drainage Length (ft.)	500
Basin Slope (ft./ft.)	0.0078	Basin Slope (ft./ft.)	0.0103
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0425	Kb (watershed resistance factor)	0.0425
Rainfall Intensity (in./hr.)	9	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	5.6544	Tc (min.)	5.0748
Tc (hr.)	0.0942	Tc (hr.)	0.0846
Tl (hr.)	0.0565	Tl (hr.)	0.0507
		Use Tc (hr.)	0.06
Basin Name (Northsight Streets)	S7	Basin Name (Northsight Streets)	S12
Basin Area (acres)	0.2	Basin Area (acres)	0.29
Upper Elevation (ft.)	1453.39	Upper Elevation (ft.)	1463.96
Lower Elevation (ft.)	1450.8	Lower Elevation (ft.)	1457.92
Drainage Length (ft.)	210	Drainage Length (ft.)	860
Basin Slope (ft./ft.)	0.0123	Basin Slope (ft./ft.)	0.0070
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0444	Kb (watershed resistance factor)	0.0434
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	7.9
Tc (min.)	3.1830	Tc (min.)	8.0303
Tc (hr.)	0.0531	Tc (hr.)	0.1338
Tl (hr.)	0.0318	Tl (hr.)	0.0803
Use Tc (hr.)	0.06		

Basin Name (Northsight Streets)	<b>S9</b>	Basin Name (Northsight Streets)	S11
Basin Area (acres)	0.35	Basin Area (acres)	0.54
Upper Elevation (ft.)	1457.86	Upper Elevation (ft.)	1463
Lower Elevation (ft.)	1452.7	Lower Elevation (ft.)	1456.98
Drainage Length (ft.)	500	Drainage Length (ft.)	686
Basin Slope (ft./ft.)	0.0103	Basin Slope (ft./ft.)	0.0088
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0428	Kb (watershed resistance factor)	0.0417
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	8.7
Tc (min.)	5.0973	Tc (min.)	6.3208
Tc (hr.)	0.0850	Tc (hr.)	0.1053
Tl (hr.)	0.0510	T1 (hr.)	0.0632
Basin Name (Northsight Streets)	S14	Basin Name (Frank Lloyd Wright Blvd.)	FLW
Basin Area (acres)	0.48	Basin Area (acres)	4.42
Upper Elevation (ft.)	1463.96	Upper Elevation (ft.)	16.9
Lower Elevation (ft.)	1459.82	Lower Elevation (ft.)	12.9
Drainage Length (ft.)	490	Drainage Length (ft.)	3265
Basin Slope (ft./ft.)	0.0084	Basin Slope (ft./ft.)	0.0012
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0420	Kb (watershed resistance factor)	0.0360
Rainfall Intensity (in./hr.)	9.1	Rainfall Intensity (in./hr.)	3.9
Tc (min.)	5.3349	Tc (min.)	31.8999
Tc (hr.)	0.0889	Tc (hr.)	0.5317
Tl (hr.)	0.0533	T1 (hr.)	0.3190
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06

Basin Name (Northsight Automall)	AML7	Basin Name (Northsight Automall)	AML8
Basin Area (acres)	6.41	Basin Area (acres)	5.7
Upper Elevation (ft.)	1510	Upper Elevation (ft.)	1514
Lower Elevation (ft.)	1502	Lower Elevation (ft.)	1502
Drainage Length (ft.)	850	Drainage Length (ft.)	1000
Basin Slope (ft./ft.)	0.0094	Basin Slope (ft./ft.)	0.0120
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0350	Kb (watershed resistance factor)	0.0353
Rainfall Intensity (in./hr.)	8.8	Rainfall Intensity (in./hr.)	8.6
Tc (min.)	6.2565	Tc (min.)	6.3790
Tc (hr.)	0.1043	Tc (hr.)	0.1063
Tl (hr.)	0.0626	Tl (hr.)	0.0638
Basin Name (Northsight Automall)	AML9	Undevlpd Pcl S of Butherus, N of Evans, W of Northsight	UD2
Basin Area (acres)	1.8	Basin Area (acres)	24.21
Upper Elevation (ft.)	1502	Upper Elevation (ft.)	1474
Lower Elevation (ft.)	1498	Lower Elevation (ft.)	1463
Drainage Length (ft.)	380	Drainage Length (ft.)	1500
Basin Slope (ft./ft.)	0.0105	Basin Slope (ft./ft.)	0.0073
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.01375
b (Kb parameter)	0.04	b (Kb parameter)	0.08
Kb (watershed resistance factor)	0.0384	Kb (watershed resistance factor)	0.0610
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	6.5
Tc (min.)	4.1720	Tc (min.)	13.4548
Tc (hr.)	0.0695	Tc (hr.)	0.2242
T1 (hr.)	0.0417	T1 (hr.)	0.1345
Use Tc (hr.)	0.06		

Basin Name (Northsight Streets)	P1	Basin Name (Northsight Streets)	P2
Basin Area (acres)	0.05	Basin Area (acres)	0.06
Upper Elevation (ft.)	1447.88	Upper Elevation (ft.)	1446.78
Lower Elevation (ft.)	1445.14	Lower Elevation (ft.)	1445.03
Drainage Length (ft.)	205	Drainage Length (ft.)	75
Basin Slope (ft./ft.)	0.0134	Basin Slope (ft./ft.)	0.0233
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0481	Kb (watershed resistance factor)	0.0476
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	3.2001	Tc (min.)	1.6198
Tc (hr.)	0.0533	Tc (hr.)	0.0270
Tl (hr.)	0.0320	Tl (hr.)	0.0162
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06
Basin Name (Northsight Streets)	E1	Basin Name (Northsight Streets)	E2
Basin Area (acres)	0.64	Basin Area (acres)	0.18
Upper Elevation (ft.)	1485.55	Upper Elevation (ft.)	1453.24
Lower Elevation (ft.)	1451.94	Lower Elevation (ft.)	1421.94
Drainage Length (ft.)	623	Drainage Length (ft.)	200
Basin Slope (ft./ft.)	0.0539	Basin Slope (ft./ft.)	0.1565
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0412	Kb (watershed resistance factor)	0.0447
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	3.3390	Tc (min.)	1.4178
Tc (hr.)	0.0557	Tc (hr.)	0.0236
Tl (hr.)	0.0334	Tl (hr.)	0.0142
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06

Basin Name (Carl's Junior)	CJN	Basin Name (Carl's Junior)	CJS
Basin Area (acres)	0.28	Basin Area (acres)	0.55
Upper Elevation (ft.)	83.7	Upper Elevation (ft.)	83.7
Lower Elevation (ft.)	82.8	Lower Elevation (ft.)	78.1
Drainage Length (ft.)	180	Drainage Length (ft.)	287
Basin Slope (ft./ft.)	0.0050	Basin Slope (ft./ft.)	0.0195
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0435	Kb (watershed resistance factor)	0.0416
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	3.8567	Tc (min.)	3.1223
Tc (hr.)	0.0643	Tc (hr.)	0.0520
Tl (hr.)	0.0386	Tl (hr.)	0.0312
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06
Basin Name (Northsight Financial Ctr.)	NFC	Basin Name (Northsight Automall)	E84
Basin Area (acres)	4.8	Basin Area (acres)	0.91
Upper Elevation (ft.)	63.3	Upper Elevation (ft.)	1503.76
Lower Elevation (ft.)	53.3	Lower Elevation (ft.)	1488
Drainage Length (ft.)	763	Drainage Length (ft.)	1500
Basin Slope (ft./ft.)	0.0131	Basin Slope (ft./ft.)	0.0105
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0357	Kb (watershed resistance factor)	0.0403
Rainfall Intensity (in./hr.)	9.1	Rainfall Intensity (in./hr.)	7.5
Tc (min.)	5.3430	Tc (min.)	9.1855
Tc (hr.)	0.0891	Tc (hr.)	0.1531
Tl (hr.)	0.0534	Tl (hr.)	0.0919

West Hayden Road & FLW Blve	· HY1	East Hayden Rd. to Sun Pontiac	HY2
Basin Area (acres)	4.61	Basin Area (acres)	2.51
Upper Elevation (ft.)	1512.93	Upper Elevation (ft.)	1508
Lower Elevation (ft.)	1492.12	Lower Elevation (ft.)	1492
Drainage Length (ft.)	3300	Drainage Length (ft.)	1900
Basin Slope (ft./ft.)	0.0063	Basin Slope (ft./ft.)	0.0084
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0359	Kb (watershed resistance factor)	0.0375
Rainfall Intensity (in./hr.)	5.7	Rainfall Intensity (in./hr.)	7.3
Tc (min.)	16.6789	Tc (min.)	10.7816
Tc (hr.)	0.2780	Tc (hr.)	0.1797
Tl (hr.)	0.1668	T1 (hr.)	0.1078
West Hayden Budget to Price Club	HY3	East Hayden Sun Pontiac to Price Club	HY4
Basin Area (acres)	1.29	Basin Area (acres)	1.16
Upper Elevation (ft.)	1492.12	Upper Elevation (ft.)	1492
Lower Elevation (ft.)	1484	Lower Elevation (ft.)	1484
Drainage Length (ft.)	980	Drainage Length (ft.)	880
Basin Slope (ft./ft.)	0.0083	Basin Slope (ft./ft.)	0.0091
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)			0.04
	0.0393	Kb (watershed resistance factor)	0 0396
Rainfall Intensity (in./hr.)	0.0393 8.3	<pre>Kb (watershed resistance factor) Rainfall Intensity (in./hr.)</pre>	0.0396 8 4
Rainfall Intensity (in./hr.) Tc (min.)		<pre>Kb (watershed resistance factor) Rainfall Intensity (in./hr.) Tc (min.)</pre>	8.4
Rainfall Intensity (in./hr.)	8.3	Rainfall Intensity (in./hr.)	

Northsight Master Plan Area E1	MPE1	Northsight Master Plan Area L	L
Basin Area (acres)	4	Basin Area (acres)	12.15
Upper Elevation (ft.)	1453	Upper Elevation (ft.)	1462
Lower Elevation (ft.)	1446	Lower Elevation (ft.)	1442
Drainage Length (ft.)	630	Drainage Length (ft.)	2000
Basin Slope (ft./ft.)	0.0111	Basin Slope (ft./ft.)	0.0100
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0362	Kb (watershed resistance factor)	0.0332
Rainfall Intensity (in./hr.)	9.1	Rainfall Intensity (in./hr.)	7.5
Tc (min.)	5.1467	Tc (min.)	9.7466
Tc (hr.)	0.0858	Tc (hr.)	0.1624
Tl (hr.)	0.0515	Tl (hr.)	0.0975
Use Tc (hr.)	0.06	•	0.03.0
Basin Name (Northsight Automall)	W84	Break Masters	BRM
Basin Area (acres)	0.73	Basin Area (acres)	0.55
Upper Elevation (ft.)	1503.71	Upper Elevation (ft.)	1506.2
Lower Elevation (ft.)	1488	Lower Elevation (ft.)	1503.5
Drainage Length (ft.)	1300	Drainage Length (ft.)	372
Basin Slope (ft./ft.)	0.0121	Basin Slope (ft./ft.)	0.0073
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0409	Kb (watershed resistance factor)	0.0416
Rainfall Intensity (in./hr.)	7.9	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	8.0900	Tc (min.)	4.8301
Tc (hr.)	0.1348	Tc (hr.)	0.0805
Tl (hr.)	0.0809	Tl (hr.)	0.0483
		Use Tc (hr.)	0.06

Northsight Village Phase II +Butherus and Dollar	NV2	Northsight Master Plan Area E2	MPE2
Basin Area (acres)	15.83	Basin Area (acres)	3.5
Upper Elevation (ft.)	1482	Upper Elevation (ft.)	1451.5
Lower Elevation (ft.)	1474	Lower Elevation (ft.)	1445
Drainage Length (ft.)	1430	Drainage Length (ft.)	600
Basin Slope (ft./ft.)	0.0056	Basin Slope (ft./ft.)	0.0108
m (Kb parameter)	-0.01375	m (Kb parameter)	-0.00625
b (Kb parameter)	0.08	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0635	Kb (watershed resistance factor)	0.0366
Rainfall Intensity (in./hr.)	6	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	15.0438	Tc (min.)	5.0675
Tc (hr.)	0.2507	Tc (hr.)	0.0845
Tl (hr.)	0.1504	Tl (hr.)	0.0507
		Use Tc (hr.)	0.06
83RD PLACE AND RAINTREE Dr.	83RD	Northsight Master Plan Area H	Н
Basin Area (acres)	3.02	Basin Area (acres)	8.4
Upper Elevation (ft.)	1477.4	Upper Elevation (ft.)	1463
Lower Elevation (ft.)	1461.34	Lower Elevation (ft.)	1450
Drainage Length (ft.)	2194	Drainage Length (ft.)	1350
Basin Slope (ft./ft.)	0.0073	Basin Slope (ft./ft.)	0.0096
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0370	Kb (watershed resistance factor)	0.0342
Rainfall Intensity (in./hr.)	6.7	Rainfall Intensity (in./hr.)	7.9
Tc (min.)	12.4136	Tc (min.)	8.0671
Tc (hr.)	0.2069	Tc (hr.)	0.1345
T1 (hr.)	0.1241	T1 (hr.)	0.0807

Northsight Master Plan Portion of Area C	C1	Northsight Master Plan Portion of Area C	C2
Basin Area (acres)	9.6	Basin Area (acres)	11.7
Upper Elevation (ft.)	1450	Upper Elevation (ft.)	1449
Lower Elevation (ft.)	1441	Lower Elevation (ft.)	1441
Drainage Length (ft.)	1000	Drainage Length (ft.)	950
Basin Slope (ft./ft.)	0.0090	Basin Slope (ft./ft.)	0.0084
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0339	Kb (watershed resistance factor)	0.0333
Rainfall Intensity (in./hr.)	8.5	Rainfall Intensity (in./hr.)	
Tc (min.)	6.8576	Tc (min.)	8.5 6.7667
Tc (hr.)	0.1143	Tc (hr.)	0.1128
Tl (hr.)	0.0686	T1 (hr.)	0.1128
Northsight Master Plan Area F2	F2		
Basin Area (acres)	2.43		
Upper Elevation (ft.)	1460		
Lower Elevation (ft.)	1453		
Drainage Length (ft.)	650		
Basin Slope (ft./ft.)	0.0108		
m (Kb parameter)	-0.00625		
b (Kb parameter)	0.04		
Kb (watershed resistance factor)	0.0376		•
Rainfall Intensity (in./hr.)	9.1		
Tc (min.)	5.3803		
Tc (hr.)	0.0897		
Tl (hr.)	0.0538		
Use Tc (hr.)	0.06		

Vanguard Site	V1	Vanguard Site	V2
Basin Area (acres)	3.06	Basin Area (acres)	1.2
Upper Elevation (ft.)	1449	Upper Elevation (ft.)	1451
Lower Elevation (ft.)	1444	Lower Elevation (ft.)	1445.5
Drainage Length (ft.)	460	Drainage Length (ft.)	280
Basin Slope (ft./ft.)	0.0109	Basin Slope (ft./ft.)	0.0196
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0370	Kb (watershed resistance factor)	0.0395
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	4.4554	Tc (min.)	2.9952
Tc (hr.)	0.0743	Tc (hr.)	0.0499
Tl (hr.)	0.0446	Tl (hr.)	0.0300
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06
Vanguard Site	V3	Vanguard Site	V4
Basin Area (acres)	1.84	Basin Area (acres)	1.34
Upper Elevation (ft.)	1451	Upper Elevation (ft.)	1453
Lower Elevation (ft.)	1445	Lower Elevation (ft.)	1450
Drainage Length (ft.)	453	Drainage Length (ft.)	245
Basin Slope (ft./ft.)	0.0132	Basin Slope (ft./ft.)	0.0122
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0383	Kb (watershed resistance factor)	0.0392
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	4.2386	Tc (min.)	3.2310
Tc (hr.)	0.0706	Tc (hr.)	0.0539
Tl (hr.)	0.0424	Tl (hr.)	0.0323
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06

Vanguard Site	V5	Vanguard Site	V6
Basin Area (acres)	2.53	Basin Area (acres)	1.26
Upper Elevation (ft.)	1453	Upper Elevation (ft.)	1451
Lower Elevation (ft.)	1450	Lower Elevation (ft.)	1446
Drainage Length (ft.)	517	Drainage Length (ft.)	246
Basin Slope (ft./ft.)	0.0058	Basin Slope (ft./ft.)	0.0203
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0375	Kb (watershed resistance factor)	0.0394
Rainfall Intensity (in./hr.)	9	Rainfall Intensity (in./hr.)	9.2
Tc (min.)	5.8279	Tc (min.)	2.7731
Tc (hr.)	0.0971	Tc (hr.)	0.0462
Tl (hr.)	0.0583	Tl (hr.)	0.0277
Use Tc (hr.)	0.06	Use Tc (hr.)	0.06
Vanguard Site	V7	Vanguard Site	V8
Basin Area (acres)	1.8	Basin Area (acres)	2.39
Upper Elevation (ft.)	1451.2	Upper Elevation (ft.)	1451
Lower Elevation (ft.)	1445	Lower Elevation (ft.)	1444.5
Drainage Length (ft.)	357	Drainage Length (ft.)	675
Basin Slope (ft./ft.)	0.0174	Basin Slope (ft./ft.)	0.0096
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0384	Kb (watershed resistance factor)	0.0376
Rainfall Intensity (in./hr.)	9.2	Rainfall Intensity (in./hr.)	9
Tc (min.)	3.4624	Tc (min.)	5.7036
Tc (hr.)	0.0577	Tc (hr.)	0.0951
Tl (hr.)	0.0346	Tl (hr.)	0.0570
Use Tc (hr.)	0.06	Use Tc (hr.)	0,06

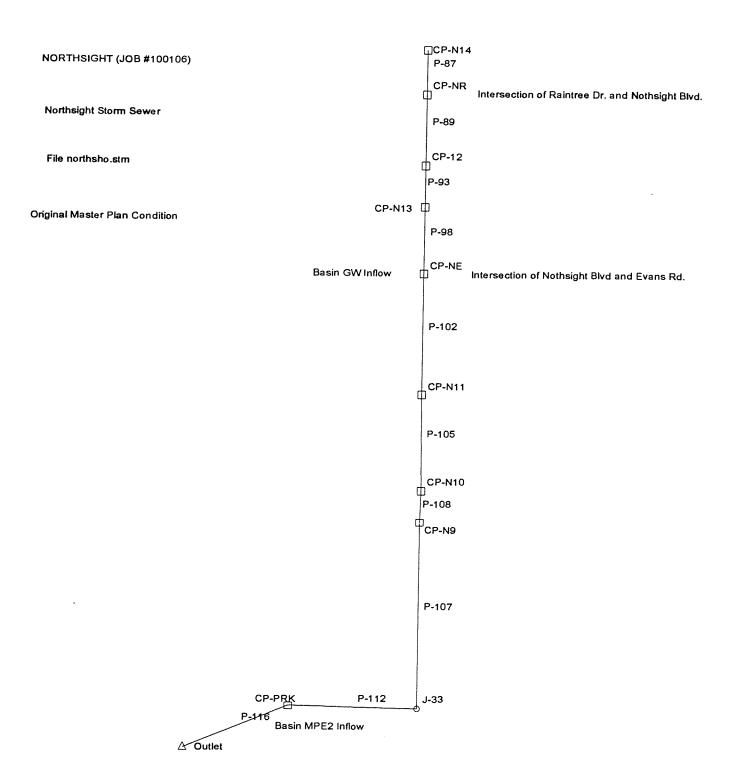
Vanguard Site	<b>V</b> 9	Parcel 1 Lot 3 Northsight Automall (undeveloped land next to Breakmasters)	PCL1
Basin Area (acres)	2.72	Basin Area (acres)	0.64
Upper Elevation (ft.)	1452.2	Upper Elevation (ft.)	0.64
Lower Elevation (ft.)	1445	Lower Elevation (ft.)	1508.51
Drainage Length (ft.)	668	Drainage Length (ft.)	1499
Basin Slope (ft./ft.)	0.0108	Basin Slope (ft./ft.)	400
m (Kb parameter)	-0.00625	m (Kb parameter)	0.0238
b (Kb parameter)	0.04	b (Kb parameter)	-0.01375
Kb (watershed resistance factor)	0.0373	Kb (watershed resistance factor)	80.0
Rainfall Intensity (in./hr.)	9	Rainfall Intensity (in./hr.)	0.0827
Tc (min.)	5.4525	Tc (min.)	9.2
Tc (hr.)	0.0909	Tc (hr.)	4.9536
Tl (hr.)	0.0545	Tl (hr.)	0.0826
Use Tc (hr.)	0.06	Use Tc (hr.)	0.0495 0.06
Sun Pontiac	SUNP	Evans, Gelding, and 84th St.	EG84
Basin Area (acres)	11.2	Pagin Auga (anna)	
Upper Elevation (ft.)	1489	Basin Area (acres) Upper Elevation (ft.)	1.74
Lower Elevation (ft.)	1475	Lower Elevation (ft.)	62.5
Drainage Length (ft.)	1090	Drainage Length (ft.)	48.5
Basin Slope (ft./ft.)	0.013		695
m (Kb parameter)	-0.00625	<pre>Basin Slope (ft./ft.) m (Kb parameter)</pre>	0.0201
b (Kb parameter)	0.04	b (Kb parameter)	-0.00625
Kb (watershed resistance factor)	0.033	- · · · · · · · · · · · · · · · · · · ·	0.04
Rainfall Intensity (in./hr.)	8.6	Kb (watershed resistance factor)	0.0385
Tc (min.)	6.343	Rainfall Intensity (in./hr.) Tc (min.)	9.2
Tc (hr.)	0.106	To (hr.)	4.6197
TI (hr.)	0.100	re (iir.)	0.0770
	0.063	m1 /bm )	
	0.063	T1 (hr.) Use Tc (hr.)	0.0462

Northsight Master Plan Portion of Area G	GE	Northsight Master Plan Portion of Area G	GW
Basin Area (acres)	8.75	Basin Area (acres)	10.02
Upper Elevation (ft.)	1464	Upper Elevation (ft.)	1462
Lower Elevation (ft.)	1458	Lower Elevation (ft.)	1454
Drainage Length (ft.)	950	Drainage Length (ft.)	1090
Basin Slope (ft./ft.)	0.0063	Basin Slope (ft./ft.)	0.0073
m (Kb parameter)	-0.01375	m (Kb parameter)	-0.01375
b (Kb parameter)	0.08	b (Kb parameter)	0.08
Kb (watershed resistance factor)	0.0670	Kb (watershed resistance factor)	0.0662
Rainfall Intensity (in./hr.)	6.9	Rainfall Intensity (in./hr.)	6.8
Tc (min.)	11.5188	Tc (min.)	11.7680
Tc (hr.)	0.1920	Tc (hr.)	0.1961
Tl (hr.)	0.1152	Tl (hr.)	0.1177
Northsight Master Plan Portion of Area J	JPRT	Northsight Master Plan Portion of Area I	IPRT
Basin Area (acres)	32.25	Basin Area (acres)	16.87
Upper Elevation (ft.)	1474	Upper Elevation (ft.)	1474
Lower Elevation (ft.)	1464	Lower Elevation (ft.)	1467
Drainage Length (ft.)	1800	Drainage Length (ft.)	1110
Basin Slope (ft./ft.)	0.0056	Basin Slope (ft./ft.)	0.0063
m (Kb parameter)	-0.01375	m (Kb parameter)	-0.01375
b (Kb parameter)	0.08	b (Kb parameter)	0.01373
Kb (watershed resistance factor)	0.0593	Kb (watershed resistance factor)	0.0631
Rainfall Intensity (in./hr.)	5.8	Rainfall Intensity (in./hr.)	3.9
Tc (min.)	16.5279	Tc (min.)	14.9955
Tc (hr.)	0.2755	Tc (hr.)	0.2499
Tl (hr.)	0.1653	Tl (hr.)	0.1500
		•	0.1500

# **DEVELOPED CONDITIONS**

Northsight Master Plan Portion of Area G	GE	Northsight Master Plan Portion of Area G	GW
Basin Area (acres)	8.75	Basin Area (acres)	10.02
Upper Elevation (ft.)	1464	Upper Elevation (ft.)	1462
Lower Elevation (ft.)	1458	Lower Elevation (ft.)	1454
Drainage Length (ft.)	950	Drainage Length (ft.)	1090
Basin Slope (ft./ft.)	0.0063	Basin Slope (ft./ft.)	0.0073
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0341	Kb (watershed resistance factor)	0.0337
Rainfall Intensity (in./hr.)	8	Rainfall Intensity (in./hr.)	
Tc (min.)	7.6629	Tc (min.)	8 7.7906
Tc (hr.)	0.1277	Tc (hr.)	
Tl (hr.)	0.0766	Tl (hr.)	0.1298 0.0779
Northsight Master Plan Portion of Area I	IPRT	Northsight Master Plan Portion of Area J	JPRT
Basin Area (acres)	16.87	Basin Area (acres)	22.25
Upper Elevation (ft.)	1474	Upper Elevation (ft.)	32.25
Lower Elevation (ft.)	1467	Lower Elevation (ft.)	1474 1464
Drainage Length (ft.)	1110	Drainage Length (ft.)	1800
Basin Slope (ft./ft.)	0.0063	Basin Slope (ft./ft.)	0.0056
m (Kb parameter)	-0.00625	m (Kb parameter)	-0.00625
b (Kb parameter)	0.04	b (Kb parameter)	0.04
Kb (watershed resistance factor)	0.0323	Kb (watershed resistance factor)	
Rainfall Intensity (in./hr.) 7.9		Rainfall Intensity (in./hr.)	0.0306
Tc (min.)	8.0976	Tc (min.)	7.3
Tc (hr.)	0.1350	Tc (hr.)	10.7349
Tl (hr.)	0.0810	Tl (hr.)	0.1789
			0.1073

**Appendix V**Storm Drain Analysis



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```
------ Beginning Calculation Cycle -----
 Discharge: 70.00 cfs at node CP-N14
 Discharge: 143.00 cfs at node CP-NR
 Discharge: 145.00 cfs at node CP-12
 Discharge: 148.00 cfs at node CP-12
Scharge: 201.00 cfs at node CP-NE
ischarge: 204.00 cfs at node CP-NI1
Discharge: 207.00 cfs at node CP-NI0
Discharge: 207.00 cfs at node CP-NI0
 Discharge: 209.00 cfs at node CP-N9
 Discharge: 209.00 cfs at node J-33
 Discharge: 225.00 cfs at node CP-PRK
 Discharge: 225.00 cfs at node Outlet
 Beginning iteration 1
 Discharge: 70.00 cfs at node CP-N14
 Discharge: 143.00 cfs at node CP-NR
 Discharge: 145.00 cfs at node CP-12
 Discharge: 148.00 cfs at node CP-N13
 Discharge: 201.00 cfs at node CP-NE
 Discharge: 204.00 cfs at node CP-N11
 Discharge: 207.00 cfs at node CP-N10
 Discharge: 209.00 cfs at node CP-N9
Discharge: 209.00 cfs at node J-33
Discharge: 225.00 cfs at node CP-PRK
Discharge: 225.00 cfs at node Outlet
 Discharge Convergence Achieved in 1 iterations: relative error: 0.0
 ** Warning: Design constraints not met.
 ** Problem: Flooding in system
Warning: No Duration data exists in IDF Table
Information: Outlet Known flow propagated from upstream junctions.
Violation: P-116 does not meet maximum velocity constraint (try drop structure).
Information: P-112 Surcharged condition
Violation: P-112 does not meet minimum cover constraint at upstream end.
Information: J-33 The hydraulic grade exceeds the Rim/Ground elevation
  formation: J-33 Flooding condition.
  formation: J-33 Known flow propagated from upstream junctions.
information: P-107 Surcharged condition
Violation: P-107 does not meet minimum cover constraint at downstream end.
Information: P-108 Surcharged condition
Violation: P-108 does not meet minimum cover constraint at downstream end.
Information: P-105 Surcharged condition
Violation: P-105 does not meet minimum cover constraint at downstream end.
Information: CP-N11 The hydraulic grade exceeds the Rim/Ground elevation
Information: CP-N11 Flooding condition.
Information: P-102 Surcharged condition
Violation: P-102 does not meet minimum cover constraint at downstream end.
Information: CP-NE The hydraulic grade exceeds the Rim/Ground elevation
Information: CP-NE Flooding condition.
Information: P-98 Surcharged condition
Violation: P-98 does not meet minimum cover constraint at downstream end.
Information: P-93 Surcharged condition
Information: P-89 Surcharged condition
Violation: P-89 does not meet minimum cover constraint at upstream end.
Information: P-87 Surcharged condition
Violation: P-87 does not meet minimum cover constraint at downstream end.
------ Calculations Complete ------
** Analysis Options **
Friction method: Manning's Formula
HGL Convergence Test: 0.001000
Maximum Network Traversals: 5
Number of Flow Profile Steps: 5
 scharge Convergence Test: 0.001000
 ximum Design Passes: 3
```

Project Title: NORTHSIGHT Project Engineer: Gilbertson Associates, Inc. c:\haestad\stmc\northsho.stmGilbertson Associates, Inc. 23733 N. Scottsdale Rd., Suite B Scottsdale, AZ 85255 (602) 585-6464 StormCAD v1.0 05/09/00 02:09:34 PM © Haestad Methods, Inc. 37 Brookside Road Waterbury, CT 06708 USA (203) 755-1666 Page 1 of 2

-87 P-89 P-93 P-98 P-102 P-105 P-107 P-108 P-112 P-116	72.00 89.00 190.00 347.00 260.00 300.00 28.00 73.00 142.00 155.00	Size 36 inch 54 inch	Discharge 70.00 143.00 145.00 148.00 201.00 204.00 209.00 207.00 209.00 225.00	Hydraulic Upstream   57.75 55.70 55.10 53.94 53.12 50.83 46.26 47.33 44.17 40.58	Grade Downstream 56.96 55.23 54.07 51.97 50.40 47.60 45.94 46.52 42.57 37.59
Label CP-NR J-33 Outlet CP-N14 CP-12 CP-N13 CP-NE CP-N11 CP-N10 CP-N9 CP-PRK Elapsed:	Discharge 143.00 209.00 225.00 70.00 145.00 148.00 201.00 204.00 207.00 209.00 225.00 0 minute(s) 2	Grou	57.97 45.94 45.00 60.00 58.50 56.50 51.97 50.40 47.80 47.20 46.30	,	ream HGL 55.70 44.17 37.43 57.75 55.10 53.94 51.97 50.40 47.33 46.26 40.58

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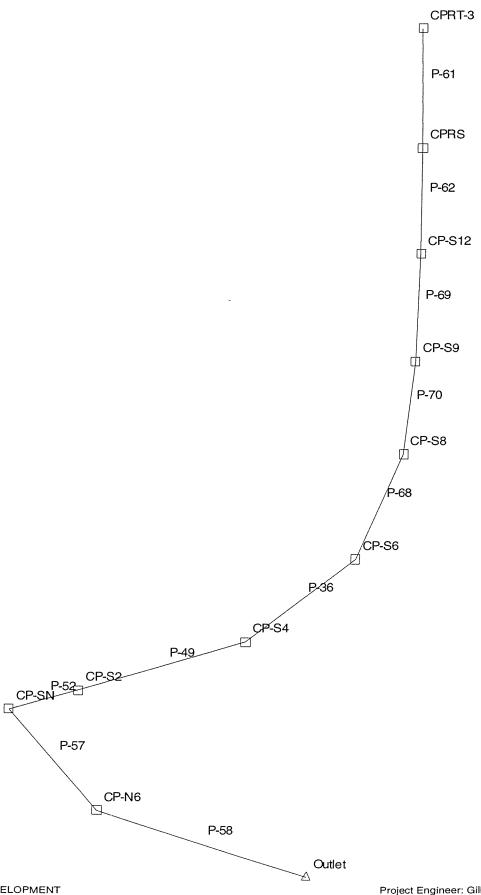
### Node Report

Node	Inlet Area (acres)	Weighted Roughness Coefficient	Inlet CA (acres)	External CA (acres)	Total CA (acres)	Inlet TC (min)	External TC (min)	Upstream Flow Time (min)	System Flow Time (min)	System Intensity (in/hr)	Total Watershed (CIA) (cfs)	Additional Flow (cfs)	Carryover (cfs)	Known Flow (cfs)	Total Upstream Added (cfs)	Discharge (cfs)	Ground Elevation (ft)	Rim Elevation (ft)	HGL In	HGL Out (ft)	Inlet Intensity (in/hr)	Inlet Discharge (cfs)	Description	Sump Elevation (ft)
:P-N14 :P-NR	0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00	0.00 0.00	0.00 0.12	0.00 0.12	0.00	0.00	0.00	0.00	70.00	0.00	70.00	60.00	60.00	57.91	57.75	0.00	0.00		53.46
:P-12 :P-N13	0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00	0.00 0.00	0,29 0.63	0.29 0.63	0.00	0.00	0.00	0.00 0.00 0.00	143.00		143.00 145.00	57.97 58.50	57.97 58.50	56.96 55.23	55.70 55.10	0.00 0.00	0.00 0.00		50.55 49.60
P-NE P-N11	0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	0.00 0.00	1.25 1.60	1.25 1.60	0.00	0.00	0.00	0.00 0.00 0.00	148.00 201.00 204.00	0.00	148.00 201.00	56.50 51.97	51.97	54.07 51.97	53.94 51.97	0.00	0.00 0.00		47.98 45.14
P-N10 P-N9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.99 2.08	1.99 2.08	0.00	0.00	0.00	0.00	207.00	0.00	204.00 207.00	50.40 47.80	50.40 47.80	50.40 47.60	50.40 47.33	0.00	0.00 0.00		42.42 39.72
P-PRI	N/A 0.00	N/A 0.00	0.00	N/A 0.00	0.00	N/A 0.00	0.00	2.12 2.30	2.12 2.30	0.00	0.00	N/A 0.00	N/A 0.00	N/A 225.00	0.00	209.00	47.20 45.94	47.20 45.94	46.52 45.94	46.26 44.17	0.00 N/A	0.00 N/A		39.06 38.91
utlet	N/A	N/A	N/A	N/A	0.00	N/A	0.00	2.46	2.46	0.00	0.00	N/A	N/A	N/A	0.00 0.00	225.00 N/A	46.30 45.00	46.30 45.00	42.57 37.43	40.58 37.43	0.00 N/A	0.00 N/A		36.40 34.02

## Pipe Report

,ibe	Upstream Node	Downstream Node	Inlet Area (acres)	Weighted Roughness Coefficient	Inlet CA (acres)	Total CA (acres)	System Intensity (in/hr)	Discharge (cfs)	Length (ft)	Constructed Slope (ft/ft)	Section Size	Roughness	Capacity (cfs)	Upstream Invert Elevation	Downstream Invert Elevation	Upstream Ground Elevation	Downstream Ground Elevation	Upstream Cover (ft)	Downstream Cover (ft)	Upstream HGL (ft)	Downstream HGL (ft)	Description
37	CP-N14	CP-NR	0.00	0.00	0.00	0.00	0.00	70.00	72.00	0.008750	36 inch	0.040		(1.7	(11)	(11)	(ft)					
19	CP-NR	CP-12	0.00	0.00	0.00	0.00	0.00	143.00		0.010674		0.013	62.39	54.18	53.55	60.00	57.97	2,82	1.42	57.75	56.96	
93	CP-12	CP-N13	0.00	0.00	0.00	0.00	0.00	145.00	190.00	0.008526		0.013	203.16	50.55	49.60	57.97	58.50	2.92	4.40	55.70	55.23	
8	CP-N13	CP-NE	0.00	0.00	0.00		0.00	148.00				0.013	181.57	49.60	47.98	58.50	56.50	4.40	4.02	55,10		
102	CP-NE	CP-N11	0.00	0.00			0.00	- 1	347.00	0.008184		0.013	177.89	47.98	45.14	56.50	51.97	4.02	2.33		54.07	
05	CP-N11	CP-N10	0.00	0.00	0.00		1	201.00	260.00	0.010462		0.013	201.13	45.14	42.42	51.97	50.40	2.33		53.94	51.97	
	CP-N10	CP-N9	0.00			1	0.00	204.00	300.00	0.009000	, ,	0.013	186.55	42.42	39.72	50.40	47.80		3.48	53.12	50.40	
ı		J-33		0.00	0.00		0.00	207.00	73.00	0.009041	54 inch	0.013	186.97	39.72	39.06		. 1	3.48	3.58	50.83	47.60	
			0.00	0.00	0.00		0.00	209.00	28.00	0.005357	54 inch	0.013	143.92	39.06	I	47.80	47.20	3.58	3.64	47.33	46.52	
		CP-PRK	N/A	N/A	N/A	0.00	0.00	209.00	142.00	0.017676	54 inch	0.013	261.43		38.91	47.20	45.94	3.64	2.53	46.26	45.94	
10	CP-PRK	Outlet	0.00	0.00	0.00	0.00	0.00	225.00	155.00	0.015355	54 inch	0.013		38.91	36.40	45.94	46.30	2.53	5.40	44.17	42.57	
												0.013	243.66	36.40	34.02	48.30	45.00	5.40	6.48	40.58	37.59	

## Scenario: Base



Title: NORTHSIGHT DEVELOPMENT j:\admin\100\106\hec2\87thst.stm

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Project Engineer: Gilbertson Associates, Inc. StormCAD v4.1.1 [4.2014] Page 1 of 1

Scenario: Base

>>>> Info: Subsurface Analysis iterations: 1

>>>> Info: Convergence was achieved.

Gravity subnetwork discharging at: Outlet

>>>> Info: Loading and hydraulic computations completed successfully.

>>>> Info: P-61 Hydraulic jump formed.

>>>> Info: P-61 Critical depth assumed upstream.

>>>> Warning: P-61 Pipe fails minimum cover constraint.

>>>> Info: P-62 Hydraulic jump formed.

>>>> Info: P-62 Critical depth assumed upstream.

>>>> Warning: P-62 Pipe fails minimum cover constraint.

>>>> Warning: P-68 Pipe discharge is above full flow capacity.

>>>> Warning: P-49 Pipe fails minimum cover constraint.

>>>> Warning: P-52 Pipe fails minimum cover constraint.

>>>> Warning: P-52 Pipe fails minimum slope constraint.

>>>> Warning: P-52 Pipe discharge is above full flow capacity.

>>>> Info: P-57 Hydraulic jump formed.

>>>> Info: P-57 Critical depth assumed upstream.

>>>> Warning: P-57 Pipe fails minimum cover constraint.

>>>> Warning: P-58 Pipe fails minimum cover constraint.

#### CALCULATION SUMMARY FOR SURFACE NETWORKS

Label   	Inlet   Type 	Inlet	Total Intercepted Flow (cfs)	Total Bypassed Flow (cfs)	Capture Efficiency (%)	Gutter Spread (ft)	Gutter   Depth   (ft)
CP-N6	Generic Inlet	Generic Default 100%	0.00	0.00	100.0	0.00	0.00
CP-SN	Generic Inlet	Generic Default 100%	0.00	0.00	100.0	0.00	0.00
CP-S2	Generic Inlet	Generic Default 100%	0.00	0.00	100.0	0.00	0.00
CP-S4	Generic Inlet	Generic Default 100%	0.00	0.00	100.0	0.00	0.00
CP-S6	Generic Inlet	Generic Default 100%	0.00	0.00	100.0	0.00	0.00
CP-S8	Generic Inlet	Generic Default 100%	0.00	0.00	100.0	0.00	0.00
CP-S9	Generic Inlet	Generic Default 100%	0.00	0.00	100.0	0.00	0.00
CP-S12	Generic Inlet	Generic Default 100%	0.00	0.00	100.0	0.00	0.00
CPRS	Generic Inlet	Generic Default 100%	0.00	0.00	100.0	0.00	0.00
CPRT-3	Generic Inlet	Generic Default 100%	0.00	0.00	100.0	0.00	0.00

#### CALCULATION SUMMARY FOR SUBSURFACE NETWORK WITH ROOT: Outlet

Label 	Number   of   Sections	Section   Size 	Section   Shape	Length (ft)	Total System	Average   Velocity   (ft/s)	Hydraulic Grade Upstream	Hydraulic   Grade   Downstream
!	! !	! !	l	ļ 1	(cfs)	! !	(ft)	(ft)
P-58	1	72 inch	Circular	735.00	248.00	11.89	36.97	32.56
P-57	1	72 inch	Circular	150.00	242.00	10.51	38.46	37.58
P-52	1	66 inch	Circular	199.00	233.00	9.81	41.00	40.04
P-49	1	66 inch	Circular	481.00	230.00	9.68	43.40	41.15
P-36	1	66 inch	Circular	120.00	228.00	9.60	44.39	43.84
P-68	1	54 inch	Circular	523.00	204.00	12.83	50.45	44.82
P-70	1	54 inch	Circular	175.00	154.00	9.68	52.04	50.96
P-69	1	54 inch	Circular	800.00	151.00	9.49	57.05	52.33
P-62	1	54 inch	Circular	306.00	141.00	9.76	59.63	57.19
P-61	1	54 inch	Circular	75.00	131.00	9.85	60.52	59.81

Title: NORTHSIGHT DEVELOPMENT j:\admin\100\106\hec2\87thst.stm

Gilbertson Associates, Inc.

Project Engineer: Gilbertson Associates, Inc. StormCAD v4.1.1 [4.2014]

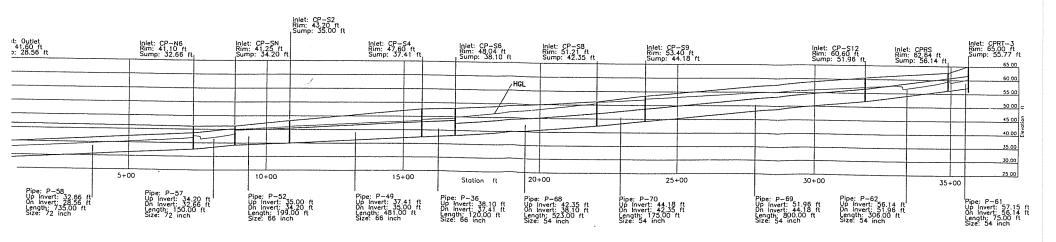
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Labe1	Total	Ground	Hydraulic	Hydraulic
	System	Elevation	Grade	Grade
	Flow	(ft)	Line In	Line Out
1	(cfs)		(ft)	(ft)
Outlet	248.00	41.60	32.56	32.56
CP-N6	248.00	41.10	37.58	36.97
CP-SN	242.00	41.25	40.04	38.46
CP-S2	233.00	43.20	41.15	41.00
CP-S4	230.00	47.60	43.84	43.40
CP-S6	228.00	48.04	44.82	44.39
CP-S8	204.00	51.21	50.96	50.45
CP-S9	154.00	53.40	52.33	52.04
CP-S12	151.00	60.60	57.19	57.05
CPRS	141.00	62.64	59.81	59.63
CPRT-3	131.00	65.00	60.68	60.52
•	•	•		

\_\_\_\_\_\_

Completed: 12/04/2001 11:24:14 AM

87th Street Starm Drain Parcel IPRT Developed



# Scurario: Base

# **Pipe Report**

Label	Up. Node	Dn. Node	System Q (cfs)	L (ft)	S (ft/ft)	Size	#	n	Q Full (cfs)	Up. Invert (ft)	Dn. Invert (ft)	Up. Gr Elev. (ft)	Dn. Gr. Elev. (ft)	Up. Cover (ft)	Dn. Cover (ft)	HGL In (ft)	HGL Out (ft)	Exc. Cap.?
1	CPRT-3		131.00	75.00	0.013467	54 inch	1	0.013	228.19	57.15	56.14	65.00	62.64	3.35	2.00	60.52	59.81	false
_		CP-S12	141.00	306.00	0.013660	54 inch	1	0.013	229.82	56.14	51.96	62.64	60.60	2.00		59.63		false
1	CP-S12		151.00	800.00	0.009725	54 inch	1	0.013	193.92	51.96	44.18	60.60	53.40	4.14	4.72	57.05		false
1	CP-S9		154.00	175.00	0.010457	54 inch	1	0.013	201.08	44.18	42.35	53.40	51.21	4.72	4.36	52.04		false
1 1			204.00	523.00	0.008126	54 inch	1	0.013	177.26	42.35	38.10	51.21	48.04	4.36		50.45	44.82	1 1
1 1	CP-S6		228.00	120.00	0.005750	66 inch	1	0.013	254.63	38.10	37.41	48.04	47.60	4.44	4.69	44.39	43.84	
1	CP-S4	_	230.00	481.00	0.005010	66 inch	1	0.013	237.69	37.41	35.00	47.60	43.20	4.69	2.70	43.40	41.15	1
1 1	CP-S2		233.00	199.00	0.004020	66 inch	1	0.013	212.91	35.00	34.20	43.20	41.25	2.70	1.55	41.00	40.04	
P-57	CP-SN	CP-N6	242.00	150.00	0.010267	72 inch	1	0.013	429.09	34.20	32.66	41.25	41.10	1.05	2.44	38.46	37.58	1 1
P-58	CP-N6	Outlet	248.00	735.00	0.005578	72 inch	1	0.013	316.29	32.66	28.56	41.10	41.60	2.44	7.04	36.97	32.56	1 }

# Scenario: Base

# **Node Report**

	CA	External CA (acres)	Time of Concentration (min)	External Time of Concentratior (min)	Flow Time	System Intensity (in/hr)	System Rational Flow (cfs)	Additional Flow (cfs)	Additional Carryovei (cfs)		Upstream Additional Flow (cfs)	Total System Flow (cfs)	Ground Elevation (ft)		Grade	Hydraulic Grade Line Out (ft)	Local Intensity (in/hr)	Local Rational Flow (cfs)
CPRT-3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	131.00	0.00	131.00	65.00	65.00	60.68	60.52	0.00	0.00
CPRS	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	141.00	0.00	141.00	62.64	62.64	59.81	59.63	0.00	0.00
CP-S12		0.00	0.00	0.00	0.65	0.00	0.00	0.00	0.00	151.00	0.00	151.00	60.60	60.60	57.19	57.05	0.00	0.00
CP-S9	0.00	0.00	0.00	0.00	2.05	0.00	0.00	0.00	0.00	154.00	0.00	154.00	53.40	53.40	52.33	52.04	0.00	0.00
CP-S8	0.00	0.00	0.00	0.00	2.36	0.00	0.00	0.00	0.00	204.00	0.00	204.00	51.21	51.21	50.96	50.45	0.00	0.00
CP-S6	0.00	0.00	0.00	0.00	3.03	0.00	0.00	0.00	0.00	228.00	0.00	228.00	48.04	48.04	44.82	44.39	0.00	0.00
CP-S4	0.00	0.00	0.00	0.00	3.24	0.00	0.00	0.00	0.00	230.00	0.00	230.00	47.60	47.60	43.84	43.40	0.00	0.00
CP-S2	0.00	0.00	0.00	0.00	4.07	0.00	0.00	0.00	0.00	233.00	0.00	233.00	43.20	43.20	41.15	41.00	0.00	0.00
CP-SN	0.00	0.00	0.00	0.00	4.41	0.00	0.00	0.00	0.00	242.00	0.00	242.00		41.25	40.04	38.46	0.00	0.00
CP-N6	0.00	0.00	0.00	0.00	4.65	0.00	0.00	0.00	0.00	248.00		248.00	41.10	41.10	37.58	36.97	0.00	
Outlet					5.68	0.00	0.00					248.00	41.60	41.60	32.56	32.56	0.00	0.00

Appendix VI HEC-I Model

\*

\* U.S. ARMY CORPS OF ENGINEERS \*

\* HYDROLOGIC ENGINEERING CENTER \*

\* 609 SECOND STREET \*

\* DAVIS, CALIFORNIA 95616 \*

\* (916) 756-1104 \*

\*\*\*\*\*\*\*\*\*\*\*

х х		XXXXXXX	XX	XXX		X
Х	Х	X	X	Х		XX
X	Х	X	X			X
XXXXXXX		XXXX	Χ		XXXXX	Х
Х	X	X	Х			Х
X	Х	Χ	X	Х		Х
<b>y y</b>		XXXXXXX	XX	XXX		XXX

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE. THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY, DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE
             ID.....1....2....3....4....5....6....7....8....9....10
             10
                 NORTHSIGHT DRAINAGE MASTER PLAN REVISION
  2
             10
                 GAI# 100-106
  3
             ID
                 FILE = 106TOM.DAT
                 BASIN GE IS OEVELOPEO
             10
  5
             10
                 BASIN I IS OEVELOPEO
             ID
                 100 YEAR 6 HOUR STORM EVENT
  7
             10
                 REVISED OCTOBER 10, 2001 FOR PRICE CLUB DETENTION AND NORHTSIGHT VILLAGE II
                 REVISED NOVEMBER 27, 2001 FOR IPRT OFTENTION
  8
             ΙD
             *DIAGRAM
  9
                                       1000
 10
             10
                     5
             * ******************
             * ******* START INFLOW TO DETENTION BASIN 1 **********
             * ********************
             * ********************
             * ******* NORTHSIGHT AUTOMALL STREETS***********
 11
             KK
 12
            KM
                 RUNOFF FROM NORTHSIGHT AUTOMALL STREET BASIN 1
 13
            ВА
                 .0008
 14
            PH
                         0.72
                                 .74
                                     1.45 / 2.46
                                                     2.73
                                                            2.91
                                                                   3.25
 15
            LS
                           98
 16
            UD
                 .0785
 17
            KK
                  AMS2
 18
                 RUNOFF FROM NORTHSIGHT AUTOMALL STREET BASIN 2
            ΚM
 19
            ВА
                 .0008
 20
            LS
                 .0840
 21
            UD
 22
            ΚK
                  PAM2
 23
            KM
                 COMBINE HYDROGRAPHS AMS1 ANO AMS2
 24
            HC
                    2
 25
            KK
 26
                 RUNOFF FROM NORTHSIGHT AUTOMALL STREET BASIN 5
            KM
 27
            ВА
                 .0004
 28
            LS
                          98
 29
            UD
                  .06
 30
            KK
                 AMS6
                 RUNOFF FROM NORTHSIGHT AUTOMALL STREET BASIN 6
 31
            KM
 32
                 .0003
            ВА
 33
                          98
            LS
            U0
 34
                   .06
```

```
ID......1.....2.....3.....4.....5.....6.....7....8.....9.....10
LINE
 35
              KK
                    PAM6
                   COMBINE HYDROGRAPHS AMS5, AMS6, AND PAM2
 36
              KM
 37
              HC
 38
                    AMS7
              KK
                   RUNOFF FROM NORTHSIGHT AUTOMALL STREET BASIN 7
 39
              KM
 40
              BA
 41
              LS
                              98
 42
              UD
                   .0684
              * ************* LOT 9 NORTHSIGHT AUTOMALL *****
 43
              KK
                    NAM9
 44
              KM
                  RUNOFF FROM LOT 9 NORTHSIGHT AUTOMALL
 45
                   SITE IS CURRENTLY DEVELOPED
 46
                  WAS UNABLE TO OBTAIN DESIGN DRAWINGS
              KM
 47
                  SITE WOULD HAVE BEEN REQUIRED TO COMPLY WITH THE APPROVED
              KM
                   MASTER DRAINAGE PLAN FOR THE NORTHSIGHT AUTOMALL
 48
              KM
 49
                   .0028
              BA
 5D
              LS
                              95
 51
              UD
                     .06
 52
                  DNAM9
              KK
 53
              KM
                  DETENTION FOR LOT 9 NORTHSIGHT AUTOMALL
 54
              KM
                  VOLUME OF DETENTION IS BASED ON THE APPROVED MASTER
 55
              KM
                  DRAINAGE PLAN.
 56
              RS
                      1
                            STOR
 57
                          .2916
              s٧
                      0
 58
              SE
                      0
                              3
 59
              SQ
                      D
                            2.5
              * ************ END LOT 9 NORTHSIGHT AUTOMALL ******
 60
                    PAM7
              KK
 61
              KM
                   COMBINE HYDROGRAPHS AMS7 AND PAM6
 62
              KM
                   AND DNAM9
              HC
                      3
 63
 64
              KK
                   AMS3
 65
              KM
                  RUNOFF FROM NORTHSIGHT AUTOMALL STREET BASIN 3
              ВА
                   .0005
 66
 67
              LS
                             98
 68
              UD
                     .06
              KK
                   AMS4
 69
 70
              KM
                  RUNOFF FROM NORTHSIGHT AUTOMALL STREET BASIN 4
 71
              ВА
                   .0002
                             98
 72
              LS
 73
              UD
                     .06
              * ************ LOT 7 NORTHSIGHT AUTOMALL *****
```

```
10.....1....2.....3.....4.....5.....6.....7....8......9.....10
LINE
 74
              KK
                   NAM7
 75
                  RUNOFF FROM LOT 7 NORTHSIGHT AUTOMALL
              KM
 76
              KM
                  SITE IS CURRENTLY OEVELOPED WITH THE VAN CHEVROLET
 77
                  AUTO CEALERSHIP. WAS UNABLE TO OBTAIN CESIGN CRAWINGS
              KM
 78
              KM
                  SITE WOULD HAVE BEEN REQUIRED TO COMPLY WITH THE APPROVED
 79
                  MASTER DRAINAGE PLAN FOR THE NORTHSIGHT AUTOMALL
             KM
 80
             BA
                    .01
 81
             LS
                             95
             UD
                  .0626
 82
 83
                  ONAM7
             KK
 84
             KM
                  OETENTION FOR LOT 7 NORTHSIGHT AUTOMALL
 85
                  VOLUME AND DISCHARGE ARE BASED ON THE APPROVED MASTER
             KM
 86
             KM
                 DRAINAGE PLAN
 87
                      1 STOR
             RS
                                     0
 88
                      0 1.0101
             SV
 89
             SE
                      0
                             3
 90
             SQ
                      0
                           6.6
                   91
             KK
                   PAM3
 92
             KM
                  COMBINE HYDROGRAPHS AMS3, AMS4, AND NAM7
 93
             HC
             * *********** LOT 8 NORTHSIGHT AUTOMALL *****
 94
             KK
                   NAM8
 95
             KM
                 RUNOFF FROM LOT 8 NORTHSIGHT AUTOMALL
 96
             KM
                 SITE IS CURRENTLY DEVELOPED WITH THE LOU GRUBB FORD
 97
                 AUTO DEALERSHIP. WAS UNABLE TO OBTAIN DESIGN DRAWINGS
             KM
 98
             KM
                 SITE WOULD HAVE BEEN REQUIRED TO COMPLY WITH THE APPROVED
 99
             KM
                  MASTER DRAINAGE PLAN FOR THE NORTHSIGHT AUTOMALL
100
             ВА
                  .0089
101
             LS
                            95
             UD
                  .0638
102
103
             ΚK
                 ONAM8
104
             KM
                 DETENTION FOR LOT 8 NORTHSIGHT AUTOMALL
105
             KM
                 VOLUME AND DISCHARGE ARE BASED ON THE APPROVED MASTER
                 DRAINAGE PLAN
106
             KM
                     1 STOR
107
             RS
                                     0
108
             S۷
                      0 1.1134
109
             SE
                     0
                             3
             SQ
110
                      0
             * ********** END LOT 8 NORTHSIGHT AUTOMALL *****
111
             KK
                 PNAM8
             KM
                 COMBINE HYOROGRAPHS S8 AND PAM3
112
113
             HC
                     2
```

```
ID.....1....2.....3....4.....5.....6.....7....8......9.....10
LINE
 114
                  CPAM1
              KK
                   COMBINE HYDROGRAPHS PAM7 AND PNAM8
 115
              KM
 116
              HC
              * ********* SATURN OF SCOTTSDALE ********
 117
                   STURN
 118
              KM
                   RUNOFF FROM SATURN AUTO
 119
                   LAG TIME IS A WEIGHTED AVERAGE OF BASINS FLOWING TO DETENTION
              KM
 12D
              ВА
                   .0049
 121
              LS
 122
              UD
                     .06
123
                   DSATR
              KK
 124
                   ROUTE SATURN THROUGH COMBINED DETENTION
              KM
                   OUTLET IS 6" DIAMETER PIPE
 125
              KM
 126
              RS
                           STOR
 127
              sv
                       0
                           .6645
128
              SE
                     6.2
                            7.2
129
              SQ
                       0
                             1.7
              * ********** END SATURN OF SCOTTSDALE *******
130
              KK
                   AMS8
131
              KM
                   RUNOFF FROM NORTHSIGHT AUTOMALL STREET BASIN 8
                   .0004
132
              ВА
133
              LS
                             98
134
              UD
                   .064D
135
              KK
                   AMS9
136
              KM
                   RUNOFF FROM NORTHSIGHT AUTOMALL STREET BASIN 9
137
              BA
                   .0005
138
              LS
                             98
139
              UD
                   .0619
140
              KK
                   PAM9
141
              KM
                  COMBINE HYDROGRAPHS DSATR, CPAM1, AMS8 AND AMS9
              HC
142
143
              KK
                  RPAM9
                  ROUTE HYDROGRAPH PAM9 TO TO CONCENTRATION POINT AT
              KM
144
145
              KM
                  HACIENDA HARLEY-DAVIDSON
146
              RD
                    395 .0033
                                   .013
                                                   CIRC
                                                           2.5
              * *********** HACIENDA HARLEY-DAVIDSON *******
147
              KK
                  RUNOFF FROM HACIENDA HARLEY-DAVIDSON
148
              KM
                  SITE MODELED AS A SINGLE BASIN, MODEL BASED ON DRAINAGE
             KM
149
                  REPORT AS PLANS ARE NOT AVAILABLE
15D
             KM
151
             ВА
                  .0050
152
             LS
                             92
```

```
LINE
            ID......1.....2.....3......4.....5.....6......7.....8......9.....1D
153
            UD
                  .06
154
                DHRLD
            KK
155
            KM
                ROUTE HRLD THROUGH DETENTIO DHRLD
156
            KM
                OUTLET DISCHARGE FROM CALCULATION IN FINAL DERAINAGE REPORT
157
            RS
                        STOR
                                 0
158
            SV
                       .6019
                    n
159
                    0
            SE
                          3
160
            SQ
                    0
                          1
            161
            KK
162
            KM
                RUNOFF FROM BREAK MASTERS
163
            BA
                .0009
164
            LS
                         93
165
            UD
                  .06
166
            KK
                DBRM
167
            KM
                ROUTE BREAKMASTERS RUNOFF THROUGH DETENTION BASIN
168
            KM
                DISCHARGE VIA 8" PIPE PER SITE VISIT
169
            KM
                STORAGE VOLUME IS A COMBINATION OF ALL ON-SITE
170
            KM
                STORAGE BASINS
171
            RS
                                 0
                   1
                       STOR
                       .0929
172
            SV
                   0
173
            SE
                 0.7
                        3.7
174
                   0
                          3
            * ****************** END BREAK MASTERS *****************
            * ******* PARCEL 1 LOT 3 NORTHSIGHT AUTOMALL *******
175
                PCL1
            KK
               RUNOFF FROM UNDEVELOPED LAND (PARCEL 1 LOT 3 NORTHSIGHT AUTOMALL)
176
            KM
                .001D
177
           BA
178
           LS
                         77
179
           UD
                 .06
            180
           KK
               PHRLD
181
           KM
               COMBINE HYDROGRAPHS DHRLD AND RPAM9
182
           KM
                AND BRM AND PCL1
183
           HC
                   4
           * *********** BUDGET AUTO SALES ***********
           * HYDROLOGY DERIVED FROM FINAL DRAINAGE REPORT FOR BUDGET AUTO SALES
            * BY GILBERTSON ASSOCIATES, INC. DATED MAY 5, 1999 GAI - 66301
           * TIME OF CONCENTRATION CHANGED TO A MINIMUM OF 0.06 HOURS
```

```
LINE
              ID......1.....2.....3.....4.....5.....6.....7.....8.....9......10
 184
                       2
              ΚK
 185
              KM
                   RUNOFF FROM BASIN 2 (BUDGET AUTO SALES)
 186
              ВА
                   .0018
 187
              LS
                              95
 188
              UD
                     .06
189
              KK
                   DPARK
19D
              KM
                   PARKING LOT STORAGE BASIN 2 (BUDGET AUTO SALES)
191
              RS
                            STOR
                       1
                                      0
192
                       0
                           .2662
              SA
193
              SE
                      92
                           92.76
194
              SQ
                       0
                               2
195
              ST
                   92.76
                              20
                                      3
                                             1.5
196
              KK
                   DBUDG
197
              KM
                   DIVERT FLOW IN EXCESS OF 2 CFS FROM DETENTION BASIN DPARK
198
                   OF BUDGET AUTO SALES DIVERTED FLOW WILL EXIT SITE AND GO
              KM
199
                   TO HAYDEN ROAD
              KM
                   DBUDG
20D
              DT
                                                      5
201
              DΙ
                       0
                               1
                                      2
                                              3
202
              DQ
                       0
                               0
                                      0
                                              1
                                                      3
2D3
              KK
                       4
204
              KM
                   RUNOFF FROM BASIN 4 (BUDGET AUTO SALES)
2D5
              ВА
                   .0007
206
              LS
                              95
207
              UD
                     .06
208
              KK
                   PDET1
209
              KM
                   COMBINE BASIN 2 AND DPARK (BUDGET AUTO SALES)
21D
              HC
211
              KK
                   DET1
212
              KM
                  DETENTION BASIN 1 (BUDGET AUTO SALES)
213
              RS
                    1
                           STOR
214
              SA
                   .1022
                          .1302
215
                   89.7 92.76
              SE
216
              SQ
                      0
                            2.2
              * *** LOT 14 NORTHSIGHT AUTO MALL (EAST PART) BASIN B ****
              * BASIN 14B WILL DISCHARGE INTO BUDGET AUTO SALES
              * DETENTION BASIN 2
217
              KK AM14B
218
              KM
                  RUNOFF FROM BASIN 14B
                  BASIN ASSUMED 100% IMPERVIOUS
219
              KM
                  .0023
220
              ВА
221
              LS
                             98
222
              UD
                     .06
```

```
LINE
            ID.....1....2.....3.....4.....5.....6.....7....8......9.....10
223
            KK
                D14B
224
            KM STORAGE REQUIRED PER APPROVED MASTER PLAN (10,500 CU. FT.)
225
            KM
                MASTER PLAN APPROVED BY BILL ERICKSON OF THE
226
            KM
               CITY OF SCOTTSDALE ON 8/20/87
227
            KM DISCHARGE LIMITED TO 1.7 CFS BY APPROVED MASTER PLAN
228
            RS
                    1 STOR
229
            sv
                    0 .24105
230
            SE
                    0
                         3
                    0
                        1.7
            * ******* END LOT 14 BASIN B (EAST PART) ********
232
            KK
233
            KM
                RUNOFF FROM BASIN 1 (BUDGET AUTO SALES)
234
            ВА
                .0008
235
            LS
                          95
236
            UD
                  .06
237
            KK
238
            KM
                RUNOFF FROM BASIN 3 (BUDGET AUTO SALES)
239
            BA
                .0008
240
            LS
                          95
241
            UD
                  .06
242
               PDET2
            KK
243
            KM
                COMBINE BASIN 1 AND 3 OF BUDGET AUTO SALES
244
            KM
                AND BASIN 14B FROM LOT 14 OF NORTHSIGHT AUTO MALL
245
            HC
246
            KK
                DET2
247
            KM
               DETENTION BASIN 2 (BUDGET AUTO SALES)
                       STOR
248
            RS
                 1
249
            SA
                .0235
                       .0813
                              .0813
            SE
               90.1
250
                       93.1 93.44
251
            SQ
                        2.2
                  0
                               2.7
            252
            KK PBUDG
253
            KM COMBINE HYDROGRAPHAS DET1 AND DET2 FROM BUDGET AUTO SALES
254
            KM
              AND CONCENTRATION POINT PHRLD
255
            * ******* END NORTHSIGHT AUTOMALL STREETS*********
            * ********** SATURN OF SCOTTSDALE ********
256
            KK
                  S8
257
            KM
              RUNOFF FROM BASIN S8 OF SATURN BASIN DISCHARGES TO HAYDEN RD.
258
               .0003
            BA
259
            LS
260
            UD
                 .06
```

```
iD......1.....2......3......4......5......6......7......8......9......1D
LINE
              KK
                     HY1
 261
                   RUNOFF FROM EAST SIDE OF HAYDEN ROAD AND FRANK LLOYD WRIGHT BLVD.
 262
              KM
                   BASIN TERMINATES AT BUDGET AUTO SALES CATCH BASIN
 263
              KM
 264
              ВА
                    .0072
 265
                               95
              LS
 266
              UD
                    .1668
 267
              ΚK
                    PHY1
 268
              KM
                   COMBINE HYDROGRAPHS S8 AND HY1
 269
                   BASIN S8 IS A BASIN ON SATURN OF SCOTTSDALE THAT DISCHARGES TO
              KM
 270
              KM
                   HAYDEN ROAD
 271
              HC
                       2
              *
272
              KK
                   DPHY1
                   DIVERT FLOW BYPASSING THE CATCH BASIN AT BUDGET AUTO SALES
273
              KM
274
              DT
275
                                                      15
                                                              25
                                                                      5D
              DΙ
                       0
                               7
                                       8
                                               10
              DQ
                       0
                                       1
                                               3
                                                       8
                                                              18
                                                                      43
276
                               D
277
              KK
                     HY2
278
                   RUNOFF FROM EAST SIDE OF HAYDEN ROAD BETWEEN FRANK LLOYD WRIGHT
              KM
279
              KM
                   AND SUN PONTIAC CATCH BASIN
                   .0039
280
              BA
281
              LS
                              95
282
              UD
                   .1078
283
              KK
                   DPHY2
284
              KM
                   DIVERT FLOW BYPASSING THE CATCH BASIN AT SUN PONTIAC
285.
              DT
                   DPHY2
                                                                      50
286
              DΙ
                       D
                                              10
                                                      15
                                                              25
                               6
                                       7
                       0
                                                       9
                                                              19
                                                                      44
287
              DQ
                               D
                                       1
288
              KK
                    PHY2
289
              KM
                   COMBINE HYDROGRAPHS PBUDG, AND UNDIVERTED FLOW FROM PHY1 AND HY2
290
              HC
                       3
291
              KK
                   RPHY2
292
              KM
                   ROUTE HYDROGRAPH PHY2 THROUGH STORM SEWER AT SUN PONTIAC
293
              RD
                          .0D66
                                  .013
                                                    CIRC
                                                               3
              * ************ 84TH STREET CATCH BASINS *********
                     W84
294
              ΚK
295
              KM
                   RUNOFF FROM WEST SIDE OF 84TH STREET
296
              ВА
                   .0011
297
              LS
                              98
              UD
                   .0809
298
```

```
ID.....1....2.....3.....4.....5.....6.....7....8......9.....1D
LINE
299
                   DW84
             KK
300
             KM
                  DIVERT FLOW BYPASSING THE WEST 84TH STREET CATCH BASIN
301
             DT
                   DW84
                                                   5
302
             DΙ
                      0
                             2
                                    3
                                            4
                                                          6
                                                   3
303
             DQ
                      0
                                            2
                                                          4
304
                   E84
             KK
305
             KM
                  RUNOFF FROM EAST SIDE OF 84TH STREET
306
                  .0014
             BA
307
             LS
                            98
3D8
             UD
                  .0919
309
             KK
                   DE84
31D
             KM
                 DIVERT FLOW BYPASSING THE WEST 84TH STREET CATCH BASIN
311
                  DE84
             DT
312
             DΙ
                     0
                                           4
                                                   5
                                                          6
313
             DQ
                     0
                                           2
                                                   3
                                    1
             * ********* END 84TH STREET CATCH BASINS *********
314
             ΚK
                   UD1
315
                 RUNOFF FROM UNDEVELOP LOT ADJACENT TO U-HAUL ON THE
             KM
316
             KM
                 NORTHEAST CORNER OF HAYDEN ROAD AND 84TH STREET
317
             BA
                 .0014
318
             LS
                            77
319
             UD
                    .06
               ************************
320
             KK
321
             KM
                  COMBINE HYDROGRAPHS RPHY2, UD1 AND UNDIVERTED FLOWS FROM 84TH STREET
             HC
322
             * *********** AIR PARK HOLDINGS ***********
             * *********** P K ELECTRONICS **********
323
             KK
                PKELT
324
                RUNOFF FROM P K ELECTRONICS
             KM
325
             BA
                 .0075
             LS
                            95
326
             UD
                   .06
327
328
             KK
                 DPKET
329
             KM
                 DETENTION ON P K ELECTRONICS
                 RUNOFF UP TO 3.4'OR VOLUME TO 0.885D ACR*FT IS FOR RETENTION
330
             KM
                 AREA, REMAINDER OF DETENTION OUTLETS TO PK ELECTRONICS SITE
331
             KM
332
             RS
                     1
                          STOR
333
             sv
                     0
                        .8850 1.0285
                          3.4
                                  3.5
334
             SE
                     0
335
             SQ
                     0
                                  1.7
             * ************* END P K ELECTRONICS ***********
             * ****** NORTHWEST CORNER OF 83RD WAY AND 84TH STREET ***
```

```
ID......1.....2......3.....4......5.....6......7.....8.....9.....10
LINE
 336
               KK
                      AH1
 337
               KM
                    RUNOFF FROM BASIN AH1
 338
               ВА
                    .0007
 339
               LS
                               95
 34D
               UD
                      .06
 341
               KK
                     DAH1
 342
               KM
                    ROUTE BASIN AH1 THROUGH DETENTION DAH1
 343
                    UNDERGROUND STORAGE TANK COLLECTS ROOF WITH INLETS IN LANDSCAPE
               KM
 344
                    AREA. OVERFLOW WILL GO TO DRAIANGE AREA 4
               KM
 345
               RS
                        1
                             STOR
                                        0
 346
               S۷
                        0
                            .1269
347
               SE
                        0
348
               SQ
                        0
                            .0001
 349
               ST
                        8
                               50
                                        3
                                              1.5
35D
              KK
                     AH3
                   RUNOFF FROM BASIN AH3
351
              KM
352
              BA
                    .0009
353
              LS
                               93
354
              UD
                      .06
355
              KK
                    DAH3
356
              KM
                    ROUTE BASIN AH3 THROUGH DETENTION DAH3
357
              KM
                    OVERTOP GOES TO BASIN 4
358
              RS
                       1
                             STOR
                                        0
                            .1233
359
                                    .1233
              S۷
                       0
              SE
                    96.5 99.499
                                     99.5
360
361
              SQ
                       D
                               0
                                     .001
362
              ST
                    99.5
                               5
                                        3
                                              1.5
363
              KK
                     AH2
364
              KM
                   RUNOFF FROM BASIN AH2
365
              ВА
                    .0005
366
              LS
                               95
              UD
367
                      .06
368
              KK
                   CPAH2
369
              KM
                   COMBINE OUTFLOW FROM P K ELECTRONICTS AND BASIN AH2
370
              HC
                       2
              *
371
              ΚK
                    DAH2
372
              KM
                   ROUTE BASIN AH2 THROUGH DETENTION DAH2
373
              KM
                   OVERFLOW GOES TO BASIN 4
374
              RS
                             STOR
                                        0
                       1
                       D
                           .D028
375
              S۷
376
              SE
                   99.25
                             99.5
377
              SQ
                       0
                               2
```



PRELIMINARY DRAINAGE REPORT FOR RAINTREE DRIVE RESIDENTIAL

March 4, 2021 WP# 195063

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#### 1.0 INTRODUCTION

The proposed Raintree Drive Residential project (Site) is an 8.24-acre site located in the southwest quarter of Section 12, Township 3 North, Range 4 East of the Gila and Salt River Meridian. More specifically, the Site is located at the south west corner of 87<sup>th</sup> Street and Raintree Drive in Scottsdale, Arizona. Refer to Exhibit 1 – *Vicinity Map* at the back of this report for project location. The project is located west of a private drive and includes a 5-story multi-family residential building and associated landscaping and hardscape. The Site is located within the previously approved Northsight Commercial Development.

This Preliminary Drainage Report has been prepared in accordance with Wood, Patel & Associates, Inc.'s (WOODPATEL's) understanding of the City of Scottsdale's technical drainage requirements and the Drainage Design Manuals for Maricopa County Hydrology and Hydraulics (2013), as applicable to Raintree Drive Residential, and is intended to support the Design Review Board (DRB) submittal for the project.

Prior to this Report the Master Drainage Report for Northsight Commercial Development and Final Drainage Report for Liberty Property Trust for Vanguard were completed by the Master Developer and submitted to the City of Scottdale for review. The Site is located within the study area of this Report. This Report is intended to conform to the findings and calculations as provided in that report.

#### 2.0 EXISTING DRIANAGE CONDITIONS AND CHARACTERISTICS

## 2.1 Offsite Hydrology (Pre-Development)

No offsite drainage is anticipated to impact the Raintree Office Development. The adjacent roadways all have existing storm drain infrastructure, and have been designed to retain the 100-year storm event. In addition, according to the Master Drainage Report by Gilbertson Associates Inc., most of the offsite runoff is intercepted by the CAP (Central Arizona Project) which is located approximately one mile north of the proposed Site. The area between the CAP and the Site is mostly developed, with existing stormwater retention onsite or conveyed to the Northsight Park regional retention basin by storm drain or street flow (refer to Appendix C – Master Drainage Report for Northsight Commercial Development, and Appendix D – Final Drainage Report for Liberty Property Trust for Vanguard).

### 2.2 Onsite Hydrology

The Site is currently part of a master planned development and includes a private drive with existing storm drain and catch basins (refer to Exhibit 2 – *Aerial Drainage Map*). There is an existing temporary retention basin located on the south side of the Site that accepts runoff. This retention basin is to be removed and the water rerouted as discussed below. The topography of the Site generally slopes from the northeast to the southwest from an approximate high elevation of 1464 to an approximate low elevation of 1458 at an approximate slope of 1.6% (Refer to Exhibit 3 – *Existing Drainage Map*).

## 2.3 FEMA Regulated Flood Zones

The Federal Emergency Management Agency (FEMA) has published a 100-year floodplain, per Flood Insurance Rate Map (FIRM). The City of Scottsdale FEMA Firm panel number is 04013C1760L, effective date October 16, 2013, and indicates the site falls within Zone "X" (refer to Exhibit 3 – *FEMA FIRM Map*).

Zone "X" is defined by FEMA as follows:

"0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flow with average depth less than one foot or with drainage areas of less than one square mile".

#### 3.0 PROPOSED DRAINAGE PLAN

### 3.1 Onsite Drainage Conditions (Post Development)

The Site currently contains four (4) retention basins for Phases 1 and 3. Basin C will not be disturbed or have additional stormwater sent to it. Additional runoff will be distributed to existing retention basins A and B, which have been designed with excess capacity (See *Drainage Exhibit A* in Appendix D - *Final Drainage Report for Liberty Property Trust for Vanguard*). Basin D will be regraded per proposed Site improvements. It will be split into two (2) separate surface basins connected via an equalizer pipe. Overall volume of Basin D will be increased in the proposed condition. All basins will still have adequate storage to capture and detain the post-construction condition.

All runoff for the Site will flow away from the buildings towards proposed conveyance structures that will ultimately outfall into existing or proposed retention basins. The drainage map for the Site is depicted in the attached Exhibit 4 – *Proposed Drainage Map*.

Drainage areas 1, 2A, & 3A as shown in *Drainage Exhibit A* from the *Final Drainage Report for Liberty Property Trust for Vanguard*, will not be disturbed. Area 2B is currently retained in a temporary retention basin. The proposed improvements will remove the temporary retention basin and grade to drain to basin A as proposed in the *Final Drainage Report for Liberty Property Trust for Vanguard* by DEI. 3B and 4 are to be split into smaller tributary areas to better align with the proposed development. The new proposed drainage areas will include 2C-2J, 3B, 3C and 4. Drainage areas 2C-2J will be directed to the existing storm drain system within the private drive, where they will outlet into existing Basin B. Drainage areas 3B, 3C, and 4 will be routed to Basin D via sheet flow, storm drain, or internal roof drain collection.

Onsite peak flow estimates for the proposed development were generated using the Rational Method, as outlined in the *Drainage Design Manual for Maricopa County, Arizona: Volume I – Hydrology* (Ref. 2). NOAA Atlas 14 precipitation data was obtained and utilized to develop Intensity-Duration-Frequency (I-D-F) curves for the Site. Rational Method peak flows were computed at concentration points within the Site at key design locations. Runoff coefficients were estimated to reflect post-development land use conditions for the 10-year and 100-year events (Refer to Appendix A – *Hydrology*).

# 3.2 Retention and Dissipation

A system of stormwater retention basins has already been developed throughout the Site to handle stormwater flows. The drainage *Design Manual for Maricopa County Volume I Hydrology* and *Design Standards and Policies Manual for the City of Scottsdale* are referenced for stormwater guidelines and requirements. The onsite stormwater storage facilities are retention basins designed to store the difference between the post-development discharges and pre-development discharge per the Final Drainage Report for Liberty Property Trust for Vanguard prepared by DEI Professional Services, L.L.C dated June 8, 2005. The 100-year precipitation depth utilized in previous reports was 2.82 inches. Per the *City of Scottsdale 2018 Design Standards and Policies Manual*, the current 100-year precipitation depth is 2.30 inches. The Site's existing hydrologic soil group, "B", correlates with an existing condition

runoff coefficient of 0.31. Using a post-development C coefficient of 0.90, the difference in the post-development and pre-development runoff coefficients is equal to 0.59.

The existing and proposed basins appear to have sufficient storage to retain additional runoff that occurs as a result of the proposed development conditions. (See calculations in Exhibit A – *Hydrology*)

#### 3.3 Outfall and Lowest Floor Elevation

Retention basins A and C, which are downstream outfalls for basins B and D, will drain through 18-inch bleed-off pipes located near the western property line and will ultimately outfall to the City of Scottsdale's Public storm drain system located in Northsight Boulevard through a shared 18-inch bleed-off pipe.

The surface drainage outfall for the Site is located at the southeast corner of the Site at a top of curb elevation of 58.58.

The finished floor elevation has been designed to be free from inundation during a 100-year, 2-hour storm event. The proposed building has been set with a finished floor elevation of 1462.00, approximately 3.5 feet above the Site outfall. The lowest finished floor is for a refuse area at the southeast corner of the Site and has been set to a floor elevation of 1459.50, approximately 1-foot above the Site outfall.

### 3.4 Operation and Maintenance

Ongoing maintenance of the designed or recommended drainage systems is required to preserve the design integrity and purpose of the drainage system. Failure to provide maintenance can prevent the drainage system from performing to its intended design purpose and can result in reduced performance. Maintenance within the public right-of-way is the responsibility of the governing municipality. However, it is the responsibility of land owners (such as private developers or property owners' associations) for facilities on private property within drainage easements, including private streets. Prior to ultimate condition build-out upstream of drainage structures, additional maintenance may be required due to an increase in sedimentation build-up. A regular maintenance program is required to have drainage systems perform to the level of protection or service, as presented in this report and the projects' plans and specifications.

For this Report, storm drain rim and invert information is provided on Exhibit 5 – *Grading and Drainage Plan.* Hydraulic analysis of the proposed storm drain will be forthcoming in the case that the City approves the drainage concepts as detailed in this Report. The onsite storm drain system will be designed to accommodate the 100-year storm event. Bentley StormCAD Version 5.6 will be utilized to analyze the proposed storm sewer system. StormCAD printouts and storm drain profiles will be available. The maximum ponding depth of any area drain is 0.25 feet.

## 4.0 SPECIAL CONDITIONS

Currently, there are no washes with 100-year flows greater than 50 cfs that traverse the project site. Also, there are no designated Section 404 washes within the site; therefore, no Section 404 permit is required.

#### 5.0 CONCLUSIONS

Based on our analysis of the Site, the following conclusions can be made:

- 1. This Preliminary Drainage Report has been prepared in accordance with Wood, Patel & Associates, Inc.'s (WOODPATEL's) understanding of the City of Scottsdale's technical drainage requirements and the Drainage Design Manuals for Maricopa County Hydrology and Hydraulics (2013), as applicable to Raintree Drive Residential, and is intended to support the Design Review Board (DRB) submittal for the project.
- 2. The proposed improvements lie within a FEMA designated "Zone X" shaded.
- 3. The proposed improvements have been shown to conform to the proposed drainage concepts as provided for the overall master development.
- 4. All stormwater retention will be provided by four (4) surface retention basins located within the master development.
- 5. Stormwater runoff will ultimately outfall to the City of Scottsdale's Public storm drain system located in Northsight Boulevard.
- 6. Finished floor elevations have been designed to be free from inundation during a 100-year, 2-hour storm event.
- 7. Ongoing maintenance is required for all drainage systems in order to assure design performance. Maintenance is the responsibility of the private parties involved.

## 6.0 REFERENCES

- Drainage Design Manual for Maricopa County, Arizona; Volume I-Hydrology, Flood Control District of Maricopa County, August 15, 2013.
- Drainage Design Manual for Maricopa County, Arizona; Volume II- Hydraulics, Flood Control District of Maricopa County, August 15, 2013.
- 3. Flood Insurance Rate Map, Maricopa County, Arizona, and Incorporated Areas Panel 1760, Federal Emergency Management Agency, Effective October 16, 2013.
- 4. Design Standards and Policies Manual, City of Scottsdale, January 2018.

APPENDIX A – HYDROLOGY

```
ID......1.....2......3......4......5......6......7......8.......9......10
LINE
                   99.5
                            50
                                   3
                                         1.5
             ST
378
379
              KK
                    AH4
             KM RUNOFF FROM BASIN AH4
380
381
             ВА
                 .0007
382
             LS
                             92
383
             U0
                    .06
              * ************* NORTH 84TH STREET INLET ***********
384
             KK
                   AH84
385
             KM
                  RUNOFF FROM 84TH STREET COLLECTED BY CATCHBASIN AT THE
386
             KM
                 AIRPARK HOLDINGS SITE ON THE NW CORNER OF 84TH ST AND
387
             KM
                 83RD WAY
388
             BA
                 .0003
389
             LS
                            98
390
             UD
                    .06
             * ********** END NORTH 84TH STREET INLET **********
391
             KK
                   CPAH
                  COMBINE HYDROGRAPHS FROM AIRPARK HOLDINGS AND 84TH ST.
392
             KM
393
             HC
                      5
394
             KK
                  DAH4
395
             KM
                 ROUTE BASIN AH4 THROUGH DETENTION DAH4
396
             KM
                  OVERTOP GOES TO OUTLET
                         STOR
397
             RS
                     1
                                 n
398
             SV
                      0 .1146
                                 .1146
                   97.5 99.499
399
             SE
                                  99.5
400
             SQ
                      0
                            0
                                  .001
                                   3
401
             ST
                   99.5
                            10
                                          1.5
             * *********** FRANK LLOYO WRIGHT BLVD.********
402
             KK
                    FLW
403
                 RUNOFF FROM FRANK LLOYD WRIGHT BLVO. RUNOFF WILL ENTER
             KM
404
             KM
                 AT LOT 10 OF NORTHSIGHT AUTOMALL. LOT 10 IS PART OF THE
405
             KM
                 FORMER LARRY MILLER TOYOTA SITE.
                 .0069
406
             ВА
407
             LS
                            95
408
             UO
                 .3190
             * ********** END FRANK LLOYD WRIGHT BLVD.********
             * ********** FORMER LARRY MILLER TOYOTA **********
             * LARRY MILLER TOYOTA WAS NOT CONSTRUCTED. MODEL BASEO ON
             * LOTS 10 AND PART OF LOT 11 OF THE SCOTTSDALE AUTOMALL
             * STORAGE AND PEAK DISCHARGE FROM THE APPROVED MASTER
             * ORAINAGE PLAN FOR THE NORTHSIGHT AUTOMALL
             KK L1011
409
                 RUNOFF FROM LOT 10 AND PART OF LOT 11
410
             KM
411
             KM
                 FORMER LARRY MILLER TOYOTA SITE
412
             KM CURVE NUMBER BASED ON LANGSCAPING FOR LARRY MILLER TOYOTA SITE
413
             BA
                 .0166
414
             LS
                            95
```

```
ID......1.....2.....3.....4.....5.....6......7.....8......9.....10
LINE
 415
              UD
                     .D6
 416
              KK
                   D1011
 417
              KM
                   COMBINE DETENTION FOR LOTS 10 AND 11 OF THE NORTHSIGHT
418
              KM
                   AUTOMALL FOR LOT 10 AND PART OF LOT 11
                  DISCHARGE IS BASED ON THE LIMITS REQUIRED BY THE APPROVED
419
              KM
                   MASTER DRAINAGE PLAN FOR THE NORTHSIGHT AUTOMALL
 420
              KM
421
              KM
                  ***** NOTE: RESULTS SHOW THIS BASIN OVERTOPS.
                   ***** AS OVERFLOW WILL CONSERVATIVELY EVALUATE SYSTEM
422
              KM
423
                   ***** MASTER PLAN REQUIRMENTS WILL NOT BE MODIFIED
              KM
424
                           STOR
                                      0
              RS
                      0 1.1354
425
              S٧
426
              SE
                      0
427
              SQ
                      0
                            7.5
              * ********* END FORMER LARRY MILLER TOYOTA ********
428
              KK
                   PLGU
429
              KM
                   COMBINE HYDROGRAPHS D1011 AND FLW
430
              HC
              * ********** LOU GRUB USED FORD **********
431
              KK
                    LGU
432
              KM
                   RUNOFF FROM LOU GRUBB USED FORD
433
                  LAG TIME IS A WEIGHTED AVERAGE FOR ALL SUB-AREAS
              KM
434
              KM
                  WITHIN THE LOU GRUBB USED FORD
435
              ВА
                  .0101
436
              LS
                             95
              UD
                    .06
437
              438
              ΚK
                  CPLGU
                  COMBINE HYDROGRAPHS PLGU AND D1011
439
              KM
                  COMBINATION IS DUE TO AN 18" DIAMETER PIPE INSTALLED IN THE
440
              KM
                  LOU GRUB USED FORD SITE. THE 18 INCH PIPE IS A CHOAK POINT
441
              KM
                  FOR THE COMBINED OUTFLOW FROM THESE THREE SITES
442
              KM
443
              HC
                      2
              ΚK
                   DLGU
444
445
              KM
                  DISCHARGE IS BASED ON MAXIMUM POSSIBLE DISCHARGE FROM THE
446
              KM
                   18" DIAMETER PIPE INSTALLED IN THE LOU GRUBB USED FORD
              KM
                  DISCHARGE FROM LOU GRUBB IS CONVEYED THROUGH A 24" DIAMETER
447
                  PIPE IN THE VAN COLLISION SITE.
448
              KM
              KM
                  **** NOTE: RESULTS SHOW THIS BASIN OVERTOPS.
449
450
              KM
                   ***** AS OVERFLOW WILL CONSERVATIVELY EVALUATE SYSTEM
              KM
                   **** MASTER PLAN REQUIRMENTS WILL NOT BE MODIFIED
451
452
              RS
                      1
                           STOR
                                      0
453
              S۷
                      0
                           .7237
454
              SE
                   2.14
                          12.88
              SQ
                      0
455
                             28
              * *********** VAN COLLISION ***********
              * HEC1 MODEL FOR VAN COLLISION FROM FINAL HYDROLOGY
              * GAI JOB NUMBER 583D4
```

```
ID......1.....2......3.....4......5......6......7.....8......9.....10
LINE
 456
              ΚK
                       1
 457
                   RUNOFF FROM BASIN 1
              KM
 458
              ВА
                   .0028
 459
              LS
                              95
 460
              UD
                     .06
 461
                    DET1
              KK
 462
              KM
                   ROUT RUNOFF FROM BASIN 1 THROUGH DETENTION BASIN DET1
 463
              RS
                     1
                          STOR
                          .1081
 464
              SA
                    .055
 465
              SE
                   498.3 501.43
 466
              SQ
                      0
                              3
 467
              KK
                   DET2
                   ROUT RUNOFF FROM DET1 THROUGH DETENTION BASIN DET2
 468
              KM
 469
              RS
                      1
                           STOR
470
                   .0278
                          .0644
              SA
471
                   496.5 499.5
              SE
                               2
472
              SQ
                     0
473
              KK
                       2
474
              KM
                   RUNOFF FROM BASIN 2
475
              ВА
                   .0019
476
              LS
                              95
              UD
477
                     .06
              *
478
                   PAV2
              KK
                   ROUTE RUNOFF FROM BASIN 2 THROUGH PAVEMENT DETENTION BASIN PAV2
479
              KM
480
              RS
                      1
                           STOR
481
                      0
                          .2512
              SA
482
              SE
                    499 499.56
483
              SQ
                      0
484
              KK
                      3
485
              KM
                   RUNOFF FROM BASIN 3
486
              ВА
                   .0018
487
              LS
                              95
488
              UD
                    .06
489
              KK
                   PAV3
                   ROUTE RUNOFF FROM BASIN 3 THROUGH PAVEMENT DETENTION BASIN PAV3
490
              KM
491
              RS
                      1
                           STOR
                                      0
492
              SA
                      0
                           .2143
493
              SE
                    500 500.59
              SQ
                      0
494
```

```
LINE
              ID......1.....2.....3.....4.....5.....6.....7.....8.....9.....1D
495
              KK
                   CPUG
496
              KM
                   COMBINE PAV2 AND PAV3 IN UNDERGROUND STORAGE
497
              RS
                      1
                           STDR
                                      0
498
              SV
                      0
                           .277D
499
              SE
                      D
                              R
500
              SQ
                      0
                              1
              * ******** END VAN COLLISION ************
501
              KK
502
              KM
                  COMBINE OUTFLOW FROM DET2 AND PUMPED UNDERGROUNF STDRAGE
5D3
              KM
                  FROM VAN CHEVROLET AND OUTFLOW OF DLGU
504
              HC
5D5
             KK
                   AHL5
506
              KM
                  RUNOFF FROM AIR PARK HOLDINGS LOT 5
507
             KM
                  SITE IS CURRENTLY DEVELOPED WITH A STRUCTURE AND ASSOCIATED
508
             KM
                  PARKING. AS IMPROVEMENT PLANS ARE NOT AVAILABLE SITE IS MODELED
509
             KM
                  UNDER EXISTING CONDITIONS AS A WDRST CASE.
                  .0025
510
             BA
             LS
                             77
511
512
             UD
                    .06
513
             KK
                 PAHL5
514
                  COMBINE HYDROGRAPH CVAN AND AHL5
             KΜ
515
             * ******************* DAL TILE **********
             * ************* SUN AIRPARK CORP. CTR. 2*******
             * INFORMATION DREIVED FROM GRADING AND DRAINAGE PLAN FDR LDT 6
             * 1555D N. 84TH STREET BY SCOTTSDALE ENGINEERING ASSOCIATES, INC.
             * DATED OCTOBER 27, 1999
516
             KK
                    DAL
517
             ΚM
                  RUNOFF FROM DAL TILE LOT6, SUN AIRPARK CORP. CTR. 2
518
             KM
                  SITE ASSUMED TO BE IMPERVIOUS
519
             BA
                  .0029
             LS
52D
                      D
                             98
                  .1004
             UD
521
522
             KK
                  D DAL
523
             KM
                 DAL TILE RETENTION BASIN note: SITE MODELED AS SINGLE
524
             KM
                  DRAINAGE AREA WITH SINGLE RETENTION BASIN
525
             RS
                      1
                           STOR
                                     0
526
             s٧
                      0
                          .4534
             SE
                     91
527
                             94
             SQ
                          0.001
528
                     0
             ST
                                           1.5
529
                     94
                             20
                                     3
530
             KK
                   PDAL
531
             KM
                 COMBINE HYDROGRAPH PAHL5 AND D_DAL
532
             HC
                      2
```

```
ID......1.....2......3.....4......5.....6......7.....8......9.....10
LINE
 533
              KK
                   RPOAL
              KM
                   ROUTE PDAL THROUGH CHANNEL ALONG 84TH STREET
 534
                             .01
                                     .040
                                                    TRAP
                                                                       4
 535
              RO
                     775
 536
              KK
                    RP84
                   ROUTE CDAL THROUGH CHANNEL ALONG HAYDEN RO
 537
              KM
 538
                     228 .0069
                                    .040
                                                    TRAP
              RO
              * ********** BUICK OF SCOTTSOALE *********
              * HYDROLOGY FROM FINAL ORAINAGE REPORT FOR BUICK OF SCOTTSOALE
              * DATED OCTOBER 14, 1999 BY GILBERTSON ASSOCIATES, INC. GAI 40118
539
              KK
                      11
540
              KM
                   RUNOFF FROM BASIN 11
 541
              BA
                    .0002
 542
                                      .74
                                             1.45
                                                    2.46
                                                            2.73
                                                                    2.91
                                                                            3.25
              РΗ
543
                              95
              LS
544
              UO
                    .0234
545
              KK
                      12
                   RUNOFF FROM BASIN 12
 546
              KM
              ВА
                    .0004
547
548
              LS
                              95
549
              UD
                    .0205
550
              KK
                    CP11
551
              KM
                   COMBINE BASINS 11 AND 12 AT CONCENTRATION POINT CP11
552
              HC
                       2
553
              KK
554
              KM
                   RUNOFF FROM BASIN 8
555
                    .0003
              ВА
556
              LS
                              95
557
              UD
                    .0282
558
              KK
                   COMBINE BASINS 8 AND CP11 AT CONCENTRATION POINT CP8
559
              KM
560
              HC
                       2
                       5 .
561
              ΚK
                   RUNOFF FROM BASIN 5
562
              KM
                   .0013
563
              ВА
564
              LS
                              95
565
              UD
                   .0428
566
              KK
                      6
567
              KM
                   RUNOFF FROM BASIN 6
568
              ВА
                    .0004
                              95
569
              LS
570
              UO
                    .0233
```

```
ID.....1....2....3....4....5....6....7....8....9....10
LINE
 571
              KK
                      CP5
                   COMBINE BASINS 5 AND 6 AT CONCENTRATION POINT CP5
 572
              KM
 573
              HC
                       2
 574
              KK
                       2
 575
              KM
                   RUNOFF FROM BASIN 2
 576
              BA
                   .0019
              LS
 577
                              95
              UD
                    .0591
578
579
              KK
                    DET2
 580
              KM
                           PARKING DETENTION
581
              RS
                       1
                            STOR
                                       0
                   .0002
                                           .57887
582
              SA
                            .0002 .10234
583
              SE
                   85.34
                           88.34
                                   88.84
                                            89.5
584
              SQ
                       0
                               4
                                               4
                                       4
585
              KK
                      10
586
              KM
                   RUNOFF FROM BASIN 10
587
              BA
                   .0001
588
              LS
                              95
589
              UD
                   .0203
590
              KK
                    CP10
591
                   COMBINE BASINS 2 AND 10 AT CONCENTRATION POINT CP10
              KM
592
              HC
                       2
593
              KK
                    . 3
594
              KM
                   RUNOFF FROM BASIN 3
595
              BA
                   .0003
596
              LS
                              95
              UD
597
                   .0239
598
              KK
                       9
599
              KM
                   RUNOFF FROM BASIN 9
600
              BA
                   .0003
                              95
601
              LS
602
              UD
                   .0273
603
              KK
                     CP3
604
              KM
                   COMBINE BASINS 3,9 AND CP10 AT CONCENTRATION POINT CP3
605
              HC
                       3
606
              KK
                       4
                   RUNOFF FROM BASIN 4
607
              KM
608
              BA
                   .0006
                              95
609
              LS
              UD
                   .0369
610
```

```
ID......1.....2.....3......4......5......6.....7.....8......9......10
LINE
611
              KK
                       7
612
              KM
                   RUNOFF FROM BASIN 7
613
              ВА
                   .0003
614
              LS
                               95
615
              UD
                    .0240
616
                     CP4
              KK
617
                   COMBINE BASINS 4 AND 7 AT CONCENTRATION POINT CP4
              KM
618
              HC
619
              KK
                   CPDET
620
              KM
                   COMBINE CP3, CP4, CP5 AND CP8 AT DETENTION BASIN
621
              HC
                       4
622
              KK
                     DET
623
              KM
                           ON-SITE DETENTION (BUICK OF SCOTTSDALE)
624
              RS
                            STOR
                                       0
625
              SA
                   .2367 .37897 .41843
626
              SE
                    84.3
                            87.3
                                    88.3
                       0
627
              SQ
                               1
                                     1.1
628
              KK
                   RUNOFF FROM BASIN 1
629
              KM
63D
              ВА
                   .0004
631
              LS
                              95
632
              UD
                   .0297
              * ************ END BUICK *************
              ΚK
633
                   CBUIK
634
              KM
                   COMBINE BASIN 1 AND DET4 FROM BUICK AND RP84
635
              HC
                       3
636
              KK
                     HY3
637
              KM
                   RUNOFF FROM WEST SIDE OF HAYDEN ROAD BETWEEN BUDGET AUTO SALES
638
                   CATCH BASIN AND CATCH BASIN ACROSS FROM PRICE CLUB
              KM
639
              BA
                   .0D20
640
              LS
                              95
641
              UD
                   .0760
642
              KK RDBUDG
643
              KM
                   RECOVER FLOW DIVERTED FROM BUDGET AUTO SALES
                   DBUDG
644
              \mathsf{DR}
645
              KK RDPHY1
                  RECOVER FLOW DIVERTED FROM BUDGET AUTO SALES CATCH BASIN
646
              KM
647
              DR
                   DPHY1
```

LINE	ID.	1	2	3	4	5	6	7	8	910
648	KK	RDE84								
649	KM	RECOVER FL	OW DIV	ERTED FR	OM EAST	84TH STR	EET CATCH	BASIN		
65D	DR	DE84								
	*									
651	KK	RDW84								
652	KM	RECOVER FL	OW DIV	ERTED FR	OM WEST	84TH STR	EET CATCH	BASIN		
653	DR	DW84								
	*									
654	KK	PHY3								
655	KM	COMBINE RE	COVERE	D DIVERT	ED HYDRO	GRAPHS				
656	KM	DBUDG, DPH	Y1, DW	84, DE84	AND HY3					
657	HC	5								
	*									
658	KK	DPHY3								
659	KM	DIVERT FLO	W BYPA	SSING TH	E CATCH	BASIN AT	THE BUIC	K OF		
660	KM	SCOTTSDALE	DEALE	RSHIP.	DIVERTED	FLOWS W	ILL CONTI	NUE DOWN		
661	KM	HAYDEN ROA	D OUT	OF THE N	ORTHSIGH	T DRAINA	GE AREA			
662	DT	DPHY3								
663	DI	0	5	11	15	2D	50			
664	DQ	D	0	0	4	9	39			
	*									
665	KK	HY4								
666	KM	RUNOFF FRO	M EAST	SIDE OF	HAYDEN	ROAD BET	WEEN SUN	PONTIAC		
667	KM	CATCH BASI	N AND	CATCH BA	SIN AT T	HE PRICE	CLUB			
668	BA	.0D18								
669	LS		95							
67D	UD	.0699								
	*									
671	KK	DHY4								
672	KM	DIVERT FLO	W BYPA	SSING TH	E CATCH	BASIN ON	HAYDEN R	OAD AT		
673	KM	THE PRICE	CLUB.	DIVERTE	D FLOWS	WILL CON	TINUE DOW	IN		
674	KM	HAYDEN ROA	D OUT	OF THE N	ORTHSIGH	T DRAINA	GE AREA			
675	DT	DPHY4								
676	DI	0	5	7	15	20	50			
677	DQ	0	0	0	8	14	43			
	*									
678	KK	PPCC								
679	KM	COMBINE HY	DROGRA	PHS CBUI	CK, PSUN	AND UND	IVERTED H	Y3 AND HY4	•	
680	KM	AT THE STA			•					
681	KM	LINE OF TH								
682	HC	4								
	*									

```
LINE
              ID.....1....2.....3.....4.....5.....6.....7....8......9.....10
683
              KK
                   RPPCC
                   ROUTE HYOROGRAPH PPCC TO OUTFOW FROM SUN PONTIAC
684
              KM
685
              RD
                                    .04
                             .03
686
              RC
                                            400
                                                  .0125
                     .04
                                                            18
                                                                    22
                                                                            26
                       0
                                              9
                                                    17
687
              RX
                              4
                                      8
                                                                            3
                       3
                              2
                                                     0
688
              RY
                                      1
                                              0
                                                             1
              * *********** SUN PONTIAC **************
              * HYOROLOGY FROM FINAL ORAINAGE REPORT FOR SUN PONTIAC BY
              * GILBERTSON ASSOCIATES, INC. DATED SEPTEMBER 5, 1998
              * GAI - 40113
689
              KK
                    SUNP
690
              KM
                  RUNOFF FROM BASIN SITE
691
              BA
                 .01750
692
              LS
                      0
                             95
693
              UD
                  0.063
694
              KK
                 DSUNP
695
              KM
                  ROUTE SUN PONTIAC SITE THROUGH OFTENTION BASIN
696
              KM
                   VOLUME FROM FINAL ORAINAGE REPORT (122,403 CU.FT.)
697
              RS
                      1
                           STOR
                                      Ω
698
                      0 2.7931
              sv
699
              SQ
                       0
                              3
700
              SE
                       0
                              3
              * ********* END SUN PONTIAC *************
              * ****** NORTHSIGHT VILLAGE, PHASE I (PRICE CLUB WASH)********
              * THIS PORTION OF NORTHSIGHT VILLAGE FLOWS TO RETENTION BASIN 7.
              * RETENTION BASIN 7 OVER FLOW SHOULD FLOW OVERLAND AND BE DIRECTED
              * BY SUBSEQUENT DEVELOPMENT TO THE WASH ALONG THE EAST PROPERTY LINE
              * OF THE PRICE CLUB
701
              KK
                     10
702
              KM
                   RUNOFF FROM BASIN 10
                  .0015
703
              ВА
                             95
704
              LS
                    0
705
              U0
                    .022
                   DET8
706
              KK
                  OUTLET PIPE IS A 6" OIAMETER CULVERT. F OWS ARE DIRECTED TO
707
              KM
                  WEST STORM ORAIN AND THEN TO DETENTION BASIN 7
708
              KM
709
              RS
                      1
                           STOR
                   .0393
                          .1013
710
              SA
711
              SE
                      0
                              3
712
              SQ
                      0
                             .1
              ST
                             20
                                      3
                                           1.5
713
                      3
```

```
ID......1.....2.....3.....4.....5.....6.....7.....8......9.....10
LINE
714
              KK
                     11
715
              KM
                   RUNOFF FROM BASIN 11
716
              ВА
                   .0045
717
              LS
                      0
                             95
                    .051
718
              UD
719
              KK
                     12
720
              KM
                   RUNOFF FROM BASIN 12
721
              BA
                   .0002
722
                             95
              LS
                      0
                    .024
723
              UD
724
              KK
                    CP7
725
              KM
                   COMBINE HYDROGRAPHS DET8, 11, 12
726
              HC
                      3
              *
727
              KK
                   DET7
728
              RS
                           STOR
                      1
729
              SA
                   .1702
                          .2898
730
              SE
                      0
                              3
              SQ
                      0
                            .01
731
732
              ST
                      3
                                           1.5
                             20
                                      3
              * ***** END NORTHSIGHT VILLAGE, PHASE I (PRICE CLUB WASH)**********
              * ************************
733
              KK
                  PSUN2
734
              KM
                  COMBINE HYDROGRAPH RPPCC, DISCHARGE FROM THE SUN PONTIAC SITE
735
             KM
                  AND OVER FLOW FROM THE NORTHSIGHT VILLAGE PHASE I RETENTION
                  BASIN #7
736
             KM
737
             HC
                      3
738
             KK RPSUN2
739
             KM
                  ROUTE OUTFLOW FROM SUN PONTIAC TO OUTFLOW OF PRICE CLUB
740
             KM
                  EAST DETENTION BASIN
741
             RD
742
             RC
                   .045
                           . 035
                                   .045
                                           420
                                                  .011
743
                                                    17
                                                                   22
             RX
                      0
                              4
                                     8
                                             9
                                                           18
                                                                           26
744
             RY
                      3
                              2
                                             0
                                                                            3
                                     1
             * **********************************
             * INFORMATION DERIVED FROM SITE GRADING PLAN BY GILBERTSON ASSOCIATES,
             * INC. DATED JANUARY 1987 GAI - 25002
             * DETENTION MODIFICATION OCTOBER 11, 2001
745
             KK
                    PCE
746
             KM
                  RUNOFF FROM EAST PRICE CLUB BASIN
747
                  .0153
             BA
                             90
748
             LS
749
             UD
                  .0856
```

```
ID.....1....2....3....4....5....6....7....8.....9....10
LINE
750
            KK
                  DPCE
                PRICE CLUB EAST DETENTION BASIN
            KM
751
            RS
                  1 STOR 0
752
                               .702
                .6083
                       .6345
753
             SA
754
            SE
                 71.7
                        73.2 74.7
                          9
                                10
755
            SQ
                  0
            ST
                  74.7
                          20
                                 3
                                       1.5
756
757
            KK
                  CPCE
            KM
                 COMBINE FLOWS FROM SUN PONTIAC AND PRICE CLUB EAST
758
            HC
759
760
            KK
                  RPCE
761
            KM
                 ROUTE CONCNETRATION POINT CPCE TO CULVERT CROSSING OF
762
            KM
                BUTHERUS DRIVE
763
            RD
764
            RC
                 .045
                         .035
                               .045
                                       265
                                              .011
                                8
                                              17
765
            RX
                  0
                          4
                                        9
                                                      18
                                                             22
                                                                    26
                           2
                                         0
                                                0
                                                                     3
766
            RY
                    3
                                 1
767
            KK
                  PCW
768
            KM RUNOFF FROM WEST PRICE CLUB BASIN
769
            ВА
                .0099
770
            LS
                          93
            UD
                 .0748
771
                DPCW
772
            KK
773
            KM PRICE CLUB WEST DETENTION BASIN
774
            RS
                1 STOR 0
775
            SA
                .1770
                      . 2375
                              .4617
776
            SE
                68.4
                        72.2
                               73.3
777
            SQ
                  0
                        10.7
                               11.9
            * *********** END PRICE CLUB **********
            * ******* NORTHSIGHT VILLAGE PHASE II **********
778
                  NV2
            KK
            KM RUNOFF FROM THE SOUTHEAST PARCEL OF NORRTHSIGHT VILLAGE PHASE II.
779
780
            KM SITE IS UNDEVELOPED. OUTFALLS ONTO BUTHERUS DRIVE.
781
               .0036
            BA
                          75
782
            LS
783
            UD
                .0714
            * ****** END NORTHSIGHT VILLAGE PHASE II ************
```

```
ID......1.....2......3.....4......5......6......7.....8......9......10
LINE
 784
               KK
                     CPCW
                    COMBINE HYDROGRAPHS NV2, CPCE AND OUTFLOW OF DPCW
 785
               KM
 786
               HC
               * ****** BASIN V1 VICTORIA PROPERTIES ********
 787
               KK
 788
               KM
                    RUNOFF FROM BASIN VI1 (VICTORIA PROPERTIES)
 789
               KM
                   RUNOFF FLOWS EAST TO WASH
 790
                    .0010
               BA
                               95
 791
               LS
 792
               UD
                     .06
               * ****** END BASIN V1 VICTORIA PROPERTIES ********
 793
                      CPV
               KK
                    COMBINE DISCHARGE FROM VICTORIA PROPERTIES AND
 794
               KM
                    HYDROGRAPH CPCW
 795
               KM
               HC
                       2
 796
 797
               KK
                    RCPV
 798
               KM
                   ROUTE HYDROGRAPH CPV VIA NATURAL CHANNEL FROM CPV TO
                   RAINTREE DRIVE
 799
               KM
800
               RD
                             .035
                                                    .0078
8D1
               RC
                     .045
                                     .045
                                              900
                                                                       22
                                                                               26
802
               RX
                       0
                               4
                                       8
                                                9
                                                       17
                                                               18
                                                                       2
               RY
                       3
                                                D
                                                        0
                                                                               3
803
8D4
               KK
                     UD2
                   RUNOFF FROM PARCEL BETWEEN BUTHERUS ROAD AND RAINTREE DRIVE
8D5
               KM
                   AND NORTHSIGHT BLVD. AND 83RD PLACE, EXCLUDING VICTORIA
806
               KM
807
                   PROPERTIES AND THE DOWNSIDE RISK RESTAURANT. SEVERAL OFFICE
               KM
                   PROPERTIES ARE DEVELOPED WITHIN THIS PARCEL WITH DETENTION,
808
               KM
                   HOWEVER HAVE BEEN UNABLE TO OBTAIN ANY IMPROVEMENT PLANS OR
809
               KM
810
                   DRAINAGE REPORTS. FOR THIS STUDY THE OFFICE SITES HAVE BEEN
                   ASSUMED TO BE UNDEVELOPED AS THIS IS THE MAXIMUM DISCHARGE
811
               KM
                   THAT WOULD HAVE BEEN PERMITED
               KM
812
                   .0378
813
               BA
               LS
                               77
814
                   .1345
              UD
815
               * ****** REMAINDER OF VICTORIA PROPERTIES ********
               * THIS PORTION OF VICTORIA PROPERTIES SITE FLOWS TO 83RD PLACE
               * THEN DOWN 83RD PLACE TO RAINTREE AND EAST RAINTREE TO CPRT1
816
              ΚK
                     VI2
817
              KM
                   RUNOFF FROM BASIN VI2 (VICTORIA PROPERTIES)
                   .0016
              ВА
818
                              95
819
              LS
820
               UD
                      .06
```

```
ID......1.....2.....3.....4.....5.....6.....7....8.....9.....10
LINE
821
             KK
                   DET1
822
             KM
                 RUNOFF FROM BASIN V2 FLOWS TO DETENTION BASIN 1
823
             KM
                  VOLUME OF BASIN INCREASED BASED ON SITE VISIT
824
             RS
                   1
                         STOR
                                  Λ
825
             SA
                  .0002
                         .1351
                                 .3807
826
             SE
                   69.8
                          70.5
                                  71
827
              SQ
                    0
                           0.9
                                   1.0
828
             ST
                     71
                            20
                                    3
                                          1.5
829
             KK
                   RET2
                  DISCHARGE FROM RET2 FLOWS TO RETENTION BASIN 3
830
             KM
831
             KM
                 FIELO VISIT OECREASEO AS A RESULT OF FIELO VISIT
832
             RS
                          STOR
                                     0
                    1
                 .0036
833
                        .0275
             SA
                  67.5
                            70
834
             SE
835
             SQ
                    0 0.0001
             ST
                     70
836
                             3
                                     3
                                          1.5
837
             KK
                   DET3
838
             KM
                  OVERFLOW FROM RET2 FLOWS TO DETENTION BASIN DET3
839
             RS
                          STOR
                    1
                         .0055
840
             SA
                  .0030
                                .0532
841
             SE
                  69.5
                           70
                                  70.5
             SQ
                                   0.9
842
                   0
                           0.7
843
                   70.5
             ST
                            5
                                     3
                                           1.5
844
             KK
                   VI3
845
             KM
                  RUNOFF FROM BASIN VI3 (VICTORIA PROPERTIES)
846
             ВА
                 .0010
847
             LS
                            95
848
             UD
                    .06
849
             KK
                  PAC
850
                 COMBINE OUTFLOE OF DET 3 AND BASIN V3 AT COMBINEO RETENTION
             KM
851
             KM
                  BASINS A AND C
852
             HC
                    2
853
             KK
                  RTAC
             KM ROUTE DISCHARGE FROM BASIN V3 THROUGH COMBINED RETENTION
854
855
             KM BASINS A ANO C. BASINS COMBINEO AS A RESULT OF FIELD
856
             KM VISIT. VOLUMES TAKEN FROM SITE GRADIONG PLAN.
857
             KM
                  OVERFLOW GOES TO 83RD PLACE.
858
             RS
                     1
                          STOR
                                    O
859
             sv
                     0
                         .3266
                   67.5
                         70.5
860
             SE
                     0 .0001
             SQ
861
                   70.5
862
             ST
                            20
                                    3
                                          1.5
             * ******END REMAINDER OF VICTORIA PROPERTIES ********
```

```
ID.....1....2....3....4.....5....6.....7....8.....9....10
LINE
                  RRTAC
 863
              KK
                   ROUTE OVERFLOW FROM PROTION OF VICTORIA PROPERTIES FLOWING
 864
              KM
 865
              KM
                   TO 83RD PLACE
 866
              RD
 867
              RC
                    .014
                            .014
                                    .014
                                           1164
                                                   .004
              RX
                     0
                             2
                                    4
                                            9
                                                    11
                                                             13
                                                                     18
                                                                          18.1
 868
                                                            .10
                                                    .14
              RY
                                     .28
                                             .18
                                                                     D
                                                                        .5
 869
                     .36
                             .32
 870
              KK
                    83RD
 871
              KM
                   RUNOFF FROM 83RD PLACE AND RAINTREE DRIVE CONTRIBUTING TO
872
              KM
                   CONCENTRATION POINT PRT1
873
              ВА
                   .0047
 874
              LS
 875
              UD
                   .1255
876
              ΚK
877
                   COMBINE HYDROGRAPHS UD2, RRTAC, 83RD AND RCPV
              KM
878
              HC
879
              KK
                    RPR1
88D
                   ROUTE HYDROGRAPH PRT1 THROUGH 66 CMP UNDER OFFICE COMPLEX
              KM
                   AT 8350 EAST RAINTREE DRIVE. PIPE DIAMETER FROM FIELD
881
              KM
882
                  VISIT ON 4/25/2000. PIPE SLOPE BASED ON SLOPE OF WASH
              KM
                   REPLACED BY PIPE. SLOPE FROM CITY OF SCOTTSDALE STORM
883
              KM
884
              KM
                   WATER MASTER PLAN BY KEN LEWIS
                    850 .0074
                                                   CIRC
                                                            5.5
885
              RD
                                  .021
886
                      F2
              KK
                   MASTER PLAN AREA F2 HAS BEEN REDUCED IN SIZE BY BEVELOPMENT
887
              KM
                   WILL USE MASTER PLAN CURVE NUMBER AND MAX. AND MIN. ELEVATIONS
888
              KM
              KM
                  TO MODEL REMAINDER OF F2
889
                   .D038
890
              BA
891
              LS
                              95
892
              UD
                     .06
893
              KK
                    PF2
894
              KM
                   COMBINE HYDROGRAPHS RPR1 AND F2
895
              HC
                      2
896
              KK
                   RPF2
                   ROUTE HYDROGRAPH PF2 THROUGH FIRST REACH OF A 54"
897
              KM
                   TO DETENTION BASIN 1 IN NORTHSIGHT PARK
898
              KM
899
              RD
                    466
                         .013 .013
                                                  CIRC
                                                            4.5
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ID......1.....2.....3.....4.....5.....6.....7.....8......9.....10
LINE
900
            ΚK
                EG84
901
            KM
               RUNOFF FROM EVANS ROAD, GELDING DRIVE AND 84TH STREET
902
           KM
               FLOWING TO CATCH BASIN LOCATE IN KNUCKLE OF GELDING DR.
903
           BA
                .0027
904
           LS
                        98
905
           UD
                 .06
906
               PEG84
           KK
907
           KM
               COMBINE HYDROGRAPHS RPF2 AND EG84
908
           HC
909
           KK RPEG84
910
           KM
               ROUTE HYDROGRAPH RPEG84 THROUGH SECOND REACH OF A 54"
911
               TO DETENTION BASIN 1 IN NORTHSIGHT PARK
           KM
912
           RD
                 324
                       .016
                            .013
                                          CIRC
                                                 4.5
913
           KK
                MPE 1
914
           KM
               BASIN E1 FROM ORIGINAL NORTHSIGHT MASTER PLAN
915
           ВА
               .0063
916
           LS
                        95
917
           UD
               .0515
918
           KK
                  L
919
           KM
               BASIN L FROM ORIGINAL NORTHSIGHT MASTER PLAN
920
           BA
               .0190
921
           LS
                        85
922
           UD
               .0975
923
           KK
               NMPD1
924
           KM
               COMBINE HYDROGRAPHS L, MPE1, RPEG84 AT DETENTION BASIN 1
925
           KM
               IN THE NORTHSIGHT PARK SITE
926
           HC
           * *****************
           * *********************
           927
           ΚK
                DR1
928
               DETENTION BASIN 1
           KM
929
           RS
                      STOR
                               0
                  1
                      .7508 1.0070 1.2854
930
           SA
               .0077
931
           SE
                 38
                        40
                              42
                                     44
932
           SQ
                  0
                        61
                              159
                                    212
933
           ST
                 44
                        20
                               3
                                    1.5
             *****************
             * ********* NORTHSIGHT STREETS *****************
           * ****** STORM SEWER TO DETENTION BASIN 2 ***********
```

```
ID......1.....2......3.....4......5.....6......7.....8......9......10
LINE
 934
              KK
                     N24
 935
              KM
                   RUNOFF FROM NORTHSIGHT BOULEVARD BASIN N24
 936
              ВА
                   .0014
 937
              LS
                              98
 938
              UD
                      .06
939
              KK
                     N23
                   RUNOFF FROM NORTHSIGHT BOULEVARD BASIN N23
 940
              KM
 941
              ВА
                   .0015
942
              LS
                               98
943
              UD
                      .06
944
              KK
                    PN23
945
              KM
                   COMBINE BASIN N24 AND N23
946
              HC
                       2
947
              KK
                   RPN23
                   ROUTE CONCENTRATION POINT PN23 TO CONCENTRATION POINT PN21
948
              KM
949
              RD
                     450
                           .0121
                                    .013
                                                    CIRC
                                                               2
950
              KK
                     N22
                   RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
951
              KM
952
              KM
                   RUNOFF FROM NORTHSIGHT BOULEVARD BASIN N22
953
              ВА
                   .0007
954
              LS
                              98
955
              UD
                     .06
956
              KK
                     N21
                   RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
957
              KM
958
              KM
                   RUNOFF FROM NORTHSIGHT BOULEVARD BASIN N21
                   .0007
959
              ВА
960
              LS
                              98
961
              UD
                     .06
              * ****** NORTHSIGHT VILLAGE, PHASE I (NORTHSIGHT STORM SEWER) ********
              * MODEL MODIFIED TO ADD BASIN 1 FROM CARL'S JUNIOR TO DETENTION BASIN
              * THIS PORTION OF NORTHSIGHT VILLAGE FLOWS TO DETENTION BASIN 6.
              * DETENTION BASIN 6 DISCHARGES TO THE NORTHSIGHT BLVD. STORM SEWER
              * 6 INFLOW
962
              KK
                       1
963
              KM
                   RUNOFF FROM BASIN 1
964
                   .0026
              ВА
                                                  2.46
                                                            2.73
                                                                    2.91
                                                                            3.25
965
              PH
                                     .74
                                            1.45
                      0
                              95
966
              LS
967
              UD
                    .042
968
              KK
                    DET1
969
              KM
                   8" OUTLET PIPE
970
              RS
                       1
                            STOR
                                       0
                           .1492
971
              SA
                   .0740
972
              SE
                       0
                               3
973
              SQ
                       0
```

```
ID......1.....2.....3.....4.....5.....6.....7.....8.....9......10
LINE
              ST
                       3
                             20
                                   3
                                           1.5
 974
 975
              KK
                       2
              KM
                   RUNOFF FROM BASIN 2
 976
 977
              ВА
                   .0017
 978
              LS
                      0
                              95
 979
              U0
                    .028
 980
                     CP2
              KK
 981
              нС
                     2
 982
              KK
                    0ET2
 983
              RS
                            STOR
                                      0
                       1
 984
              SA
                   .0729
                           .5978
 985
              SE
                       0
                           . 3
 986
              SQ
                       0
                              1
                                      3
                                            1.5
 987
              ST
                       3
                              20
988
              KK
                       3
989
              KM
                   RUNOFF FROM BASIN 3
990
              ВА
                   .0016
991
              LS
                     0
                              95
992
              UD
                    .027
993
              KK
                     CP3
994
              HC
                       2
995
              KK
                    DET3
996
              RS
                                      0
                      1
                           STOR
997
              SA
                   .1070
                           .3393
998
              SE
                       0
                              3
999
              SQ
                       0
                              1
                                            1.5
1000
              ST
                      3
                             20
                                      3
1001
              KK
                      4
1002
              KM
                   RUNOFF FROM BASIN 4
1003
              ВА
                   .0009
1004
              LS
                      0
                             95
1005
              U0
                    .031
1006
              KK
                     CP4
1007
              HC
                      2
```

```
ID......1.....2......3......4......5......6......7......8......9.....10
LINE
1008
                KK
                      DET4
1009
                RS
                         1
                              STOR
                                         0
1010
                SA
                     .0461
                             .1230
                SE
                         0
1011
                                 3
1012
                SQ
                         0
                                 1
1013
                ST
                         3
                                20
                                         3
                                               1.5
                         5
1014
                KK
1015
                KM
                    RUNOFF FROM BASIN 5
1016
               ВА
                     .0006
1017
               LS
                       0
                                95
               UD
1018
                      .030
1019
               KK
                       CP5
1020
               HC
                         2
1021
               KK
                     DET5
1D22
               RS
                        1
                             STOR
                                         0
1023
               SA
                     .0194
                             .1122
1024
               SE
                        0
                                3
1025
               SQ
                        0
                                1
1026
               ST
                        3
                                2D
                                         3
                                               1.5
1027
               KK
                        6
1028
               KM
                    RUNOFF FROM BASIN 6
1029
                    .0D05
               ВА
1030
               LS
                        0
                                95
1031
               UD
                     .032
1032
               KK
                        7
               KM
                    RUNOFF FROM BASIN 7
1033
1034
               ВА
                    .0028
1035
               LS
                      0
                               95
1036
               UD
                     .040
1037
               KK
                    DUM-1
1038
               KM
                    COMBINE HYDROGRAPHS DET5, 6 AND 7 TO CLEAR STACK
1039
               HC
                        3
1040
               KK
                        8
1041
               KM
                    RUNOFF FROM BASIN 8
1042
               ВА
                    .0013
1043
               LS
                        0
                               95
1044
               UD
                     .024
```

```
ID......1.....2.....3.....4......5.....6......7.....8.....9.....10
LINE
                       9
1045
              KK
1046
              KM
                   RUNOFF FROM BASIN 9
1047
              ВА
                  .0023
                             95
1048
              LS
                      0
1049
              UD
                   .037
1050
                    13
              KK
1051
              KM
                  RUNOFF FROM BASIN 13
1052
              BA
                  .0025
1053
              LS
                    0
                             95
1054
              UD
                    .044
1055
              KK DUM-2
                  COMBINE HYDROGRAPHS DUM-1, 8,9 AND 13 TO CLEAR STACK
1056
              KM
1057
              * ***** START CARL'S JUNIOR NORTH DRAINAGE AREA ************
1058
              KK
                  RUNOFF FROM BASIN 1 OF CARL'S JUNIOR
1059
              KM
1060
              BA
                  .0004
1061
              LS
                      0
                             95
1062
              U0
                    .06
              * ****** END CARL'S JUNIOR BASIN 1 NORTH DRAINAGE AREA ********
1063
              KK
                    CP6
1064
              HC
                     2
1065
              KK
                   DET6
                           STOR
1066
              RS
                    1
1067
              SA
                  .1645
                          .2824
1068
              SE
                      0
                             3
              SQ
                      0
                             23
1069
              ST
                      3
                             20
1070
                                     3
                                           1.5
              * ***** START CARL'S JUNIOR SOUTH ORAINAGE AREA ************
1071
              KK
1072
              KM
                  RUNOFF FROM SOUTH ORAINAGE ARER OF CARL'S JUNIOR
1073
              ВА
                  .0009
              LS
                             95
1074
                    0
              UD
                    .06
1075
              KK
                   OCJS
1076
                  DETENTION BASIN FOR CARL'S JUNIOR SOUTH DRAINAGE AREA
              KM
1077
              RS
                                     0
1078
                      1
                           STOR
1079
              S۷
                      0
                          .0943
              SE
                   76.2
                           79.2
1080
              SQ
                            0.3
1081
                      0
                            20
1082
                   79.2
                                   1.5
              * ****** ENO CARL'S JUNIOR SOUTH ORAINAGE AREA ********
```

```
10.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
LINE
              KK
                    PN21
1083
1084
                   COMBINE BASINS N22 AND N21, ROUTEO CONCENTRATION POINT RPN23
                   OISCHARGE FROM NORTHSIGHT VILLAGE OETENTION BASIN #6 ANO
1085
              KM
              KM
                   OISCHARGE FROM SOUTH ORAINAGE AREA OF CARL'S JUNIOR OETENTION BASIN
1086
              HC
1087
              *
1088
              KK
                   RPN21
                   ROUTE CONCENTRATION POINT PN21 TO CONCENTRATION POINT PN19
1089
              KM
1090
                                                   CIRC
              RO
                     390
                           .0130
                                    .013
1091
              KK
                     N20
1092
              KM
                   RUNOFF FROM NORTHSIGHT STREETS, STORM ORAIN TO DETENTION 2
1093
                   RUNOFF FROM NORTHSIGHT BOULEVARO BASIN N20
              KM
1094
              ВА
                   .0007
1095
              LS
                              98
1096
              U0
                    .0620
1097
              KK
                     N19
1098
              KM
                   RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
1099
              KM
                   RUNOFF FROM NORTHSIGHT BOULEVARD BASIN N19
1100
              BA
                   .0008
1101
              LS
                              98
1102
              UD
                   .0618
1103
              KK
                    PN19
1104
              KM
                   COMBINE BASINS N20 AND N19 AND ROUTED CONCENTRATION POINT RPN21
              HC
1105
                       3
1106
              KK
                   RPN19
1107
              KM
                   ROUTE CONCENTRATION POINT PN19 TO CONCENTRATION POINT PN17
1108
              RD
                     479
                           .0014 .013
                                                   CIRC
                                                              3
              * ******NORTHSIGHT VILLAGE PHASE II ****************
1109
              KK
                   SUB1A
1110
              KM
                   RUNOFF
                   .0009
              ВА
1111
1112
              LS
                              90
1113
              U0
                     .06
1114
              KK
                  DET7
1115
              KM
                  OETENTION BASIN 7
1116
              KM
                  LOW FLOW OUTLET: ONE 8" PIPE
1117
              RS
                            STOR
                                       0
                       1
1118
              SA
                  .0043
                            .015
                                  .0254
              SQ
1119
                       0
                              .6
                                    1.8
              SE 1482.2 1483.2 1484.2
1120
              ST 1484.3
                             10
                                            1.5
1121
                                      3
```

LINE	ID	12345678910
1122	KK	SUB 1B
1123	KM	
1124	BA	
1125	LS	
1126	UD	.06
	*	•••
1127	KK	CP1
1128	KM	COMBINE 1B AND DET7
1129	нс	2
	*	
1130	KK	DET1
1131	KM	DETENTION BASIN 1
1132	KM	LOW FLOW OUTLET: 8" RCP
1133	RS	1 STOR 0
1134	SA	.08 .152 .16 .21
1135	SQ	0 1 1.25 1.5
1136	SE	1477.6 1479 1480 1481
1137	ST	1481 10 3 1.5
	*	
1138	KK	R1
1139	KM	ROUTE DET1 TO DET 2
1140	RK	500 .0084 .012 CIRC .666
	*	
44/4	1414	
1141	KK	DET2
1142	KM	DETENTION BASIN 2
1143	KM	LOW FLOW OUTLET: ONE 8" PIPE
1144	RS	1 STOR 0
1145	SA	.01 .017 .024 .0413
1146 1147	SQ	0 0.6 1.8 2.3
1147	SE ST	1473.8 1474.8 1475.8 1476.8
1140	۵۱ *	1477 10 3 1.5
1149	KK	SUB2A
1150	KM	RUONFF FORM SUBASIN 2
1151	BA	.0044
1152	LS	89
1153	UD	.11
1123	*	•••
1154	KK	CP2
1155	KM	COMINE 2A ANO DET2
1156	HC	2
	*	

LINE	ID.	12345678910
1157	KK	DET3
1158	KM	DETENTION BASIN 3
1159	KM	LOW FLOW OUTLET: ONE 12" PIPE
116D	RS	1 STOR 0
1161	SA	.076 .086 .097 .128
1162	sq	0 1 3 3.5
1163	SE	1473.8 1474.8 1475.8 1476.8
1164	ST	1477 10 3 1.5
	*	
1165	KK	SUB5
1166	KM	RUNOFF FROM SUBASIN 5
1167	BA	.0007
1168	LS	87
1169	UD	.06
,	*	100
11 <i>7</i> D	KK	DET8
1171	KM	DETENTION BASIN 8
1172	KM	LOW FLOW OUTLET: ONE 8" PIPE
1173	RS	1 STOR 0
1174	SA	.0171 .031 .06 .D664
1175	SQ	0 0.6 1.9 1.95
1176	SE	1478.5 1479.5 148D.5 1480.6
1177	ST	1480.6 10 3 1.5
	*	
1178	KK	SUB4
1179	KM	RUNOFF FROM SUBASIN 4
1180	BA	.0019
1181	LS	95
1182	UD	.06
	*	
1183	KK	CP3
1184	KM	COMBINE SUBASIN 4 AND DET8
1185	HC	2
1105	*	•
1186	KK	DET6
1187	KM	DETENTION BASIN 6
1188	KM	LOW FLOW OUTLET: ONE 8" PIPE
1189	RS	1 STOR 0
1190	SA	.061 .066 .071 .1
1191	SQ	0 1 2 2.5
1192	SE	1478 1479 1480 1481
1193	ST	1481 10 3 1.5
	*	

```
ID......1.....2......3.....4......5.....6......7.....8......9......10
LINE
1194
                     SUB3
               KK
1195
               KM
                    RUNOFF FROM SUBASIN 3
1196
               ВА
                     .001
1197
               LS
                               90
1198
               UD
                      .06
1199
               KK
                      CP4
1200
               KM
                    COMBINE DET6 AND SUB3
1201
               HC
                        2
1202
               KK
                       R3
1203
               KM
                    ROUTE CP4 TO DET5
                                                            .666
1204
               RK
                      290
                              .02
                                                    CIRC
                                   .012
1205
               KK
                    SUB2B
1206
               KM
                    RUNOFF FROM SUBBASIN 2B
1207
               ВА
                    .0011
1208
               LS
                               89
1209
               UD
                      .06
               *
              KK
                     CP5
1210
1211
               KM
                   COMBINE SUB2B AND R3
1212
              HC
                       2
1213
              KK
                    DET5
1214
              \mathsf{KM}
                    DETENTION BASIN 5
1215
              KM
                    LOW FLOW OUTLET: ONE 8" PIPE
1216
              RS
                       1
                            STOR
                                       0
                                           .0903
1217
              SA
                    .0374
                           .0501
                                    .0627
1218
              SQ
                       0
                                   1.8
                                             2.6
                            .6
1219
              SE
                  1475.4 1476.4 1477.4 1478.4
1220
              ST
                  1478.5
                            10
                                   3
                     CP6
1221
              KK
1222
              KM
                    COMBINE DET5 AND DET3
1223
              нС
                       2
1224
              KK
                    DET4
                   DETENTION BASIN 4
1225
              KM
              KM
                   LOW FLOW OUTLET: ONE 12" PIPE
1226
1227
              RS
                       1
                            STOR
                                       0
1228
              SA
                    .027
                             .04
                                    .054
                                            .082
1229
              SQ
                       0
                              .8
                                     3.7
                                             5.4
                  1474.2 1475.2 1476.2 1477.2
1230
              SE
              ST
                  1477.2
                                          1.5
1231
                            10
                                       3
```

```
LINE
              ID......1.....2.....3.....4.....5.....6.....7.....8.....9......1D
1232
              KK
                    RT4
1233
              KM
                   ROUTE DET4 TO 36" STORM DRAIN IN NORTHSIGHT BLVD AND BUTHERUS
1234
              RK
                           .07 .012
                                                 CIRC
                                                           1
1235
              KK
                    N18
1236
              KM
                   RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
1237
              KM
                  RUNOFF FROM NORTHSIGHT BOULEVARD BASIN N18
1238
              KM
                  INCLUDES A PORTION OF BUTHERUS DRIVE
1239
              ВА
                  .0025
1240
              LS
                             98
1241
              UD
                  .1216
1242
              KK
                  CPN18
1243
              KM
                  COMBINE NORHTSIGHT II(RT4) AND N18 AT BUTHERUS AND NORHTSIGHT BLVD
1244
              HC
1245
              KK
                    N17
1246
                  RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
1247
              KM
                  RUNOFF FROM NORTHSIGHT BOULEVARD BASIN N17
1248
              ВА
                  .0008
1249
              LS
                             98
1250
              UD
                    .06
              * ********** DOWNSIDE RISK ********
1251
              KK
                    DR
1252
              KM RUNOFF FROM DOWNSID RISK RESTAURANT
              BA
                  .0015
1253
1254
              LS
                    0
1255
              UD
                    .06
1256
             KK DETDR
1257
             KM
                 DOWNSIDE RISK DETENTION BASIN, COMBINES
1258
             KM
                  STORAGE IN BASIN AND PARKING LOT STORAGE
1259
             RS
                      1
                           STOR
                                     0
1260
             SV
                      0
                          .1617
1261
             SE
                     69
                            72
1262
             SQ
                     0
                           2.8
1263
             ST
                     72
                            20
                                   1.5
              1264
             KK
1265
             KM
                 COMBINE CPN18, N17, ROUTED CONCENTRATION POINT RPN19
1266
             KM
                  AND DISCHARGE FROM THE DOWNSIDE RISK RESTAURANT
1267
             HC
                      4
1268
             KK RPN17
1269
             KM
                  ROUTE CONCENTRATION POINT PN17 TO CONCENTRATION POINT PN15
1270
             RD
                    242
                          .0236
                                  .013
                                                 CIRC
                                                           3
```

```
ID......1.....2......3.....4......5.....6......7.....8......9......10
LINE
1271
               KK
                      N16
                    RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
1272
               KM
                    RUNOFF FROM NORTHSIGHT BOULEVARD BASIN N16
1273
               KM
                    .0008
1274
               BA
                               98
1275
               LS
1276
               UD
                      .06
1277
               KK
                     N15
1278
               KM
                    RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
               KM
                    RUNOFF FROM NORTHSIGHT BOULEVARD BASIN N15
1279
1280
               ВА
                    .0008
1281
               LS
                               98
1282
               UD
                      .06
1283
               KK
                    PN15
1284
               KM
                    COMBINE BASINS N16 AND N15 AND ROUTED CONCENTRATION POINT RPN17
1285
               HC
                   RPN15
1286
               KK
                   ROUTE CONCENTRATION POINT PN15 TO CONCENTRATION POINT PN14
1287
               KM
1288
               RD
                     490
                            .D118
                                     .013
                                                     CIRC
                                                                3
                     N14
1289
               KK
                    RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
1290
               KM
                    RUNOFF FROM NORTHSIGHT BOULEVARD BASIN N14
1291
               KM
1292
                    .D015
               BA
1293
               LS
                               98
1294
               UD
                      .D6
1295
               KK
                    PN14
1296
               KM
                    COMBINE BASINS N14 AND ROUTED CONCENTRATION POINT RPN15
               HC
1297
                       2
               * ******* START OF RAINTREE DRIVE STORM SEWER **************
               * THIS PORTION OF THE STORM SEWER FLOWS TO THE NORTHSIGHT BLVD.
               * STORM SEWER
1298
               KK
                       R7
1299
               KM
                   RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
1300
               KM
                   RUNOFF FROM RAINTREE DRIVE BASIN R7
                   .0004
1301
               BA
1302
              LS
                              98
1303
               UD
                      .06
1304
              KK
                      R6
1305
               KM
                   RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
1306
              KM
                   RUNOFF FROM RAINTREE DRIVE BASIN R6
              BA
                    .0004
1307
1308
              LS
                              98
1309
              UD
                     .06
```

```
ID......1.....2.....3.....4......5.....6......7.....8......9.....10
LINE
                    JRT2B
1310
               KK
                   RUNOFF FROM BASIN JPRT-2B A NEW SUB-BASIN FOR THE RETAIL
1311
               KM
1312
               KM
                   SHOPPING CENTER IN AREAS JPRT AND IPRT
1313
               ВА
                    .0028
                              77
                                      93
              LS
1314
               UD
                   .0586
1315
1316
               KK
                   DET2B
1317
               KM
                   DETENTIION BASIN IN THE NORHTWEST CORNER OF JPRT-2B, OUTFLOW:12" RCP
1318
              RS
                      1
                            STOR
1319
              SA
                     .038
                           .0583
                                    .083
                                             .11
1320
                            1463
              SE
                    1462
                                    1464
                                            1465
1321
              SQ
                     0
                             1.8
                                    2.7
                                             3.2
1322
              ST
                    1465
                              10
                                      3
                                             1.5
1323
              KK
                   JRT2C
1324
              KM
                   RUNOFF FROM BASIN JPRT-2C
1325
              BA
                    .003
1326
              LS
                              77
                                      92
1327
              UD
                     .08
1328
              KK
                    CP2C
1329
              KM
                   COMBINE BASIN JPRT-2C AND OUTFLOW FROM DET2B
              HC
1330
1331
              KK
                   DET2C
                   DETAIN CP2C IN THE SOUTHWEST CORNER OF JPRT-2:OUTFLOW 15" RCP
1332
              KM
                            STOR
1333
              RS
                     1
                                      0
                                            .104
1334
              SA
                     .03
                            .053 .0774
1335
              SE
                    1462
                            1463
                                  1464
                                            1465
1336
              SQ
                     0
                              3
                                     7
                                             9
1337
              ST
                    1465
                              10
                                      3
                                             1.5
1338
              KK
                   JRT2A
1339
              KM
                   RUNOFF FROM BASIN JPRT-2A AN NNEW PART OF OLD BASIN JPRT
1340
              ВА
                   .0037
1341
              LS
                              77
                                      92
              UD
                   .0501
1342
              *
              KK
                    CP2A
1343
1344
              KM
                   COMBINE BASIN JPRT-2A AND THE OUTFLOW FROM DETENION 2C
1345
              HC
                       2
```

```
LINE
              ID......1.....2.....3.....4.....5.....6.....7....8.....9.....10
              KK DET2A
1346
1347
              KM
                   DETENTION BASIN ON THE SOUTHERN EDGE OF JPRT, OUTFLOW:18" RCP
                                  0
1348
              RS
                     1
                            STOR
                            .096
1349
              SA
                    .064
                                    .13
                                          .167
1350
              SE
                    1461
                           1462
                                  1463
                                         1464
1351
              SQ
                     0
                             3.4
                                    9
                                          12.6
1352
              ST
                    1464
                             10
                                      3
                                         1.5
              KK
1353
                     PR6
1354
              KM
                   COMBINE BASINS R6, R7 AND DET2A
1355
              HC
                       3
1356
              KK
                    RPR6
                   ROUTE CONCENTRATION POINT PR6 TO CONCENTRATION POINT PR9
1357
              KM
1358
              RD
                     202
                          .0085
                                   .013
                                                 CIRC
                                                            3
1359
              KK
                      R8
1360
              KM
                   RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
1361
              KM
                   RUNOFF FROM RAINTREE DRIVE BASIN R8
1362
              ВА
                   .0007
1363
              LS
                              98
1364
              UD
                   .0690
              * ADD PORTION OF MASTER PLAN PARCEL "J" BETWEEN BUTHERUS ALIGNMENT
              * AND RAINTREE DRIVE
1365
              KK
                    JPRT
1366
              KM
                  PORTION OF ORIGINAL MASTER PLAN PARCEL "J" BETWEEN BUTHERUS DRIVE
1367
              KM ALIGNMENT AND RAINTREE DRIVE.
1368
              KM
                  PARCEL IS ASSUMED TO BE UNDEVELOPED AS WAS
1369
              KM ASSUMED IN THE MASTER PLAN.
1370
              BA
                   .041
1371
              LS
                             77
1372
              UD
                   .1705
1373
              KK
                      R9
1374
              KM
                  RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
1375
              KM
                   RUNOFF FROM RAINTREE DRIVE BASIN R9
1376
              BA
                   .0007
1377
              LS
                             98
1378
              UD
                   .0662
1379
              KK
                    PR9
1380
              KM
                   COMBINE BASINS R8, R9, JPRT AND ROUTED CONCENTRATION POINT RPR6
1381
              HC
```

LINE	ID.	1234567891D
1382	KK	RPR9
1383	KM	ROUTE CONCENTRATION POINT RPR9 TO CONCENTRATION POINT PR11
1384	RD	115 .0155 .013 CIRC 3
1385	KK	R11
1386	KM	RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
1387	KM	RUNOFF FROM RAINTREE DRIVE BASIN R11
1388	ВА	.0011
1389	LS	98
1390	UD	.06
1391	KK	PR11
1392	KM	COMBINE BASINS R11 AND ROUTED CONCENTRATION POINT RPR9
1393	НС	2
1394	KK	RPR11
1395	KM	ROUTE CONCENTRATION POINT PR11 TO CONCENTRATION POINT PN13
1396	KM	LOCATED AT THE INTERSECTION OF NORTHSIGHT BOULEVARD AND
1397	KM	RAINTREE DRIVE.
1398	RD	90 .D029 .013 CIRC 3
	* **	******** INTERSECTION OF NORTHSIGHT BLVD. AND RAINTREE DRIVE ******
1399	KK	PNR
14D0	KM	COMBINE ROUTED CONCENTRATION POINTS RPR11 AND RPN14
1401	KM	AT THE INTERSECTION OF NORTHSIGHT BOULEVARD AND RAINTREE DRIVE
14D2	НС	2
1403	KK	N12
1404	KM	RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
1405	KM	RUNOFF FROM NORTHSIGHT BOULEVARD BASIN N12
14D6	BA	.0010
1407	LS	98
1408	UD	.D6
1409	KK	PN12
1410	KM	COMBINE ROUTED CONCENTRATION POINTS RPNR AND BASIN N12
1411	НС	2
1412	KK	RPN12
1413	KM	ROUTE CONCENTRATION POINT PN12 TO CONCENTRATION POINT PN13
1414	RD	190 .0112 .013 CIRC 4.5
1415	KK	N13
1416	KM	RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
1417	KM	RUNOFF FROM NORTHSIGHT BOULEVARD BASIN N13
1418	ВА	.0009
1419	LS	98
1420	UD	.06

```
ID......1.....2.....3.....4.....5.....6.....7.....8......9.....10
LINE
1421
              KK
                    PN13
                   COMBINE ROUTED CONCENTRATION POINTS RPN12 AND BASIN N13
1422
              KM
1423
              HC
1424
              KK
                   RPN13
                   ROUTE CONCENTRATION POINT PN13 TO CONCENTRATION POINT PNE
1425
              KM
                          .0086
                                  .013
                                                   CIRC
                                                         4.5
1426
              RD
              * ******* NORTHSIGHT FINANCIAL CENTER ************
1427
              KK
                     NFC
                   RUNOFF FROM NORTHSIGHT FINANCIAL CENTER
1428
              KM
                   .0075
1429
              ВА
1430
              LS
                              98
1431
              UD
                     .06
1432
              KK
                    DNFC
1433
              KM
                  DETENTION FOR NORTHSIGHT FINANCIAL CENTER
                  VOLUME IS SUMATION OF STORAGE PROVIDEDE IN SEVERAL PARKING
1434
              KM
              KM
                  LOT DETENTION BASINS.
1435
                  OVER FLOW FROM NORTHSIGHT WILL PASS TO CATCH BASIN IN EVANS
              KM
1436
1437
              KM
                   ROAD. CATCH BASIN IS LOCATED IN A SUMP
1438
              RS
                       1
                            STOR
1439
              sv
                       0
                           .3258
              SE
                       0
1440
                              1
              SQ
                            15.1
1441
                       0
1442
              ST
                              20
                                      3
                                            1.5
              * ****** END NORTHSIGHT FINANCIAL CENTER**********
1443
              KK
                      E1
                   RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
1444
              KM
1445
              KM
                   RUNOFF FROM EVANS ROAD BASIN E1
1446
              ВА
                  .0010
1447
              LS
                              98
              UD
1448
                     .06
1449
              KK
              KM
                   RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
1450
1451
              KM
                   RUNOFF FROM EVANS ROAD BASIN E2
                   .0003
              ВА
1452
1453
              LS
                              98
              UD
1454
                     .06
              KK
1455
                     PE1
1456
              KM
                   COMBINE BASINS E1, E2 AND DNFC
1457
              HC
                       3
1458
              KK
                    RPE1
1459
              KM
                   ROUTE CONCENTRATION POINT PE1 TO CONCENTRATION POINT PNE
1460
              RD
                     135
                           .0085
                                   .013
                                                   CIRC
                                                            1.5
              * ******* WEST PART OF UNDEVELOPED MASTER PLAN PARCEL G ********
```

```
ID......1.....2......3......4......5......6......7.....8......9......1D
LINE
1461
              KK
                      GW
                  WEST PART OF UNDEVELOPED MASTER PLAN PARCEL G
              KM
1462
1463
              KM
                   PARCEL MODELED AS UNDEVELOPED
1464
              ВА
                   .0157
1465
              LS
                             77
1466
              UD
                   .1177
              * ****** END WEST PART OF UNDEVELOPED MASTER PLAN PARCEL G ********
1467
              KK
                   COMBINE ROUTED CONCENTRATION POINT RPE1, RPN13, AND GW
1468
              KM
1469
              HC
                      3
1470
              KK
                   RPNE
                   ROUTE CONCENTRATION POINT PNE TO CONCENTRATION POINT PN11
1471
              KM
                          .01D4
1472
              RD
                    261
                                   .013
                                                  CIRC
1473
              KK
                    N11
                  RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
1474
              KM
                  RUNOFF FROM NORTHSIGHT BOULEVARD BASIN N11
1475
              KM
                  .0D11
1476
              ВА
                             98
1477
              LS
1478
              UD
                     .06
              1479
              KK
                     ٧4
1480
              KM
                  RUNOFF FROM VANGUARD BASIN 4
1481
              BA
                   .0021
1482
              LS
                             92
1483
              UD
                     .06
1484
              KK
                    DV4
1485
              KM
                  ROUTE HYDROGRAPH V4 THROUGH COMBINED DETENTION BASIN 4.1 AND 4.2
1486
              KM
                  FROM THE WOOD/PATEL FINAL DRAINAGE REPROT
                  NOTE: OVERFLOW WILL ENTER NORTHSIGHT BLVD AND FLOW TO CATCH
1487
              KM
                  BASIN N9 WHICH IS LOCATED IN A SUMP. VANGUARD BASIN V3
1488
              KM
1489
              KM
                  ALSO DISCHARGES TO CATCH BASIN N9
1490
              RS
                      1
                           STOR
1491
              sv
                      0
                          .1899
              SE
                   47.3
                           50.3
1492
1493
              SQ
                      0
                            .73
1494
              ST
                   50.3
                             20
                                     3
                                           1.5
              * ******** END VANGUARD BASIN 4 *******************
1495
              KK
                  COMBINE ROUTED CONCENTRATION POINTS RPNE AND BASINS N11 AND V4
1496
              KM
1497
              HC
                      3
```

```
10.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
LINE
1498
                 RPN11
1499
             KM
                 ROUTE CONCENTRATION POINT PN11 TO CONCENTRATION POINT PN10
1500
             RD
                   298
                        .0092 .013
                                              CIRC
1501
             KK
                   N10
             KM RUNOFF FROM NORTHSIGHT STREETS, STORM ORAIN TO DETENTION 2
1502
             KM RUNOFF FROM NORTHSIGHT BOULEVARO BASIN N10
1503
1504
             ВА
                  .001
1505
             LS
                           98
1506
             UD
                   .06
1507
             KK
                  PN10
1508
             KM
                COMBINE ROUTEO CONCENTRATION POINT RPN1 AND BASIN N10
1509
             HC
                   2
1510
             KK
                RUNOFF FROM NORTHSIGHT STREETS, STORM ORAIN TO DETENTION 2
1511
             KM
1512
             KM
                 RUNOFF FROM NORTHSIGHT BOULEVARO BASIN N9
1513
             BA
                 .0005
1514
             LS
                           98
1515
             UD
                   .06
             1516
             KK
                   ٧3
1517
             KM
                RUNOFF FROM VANGUARD BASIN 3
1518
             ВА
                .0029
1519
             LS
                           92
1520
             UD
                   .06
             KK
1521
                  DV3
             KM ROUTE HYDROGRAPH V3 THROUGH COMBINED DETENTION BASIN 3.1 ANO 3.2
1522
1523
             KM FROM THE WOOD/PATEL FINAL ORAINAGE REPROT
             KM NOTE: OVERFLOW WILL GO TO CATCH BASIN N9 WHICH IS LOCATED
1524
1525
            KM IN A SUMP.
1526
            RS
                    1
                        STOR
1527
            SV
                    0 .2559
1528
             SE
                    46
                         49
1529
             SQ
                    0
                          .73
1530
                    49
                         20
                                   3
                                        1.5
             * ******* END VANGUARD BASIN 3 ******************
1531
            KK
                   PN9
             KM
                 COMBINE ROUTED CONCENTRATION POINT RPN10 AND BASINS N9 AND V3
1532
1533
            HC
                  RPN9
1534
            KK
1535
            KM
                ROUTE CONCENTRATION POINT PN9 TO CONCENTRATION POINT PPRK
1536
            RD
                  167 .0068 .013
                                            CIRC 4.5
             * ********* MASTER PLAN AREA E2 ******************
```

```
ID.....1....2....3.....4.....5.....6.....7....8.....9.....10 ·
LINE
1537
            KK
                 MPE2
1538
            KM RUNOFF FROM MASTER PLAN AREA E2
1539
            BA
1540
            LS
                         95
1541
            UD
                  .06
            * ******* END MASTER PLAN AREA E2 **********************
1542
            KK
                  Р1
                RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
1543
            KM
                RUNOFF FROM PARK ENTRANCE ROAD P1
            KM
1544
            ВА
               .0001
1545
1546
            LS
                         98
            UD
                 .06
1547
                  P2
1548
            KK
                RUNOFF FROM NORTHSIGHT STREETS, STORM DRAIN TO DETENTION 2
1549
            KM
                RUNOFF FROM PARK ENTRANCE ROAD P2
1550
            KM
                .0001
            BA
1551
                         98
            LS
1552
1553
            UD
                  .06
1554
            KK
                 PPRK
                COMBINE ROUTED CONCENTRATION POINT RPN9 AND BASINS P1 AND P2
1555
            KM
1556
            KM
                AND RUNOFF FROM MASTER PLAN AREA E2 (MPE2)
1557
            HC
              RPPRK
              ROUTE CONCENTRATION POINT PPRK TO OUTLET INTO DETENTION BASIN 2
                                         CIRC
                152
                    .0265
                           .013
             ****** END STORM SEWER TO DETENTION BASIN 2 **********
              ****** END NORTHSIGHT STREETS ***************
            * *****************
            * **********************
            * ****** END INFLOW TO DETENTION BASIN 2 *************
            * ***************
            * ****************
1558
            KK
                 DB2
                DETENTION BASIN 2
1559
            KM
                       STOR
1560
            RS
                   1
                      .7508 1.0070 1.0070
1561
            SA
                   0
                               44 44.60
1562
            SE
                41.13
                        42
                                84
                                    113
1563
            SQ
                0
                        15
                         20
1564
            ST
                 44.6
                               3
                                     1.5
```

```
ID......1.....2.....3.....4.....5.....6.....7....8......9......1D
LINE
1565
             KK
                   CP3
1566
             KM
                 COMBINE DETENTION BASINS 1 AND 2
             НС
1567
                     2
1568
             KK
                   DB3
                  ROUTE COMBINATION POINT CP3 THROUGH DETENTION BASIN 3
1569
             KM
1570
             RS
                          STOR
                                    0
                     1
                         .0077
                                .7508 1.0070
1571
             SA
                     0
1572
             SE
                   35.4
                            36
                                   38
                                         197
1573
             SQ
                     0
                           16
                                   99
1574
                 1439.8
                            20
                                   3
                                         1.5
             ST
1575
             KK
                   DB4
1576
             KM
                 DETENTION BASIN 4
1577
             RS
                          STOR
                                   0
                     1
1578
             SA
                     0
                         .2980 1.8621 2.0643 2.2346 2.4735 2.4735
1579
             SE
                   33.9
                           34
                                   35
                                          36
                                                37
                                                        38
                                                              38.5
1580
             SQ
                     0
                            1
                                   42
                                          99
                                                157
                                                       216
                                                              247
1581
             ST
                  38.5
                            1D
                                   3
                                         1.5
             * ***********************
               *******************
               ****** START INFLOW TO DETENTION BASIN 7 **********
             * ******* RAINTREE AND 87TH STREET*************
             * ******* STORM SEWER TO DETENTION BASIN 7 **********
1582
             KK
                    R1
1583
             KM
                 RUNOFF FROM RAINTREE DRIVE BASIN 1
1584
             ВА
                 .0004
1585
             LS
                           98
1586
             UD
                  .06
1587
             KK
                    R2
1588
             KM
                 RUNOFF FROM RAINTREE DRIVE BASIN 2
                 .0D07
1589
             ВА
1590
                           98
             LS
1591
             UD
                   .06
1592
             KK
                   PR1
1593
             KM
                 COMBINE BASINS R1 AND R2
1594
             HC
                     2
```

```
ID.....1....2....3....4....5....6....7....8.....9....10
LINE
1595
              ΚK
                    RPR1
1596
              KM
                   ROUTE CONCENTRATION POINT PR1 TO CONCENTRATION POINT PR3
1597
              RD
                     485
                           .0021
                                   .013
                                                  CIRC
                                                             3
1598
              KK
                   RUNOFF FROM RAINTREE DRIVE BASIN 3
1599
              KM
1600
              ВА
                   .0004
                             98
1601
              LS
              UD
1602
                     .06
1603
              KK
                     PR3
1604
                   COMBINE ROUTE CONCENTRATION POUNT RPR1 TO BASIN P3
              KM
1605
              HC
1606
              KK
                    RPR3
                   ROUTE CONCENTRATION POINT PR3 TO CONCENTRATION POINT PRS
              KM
1607
                                                  CIRC
1608
              RD
                     67 .0021 .013
                                                            3
1609
              ΚK
                      R4
1610
              KM
                   RUNOFF FROM RAINTREE DRIVE BASIN 4
                   .0005
1611
              ВА
1612
              LS
                             98
1613
              UD
                     .06
1614
              KK
                     R5
1615
              KM
                  RUNOFF FROM RAINTREE DRIVE BASIN 5
1616
                  .0005
              BA
1617
              LS
                             98
              UD
1618
                     .06
1619
              KK
                    PR4
              KM
1620
                  COMBINE BASINS R4 AND R5
              HC
1621
                      2
1622
              KK
                   RPR4
                  ROUTE CONCENTRATION POINT PR4 TO CONCENTRATION POINT PRS
1623
              ΚM
1624
              RD
                    199
                        .0010
                                  .013
                                                  CIRC
                                                            2
              * ******* START SONORAN VILLAGE/SCOTTSDALE RETAIL ***********
              * ********** FNAL DRAINAGE REPORT ***********
              * ********* SCOTTSDALE RETAIL SITE***********
              * ********* HEC-1 MODEL BY KIMLEY-HORN *********
              * ****** START OF PART OF SONORAN VILLAGE/SCOTTSDALE RETAIL*******
```

```
ID......1.....2......3.....4......5.....6......7.....8......9......10
LINE
1625
              KK OFFSV1
                  Runoff from Sonora Village Retail Site - drains west then south along Hayden
              KM
1626
1627
              BA 0.0044
1628
              UD
                  0.021
                             77
                                     85
1629
              LS
              KK DETSV1
1630
                  Detain volume from OFFSV1 in local basins
1631
              KM
1632
              DT
                 BSNSV1
                          0.780
1633
              DI
                       0
                            1000
                       0
                            10D0
              DΩ
1634
1635
              KK OFFSV2
              KM
                   Runoff from Sonora Village Retail Site - drains west then south along Hayden
1636
1637
              BA 0.0043
                   0.018
1638
              UD
1639
              LS
                             77
                                     85
1640
              KK CP-SV2
                   Combine runoff from OFFSV2 and overflow from DETSV1
1641
              KM
              HC
                      2
1642
1643
              KK DETSV2
                  Detain volume from OFFSV2 and overflow from DETSV1 in local basins
1644
1645
              DT
                 BSNSV2
                          0.397
                      0
                           1000
1646
              DI
                      D
                           1000
1647
              DQ
1648
              KK OFFSV3
                 Runoff from Sonora Village Retail Site - drains southwest behind cineplex
1649
              KM
                  then southeast to entrance drive on Northsight Blvd.
1650
              KM
1651
              BA 0.0068
1652
              UD
                  0.029
                             77
1653
              LS
                                     85
              KK CP-SV3
1654
                  Combine runoff from OFFSV3 and overflow from DETSV2
1655
              KM
1656
              HC
                      2
              KK DETSV3
1657
                  Detain volume from OFFSV3 and overflow from DETSV2 in local basins
1658
              KM
1659
              DT
                  BSNSV3
                         0.665
                      0
                           1000
1660
              DΙ
                      0
                           1000
              DΩ
1661
              1662
              ΚK
                   RUNOFF FROM NORTHSIGHTAUTOMALL LOT 6, BASED ON APPROVED MASTER PLAN
1663
              KM
1664
              BA
                   .0129
1665
              LS
                             95
              UD
                   .0660
1666
```

```
ID......1.....2......3......4......5......6......7.....B.......9......10
LINE
                    DAML6
1667
               KK
                    DETENTION FOR NORTHSIGHT AUTOMALL, PER APPROVED MASTER DRAINAGE PLAN
1668
               KM
1669
               RS
                        1
                             STOR
                                        0
                           1.3682
1670
               S٧
                        0
               SE
                        0
                                3
1671
                        0
               SQ
                              7.6
1672
               * ****** END LOT 6 NORTHSIGHT AUTOMALL **********************
1673
               KK
                    Route flow from OFF-N3 through pipe to Northsight Blvd. entrance to cineplex
1674
               KM
                                                     CIRC
                                                              2.5
                      400 0.125 0.014
1675
               RD
1676
               KK
               KM
                    Combine flows from pipe and runoff from behind cineplex
1677
               HC
1678
                        2
1679
               KK
                   RT-SV7
1680
               KM
                    Route flow in channel along Northsight Blvd. to inlet structure
                    Poorly defined channel meanders with high n value (vegitation)
1681
               KM
                                      · -1
1682
               RS
                        1
                             FLOW
                            0.050
                                    0.070
                                                    0.016
1683
               RC
                    0.070
                                              300
                                                                               25
                                                                        19
                                                               17
1684
               RX
                        0
                                6
                                        8
                                               10
                                                       15
                                                                               2.5
                      2.5
                                      0.5
                                              0.0
                                                       0.0
                                                               0.5
                                                                        1
1685
               RY
               KK OFFSV7
1686
                   Runoff from Sonora Village Retail Site - drains west then south to corner
1687
               KM
1688
               BA 0.0012
                   0.012
1689
               UD
                               77
               LS
                                       85
1690
               KK DETSV7
1691
                   Detain runoff from OFFSV7 in local basins
1692
               KM
               DT
                   BSNSV7
                            0.133
1693
               DΙ
                        0
                             1000
1694
                        0
                             1000
1695
               DΩ
1696
               KK OFFSV4
1697
               KM
                   Runoff from Sonora Village Retail Site - drains south and west to
               KM
                   southwest corner of parking lot.
1698
                   0.0129
1699
               BA
1700
               UD
                   0.033
1701
               LS
                               77
                                       85
               KK DETSV4
1702
                   Detain runoff from OFFSV4 in local basins
1703
1704
               DT
                   BSNSV4
                            0.536
               DΙ
                        0
                             1000
1705
               DQ
                        0
                             1000
1706
```

```
ID......1.....2.....3.....4......5.....6......7.....8......9.....10
LINE
              KK CP-SV7
1707
              KM Combine runoff from OFFSV4, routed flow from OFF-N3, and overflow from BSNSV3
1708
                   ***WEST ONFLOW TO SITE***
1709
              KM
1710
              HC
                       3
              KK OFFSV5
1711
                  Runoff from Sonora Village Retail Site - drains south to boundary road
1712
              KM
1713
              BA 0.0144
1714
              UD
                  0.031
              LS
                              77
1715
                                     85
1716
              KK DETSV5
1717
              KM
                  Detain volume from OFFSV5 in local basins
1718
              KM
                   **CENTRAL ONFLOW TO SITE**
1719
              DT BSNSV5
                           1.013
                       0
                            1000
1720
              DI
              DQ
                       0
                            1000
1721
1722
              KK
                      В1
1723
              KM
                  Runoff from Onsite Basin B1
1724
              BA 0.0152
1725
              UD
                   0.036
1726
              LS
                              77
                                     85
1727
              KK CP-D1
                   Combine Offsite flows from DETSV5 and onsite from B1
1728
              KM
              HC
                       2
1729
1730
              KK DET-D1
1731
              KM
                   Detention Area D1
                           FLOW
              RS
1732
                       1
                                     -1
                                           1.91
              S۷
                           0.54
                       n
                                    1.17
1733
1734
              SE
                    1483
                            1484
                                    1485
                                           1486
1735
              SQ
                       0
                          24.07
                                          203.8
                                  41.68
                  RT-B2
1736
              KK
                   Route flow from Detention D1 to CP-D2
1737
              KM
1738
              RD
                     500 0.015 0.014
                                                   CIRC
                                                            1.5
1739
                 CP-B2
              KK
                  Combine offsite flows from CP-SV7 and from pipe RT-B2
              KM
1740
1741
              HC
                      2
                  RT-D2
1742
              KK
                   Route flow from CP-B2 in channel
1743
              KM
1744
              RS
                      1
                           FLOW
                                     -1
                           0.035
                                  0.045
                                            600
                                                  0.013
1745
              RC
                   0.045
                                    5
                                             9
                                                     11
                                                            15
                                                                    19
                                                                            20
              RX
                       0
                              1
1746
                              3
                                            0
                                                     0
                                                           1.5
                                                                     3
                                                                            3
              RY
                      3
                                    1.5
1747
```

```
ID.....1....2.....3.....4.....5.....6.....7....8......9.....10
LINE
1748
              KK
                     В2
1749
              KM
                 Runoff from onsite basin B2
1750
              BA
                 0.0054
1751
              UD
                 0.027
1752
              LS
                            77
                                    85
1753
                  CP-D2
              KK
1754
              KM
                  Combine flows from B2 and routed from RT-D2
              HC
1755
                     2
1756
              KK
                  DT-D2
1757
              KM
                 Detention basin D2
                                   - 1
1758
              RS
                          FLOW
                     1
                                                     0.67
1759
              sv
                          0.06
                                         0.29
                                                0.46
                      0
                                  0.16
1760
              SE
                   1476
                          1477
                                  1478
                                         1479
                                                1480
                                                        1481
1761
              SQ
                         13.54
                                 38.24
                                        71.61 100.62
                                                       600.0
1762
                 RT-D3
             KK
1763
                 Route flows in 2-36" culverts (equiv 4.3' diam)
              KM
1764
             RD
                  100 0.015 0.014
                                                CIRC
                                                        4.3
1765
             KK
                     В3
1766
             KM
                 Runoff from Onsite basin B3
1767
             BA 0.0120
1768
             UD
                 0.063
1769
                            77
                                   85
             LS
1770
                 CP-D3
             KK
1771
             KM
                  Combine flows from B3 and routed from RT-D3
1772
             HC
1773
             KK DET-D3
1774
             KM
                 Detention area D3
1775
             RS
                   1
                          FLOW
                                   -1
1776
             SV
                      0
                          0.95
                                  2.01
                                         3.17
                                                4.45
                                                       5.84
                                                        1478
1777
             SE
                   1473
                          1474
                                  1475
                                         1476
                                                1477
             SQ
                                         5.98
                                                7.07
                                                         68
1778
                     0
                          2.67
                                  4.63
1779
             KK
                   CP-A
1780
                  Route outflow in pipe to CP-A
             KM
                          .015 .014
             RD
                    100
                                                CIRC
                                                        1.5
1781
             * ******* END SCOTTSDALE RETAIL SITE************
1782
                 RCP-A
             KK
                  ROUTE HYDROGRAPH CP-A TO INTERSECTION OF RAINTREE DRIVE AND NORTHSIGHT BLVD.
1783
             KM
                  ROUTING ASSUMED TO BE VIA A 36" DIAMETER PIPE. SLOPE USED IS THE
1784
             KM
                 SLOPE OF NATURAL TERRAIN
1785
             KM
                                                        3
1786
                 2000 .009 .013
                                               CIRC
             RD
             * ***************************
```

```
ID.....1....2....3....4.....5....6.....7.....8.....9....10
LINE
1787
               KK OFF-N1
                    Runoff from north 1/2 ROW of Frank Lloyd Wright Blvd. west of Northsight Blvd
1788
               KM
1789
               BA
                   0.0108
                                                     2.49
                                                             2.75
                                                                     2.92
                                                                             3.25
1790
               PH
                                      0.75
                                              1.47
1791
                    0.192
               UD
1792
                                       55
               LS
                               77
1793
               KK
                    RT-N2
1794
               KM
                    Route flow in F.L.W. Blvd. eastward to Pima Rd. in 1/2 crown section
1795
               RS
                        1
                             FLOW
                                        -1
                                    0.030
1796
               RC
                    0.030
                            0.013
                                             2100
                                                    0.002
1797
               RX
                        0
                              0.1
                                      0.2
                                             45.0
                                                     45.1
                                                               50
                                                                        55
                                                                                60
1798
               RY
                        3
                              0.9
                                      0.9
                                              0.0
                                                      0.5
                                                             0.60
                                                                     0.70
                                                                              0.80
1799
               KK OFF-N2
1800
               KM
                   Runoff from basin north of Frank Lloyd Blvd. west of Pima to Northsight Blvd
1801
                   0.0301
               BA
1802
               UD
                    0.136
1803
               LS
                               77
                                       26
1804
               KK
                    CP-N2
1805
               KM
                    Combine runoff at northwest corner of Pima and F.L.W. Blvd into basin
1806
               HC
                        2
1807
               KK RT-SV6
1808
               KM
                    Route flows in the channel along Pima Rd. on the east side of Sonora Village
1809
               RS
                        1
                             FLOW
                                       -1
1810
               RC
                    0.055
                            0.045
                                    0.055
                                             1300
                                                    0.013
1811
               RX
                        0
                                       15
                               14
                                               25
                                                       35
                                                               45
                                                                       46
                                                                               60
1812
               RY
                        5
                                3
                                        3
                                                0
                                                        0
                                                                3
                                                                        3
                                                                                5
1813
               KK OFFSV6
1814
                  Runoff from Sonora Village Retail Site - drains west to Pima and south
1815
               KM
                   in a roadside channel to the boundary road.
               BA 0.0143
1816
1817
               UD
                   0.043
1818
               LS
                               77
                                       85
1819
               KK
                  DETSV6
1820
                   Detain volume from OFFSV6 in local basins
               KM
1821
                            2.077
               DT
                  BSNSV6
1822
              DI
                        0
                             1000
1823
                             1000
              DQ
                        0
1824
              KK CP-SV6
1825
                  Combine flow from OFFSV6 with flows in Pima Rd. Channel
1826
                   **EAST ONFLOW TO SITE**
               KM
1827
               HC
                       2
```

```
ID......1.....2......3.....4......5......6......7.....8......9.....10
LINE
               KK
                    RT-B7
1828
                    Route flow from CP-SV6 in Pima Rd Channel
1829
               KM
1830
               RS
                       1
                             FLOW
                                       -1
                                              720
                                                   0.013
1831
               RC
                    0.045
                            0.035
                                    0.045
                                                                15
                                                                       19
                                                                                20
                                1
                                        5
                                                9
                                                       11
1832
               RX
                        0
                                                0
                                                        0
                                                                1
                                                                                2
                        2
                                2
                                        1
1833
               RY
1834
               KK
                    Runoff from Onsite basin B7 along Future South Bound A00T Service Rd.
               KM
1835
                   0.0010
1836
               BA
               UD
                    0.027
1837
                               77
1838
               LS
                    CP-B7
1839
               KK
                    Combine flows from CP-SV6
1840
               KM
               HC
                        2
1841
1842
               KK
                    RT-B8
                    Route flow from CP-B7 in Pima Rd Channel
1843
               KM
                             FLOW
                                      -1
1844
                       1
               RS
                                              790
                                                   0.013
                            0.035
                                    0.045
               RC
                    0.045
1845
                                                       11
                                                                15
                                                                       19
                                                                                20
                                                9
1846
               RX
                        0
                                1
                                        5
                                                        0
                                                                1
                                                                        2
                                                                                2
1847
               RY
                        2
                                2
                                                0
1848
               KK
                       В4
1849
               KM
                   Runoff from Onsite basin B4
1850
               BA
                   0.0042
               U0
                    0.045
1851
1852
               LS
                               77
                                       85
1853
               KK
                    RT-B5
1854
               KM
                    Route flows in SO to CP-B5
                                                              1.5
1855
               RD
                     500
                             .013
                                     .014
                                                     CIRC
                       В5
1856
               KK
                   Runoff from Onsite basin B5
1857
               KM
1858
               ВА
                   0.0160
1859
               UO
                    0.047
1860
               LS
                               77
                                       85
                    CP-B5
1861
               ΚK
               KM
                    Combine flows from B5 and routed from B4
1862
               HC
1863
1864
               KK
                    RT-04
                    Route flows in SO to Basin 04
1865
               KM
                             .013
                                                     CIRC
                                                              2.5
                      100
                                   .014
               RD
1866
1867
               KK
                       В6
                   Runoff from Onsite basin B6
               KM
1868
                   0.0147
1869
               BA
                    0.081
1870
               U0
                               77
                                       85
1871
               LS
```

```
ID......1.....2......3.....4......5......6......7.....8......9......1D
LINE
              KK
                  CP-D4
1872
1873
              KM
                  Combine runoff from B6 and routed from B5
1874
              HC
                      2
1875
              KK
                 DET-D4
1876
              KM
                  Detention area D4
                           FLOW
                                     -1
1877
              RS
                      1
              sv
                      0
                           1.19
                                   2.48
                                           3.85
                                                  5.32
                                                          6.88
1878
                                                          1474
              SE
                    1469
                           1470
                                   1471
                                           1472
                                                  1473
1879
                                                  7.07
                                                          68.0
                                   4.63
                                           5.95
1880
              SQ
                      0
                           2.67
1881
              ΚK
                      в8
                  Runoff from Onsite basin B8 along Future Southbound ADOT Service Rd
1882
              KM
1883
              ВА
                 0.0012
1884
              UD
                  0.027
1885
              LS
                             77
              KK
                   CP-D
1886
                  Combine outflow from Detention D4 and flows in east channel
1887
              KM
1888
              HC
1889
                  RCP-D
              ΚK
                  ROUTE HYDROGRAPH CP-D THROUGH PACEL "I". ROUTING IS ASSUMED
1890
              KM
                  TO BE VIA A 48" PIPE AT A SLOPE OF D.005 FT./FT.
1891
              KM
1892
              RD
                   1100
                           .005
                                   .013
                                                  CIRC
              * ***************
                ****** END SONORAN VILLAGE/SCOTTSDALE RETAIL ****************
              * *******************
              * ADD PORTION OF MASTER PLAN PARCEL "I" BETWEEN BUTHERUS ALIGNMENT
              * AND RAINTREE DRIVE
1893
              KK
                   IPRT
1894
              KM
                  PORTION OF ORIGINAL MASTER PLAN PARCEL "I" BETWEEN BUTHERUS DRIVE
                  ALIGNMENT AND RAINTREE DRIVE. DOES NOT INCLUDE PORTION OF "I"
1895
              KM
                  TAKEN FOR FREEWAY. PARCEL IS ASSUMED TO BE DEVELOPED AS WAS
1896
              KM
                  ASSUMED IN THE MASTER PLAN. REVISED 1-15-02
1897
              KM
1898
                  .0196
              BA
1899
              LS
                             77
                                     95
1900
              UD
                   .0837
1901
              KK
                  IPRT2
                  IPRT2 THAT IS BEING DEVELOPED WITH A RETAIL SHOPPING CENTER
1902
              KM
1903
              KM
                  WITH JPRT-2A AND 2B
                  .0068
1904
              BA
                             77
                                     92
1905
              LS
              UD
                   .0619
1906
```

```
ID......1......2......3.....4......5......6......7.....8.......9......10
LINE
             KK DIPRT
1907
             KM DETENTION BASIN IN IPRT-2, OUTLET: 18" RCP
1908
                        STOR
1909
             RS
                   1
                                 0
                                      .161 .2455
                         .07 .1144
                  .027
1910
             SA
                        1462
                               1463
                                     1464 1464.3
1911
             SE
                1461
                               9.5
                                       12.6
                        3.6
             SQ
                  0
1912
                                       1.5
                         10
                                3
1913
             ST 1464.3
1914
             KK
                 PRT3
             KM COMBINE HYDROGRAPH RCP-D, RCP-A, IPRT AND DIPRT AT RAINTREE DRIVE AND THE
1915
                87TH STREET ALIGNMENT
1916
             KM
1917
             HC
             PRS
1918
             KK
             KM
                COMBINE HYDROGRAPH RPR3, RPR4 AND PRT3
1919
1920
             HC
                  RPRS
1921
             ΚK
                ROUTE CONCENTRATION POINT PRS TO CONCENTRATION POINT PS14
1922
             KM
                                             CIRC
                                                      4.5
1923
             RD
                   306
                        .0137
                                .013
1924
                  S14
             KK
                RUNOFF FROM 87TH BASIN S14
1925
             KM
1926
             BA .00074
            LS
                          95
1927
             UD
                   .06
1928
                  PS14
1929
             KK
1930
             KM
                COMBINE BASIN S14 WITH ROUTING RPR5
1931
             НС
1932
             KK
                 RPS14
                ROUTING FROM PS14 TO PS12
1933
             KM
            RD
                  310 .0107 .013
                                             CIRC
                                                     4.5
1934
             * ******* START EAST PART OF REMAINING DEVELOPED AREA G *******
1935
            KK
                   GE
                 RUNOFF FROM DEVELOPED PART OF PARCEL GE
1936
            KM
1937
            ВА
                 .0137
                          95
1938
            LS
            UD
                 .0766
1939
```

```
ID......1.....2.....3.....4.....5.....6.....7.....8......9......10
LINE
1940
               KK DETGE
                   100-YR, 2-HR STORAGE FOR PARCEL GE
1941
               KM
1942
               RS
                      1
                            STOR
                                      0
1943
                             .56
                                     .66
                                             .77
               SA
                     .46
1944
               SE
                    1460
                            1461
                                    1462
                                            1463
1945
               SQ
                     0
                              3
                                     5
                                             6
1946
               ST
                                             1.5
                    1463
                              10
                                       3
               * ****** END EAST PART OF REMAINING UNDEVELOPED AREA G *******
1947
               KK
                     S11
1948
               KM
                   RUNOFF FROM 87TH BASIN S11
1949
                    .0008
               ВА
1950
              LS
                              98
1951
              UD
                   .0632
1952
              KK
                     S12
1953
              KM
                   RUNOFF FROM 87TH BASIN S12
1954
              BA
                  . 0005
1955
              LS
                              98
1956
              UD
                    .0803
1957
              KK
                    PS12
              KM
1958
                   COMBINE BASINS S12, S11, ROUTING RPS 14, AND BASIN G
1959
              HC
              *
1960
              KK
                   RPS11
1961
              KM
                   ROUTE COMBINATION POINT PS12 TO PS9
1962
              RD
                     464
                           .0104
                                    .013
                                                   CIRC
                                                            4.5
1963
              ΚK
                      S9
1964
              KM
                   RUNOFF FROM 87TH BASIN S9
1965
              ВА
                   .0006
1966
              LS
                              98
1967
              UD
                     .06
1968
              KK
                     s10
1969
              KM
                   RUNOFF FROM 87TH BASIN S10
1970
              ВА
                   .0006
1971
              LS
                              98
1972
              UD
                     .06
1973
              KK
                     PS9
                   COMBINE ROUTING RPS11 WITH BASINS S9 AND S10
1974
              KM
              HC
1975
                       3
```

```
LINE
              ID......1.....2.....3.....4.....5.....6.....7.....8.....9......10
1976
                   RPS9
              KK
1977
              KM
                  ROUTE COMBINATION POINT PS9 TO PS8
                                                CIRC
                                                        4.5
1978
              RD
                    174
                         .0083 .013
1979
              KK
                     S7
1980
              KM
                  RUNOFF FORM 87TH BASIN S7
1981
             BA
                  .0003
1982
             LS
                            98
                    .06
1983
             UD
1984
             KK
                     S8
1985
             KM
                 RUNOFF FROM 87TH BASIN S8
1986
             BA . 0003
1987
                            98
             LS
1988
             UD
                    .06
             * ******* AREA H OF NORTHSIGHT MASTER PLAN ************
1989
             KK
1990
             KM
                 AREA H FROM NORTHSIGHT MASTR PLAN
1991
             KM
                 NOTE: AREA REDUCED BY FREEWAY RIGHT-OF-WAY
                 .0131
1992
             ВА
1993
             LS
                            95
1994
             UD
                  .0807
             1995
             KK
                   PS8
1996
             KM
                 COMBINATION OF BASINS S7 AND S8 WITH ROUTING RPS9 AND AREA H
1997
             HC
1998
             KK
                  RPS8
1999
             KM
                 ROUTING COMBINATION POINT PS8 WITH COMBINATION POINT PS6
2000
             RD
                   530
                        .0080
                                 .013
                                               CIRC
                                                       4.5
2001
             KK
                    S5
2002
                RUNOFF FROM 87TH BASIN S5
             KM
2003
             ВА
                 .0006
2004
             LS
                           98
2005
             UD
                   .06
2006
             KK
                    S6
2007
             KM
                 RUNOFF FROM 87TH BASIN S6
2008
             BA
                 .0007
2009
             LS
                           98
2010
             UD
                   .06
             * ******* START JDA CORP. HEADQUARTERS **************
             * MODEL FROM DRAINAGE REPORT BY DEI PROFESSIONAL SERVICES
               REVISION DATE JUNE 12, 1998
```

```
ID......1.....2.....3.....4......5.....6.....7.....8.....9......10
LINE
2011
              KK
                       1
                   RUNOFF FROM BASIN 1
2012
              KM
2013
              ВА
                    .0064
                                                    2.54
                                                           2.78
                                                                   2.94
                                                                           3.25
2014
              PH
                                     .76
                                            1.50
2015
              LS
                              95
              UD
2016
                     .05
2D17
              KK
                    DET1
2018
                   STORAGE ROUTE FLOW THROUGH DET. BASIN 1
              KM
                                              0
2019
              RS
                       1
                            STOR
                                      0
                                            .567
                                                    .714
2020
              sv
                       0
                             .14
                                    .324
2021
              SQ
                       0
                              4
                                       8
                                             13
                                                     50
2022
              SE
                    1450
                            1451
                                    1452
                                            1453 1453.5
2023
              KK
                       2
2024
              KM
                   RUNOFF FROM BASIN 2
                  .00564
2025
              BA
                              95
2D26
              LS
2D27
              UD
                     .07
2028
              KK
                    DET2
2029
                   STORAGE ROUTE FLOW THROUGH DET. BASIN 2
              KM
203D
              RS
                            STOR
                       1
                                     0
                                             0
                                                    .949
2031
              SV
                       0
                            .105
                                    .333
                                            .708
2032
              SQ
                       0
                              4
                                             13
                                                     50
                                      8
                                            1453 1453.5
2033
              SE
                    1450
                            1451
                                    1452
                       3
2034
              KK
2035
              KM
                   RUNOFF FROM BASIN 3
2036
              BA
                  .00377
2037
              LS
                              95
2038
              UD
                     . 05
2D39
              KK
                     CP3
2040
              KM
                   ADD HYDROGRAPHS AT CP3
2041
              HC
                     3
2042
              KK
                    DET3
2043
              KM
                   STORAGE ROUTE FLOW THROUGH DET. BASIN 3
2044
              RS
                       1
                            STOR
                                       0
                                             0
                                                                    .70
2045
              S۷
                       0
                            .044
                                                    .506
                                                           .635
                                    .141
                                            .296
                                                                    5D
                       0
                               4
                                                     26
                                                            28
2046
              SQ
                                      13
                                              21
2047
              SE
                    1447
                            1448
                                    1449
                                            1450
                                                    1451 1541.5
                                                                   1452
              * ****** END JDA CORP. HEADQUARTERS *************
```

```
ID......1.....2.....3.....4......5.....6.....7.....8......9.....10
LINE
2048
               KK
                     PS6
               KM
                   COMBINE BASINS S5 AND S6 WITH ROUTING RPS8
2049
                   AND DISCHARGE FROM THE JOA CORP. HEADQUARTERS
2050
               KM
               HC
2051
2052
               KK
2053
               KM
                   ROUTE COMBINATION POINT PS6 TO CONCENTRATION POINT PS4
2054
               RO
                           .0058
                                   .013
                                                    CIRC
               * ****** START VANGUARD BASINS 5,6,7,8 AND 9 *********
2055
               KK
2056
               KM
                   RUNOFF FROM VANGUARD DRAINAGE AREA 5
2057
               ВА
                   .0040
2058
               LS
                               95
2059
               UD
                    .0583
2060
                     0V5
               KK
                   ROUTE HYDROGRAPH V5 THROUGH DETENTION BASIN 5
2061
               KM
2062
               KM
                   OVER FLOW GOES TO DETENTION BASIN 7
2063
              RS
                            STOR
                       1
2064
               SV
                       0
                           .0259
               SE
                      49
2065
                              50
2066
               SQ
                      0
                          0.001
2067
               ST
                      50
                              20
                                             1.5
              ΚK
2068
                      ٧6
2069
              KM
                   RUNOFF FROM VANGUARD DRAINAGE AREA 6
2070
              ВА
                   .0020
2071
              LS
                              95
2072
              UD
                     .06
2073
              ΚK
                     DV6
2074
              KM
                   ROUTE HYOROGRAPH V6 THROUGH OETENTION BASIN 6
2075
              KM
                   OVERFLOW GOES TO DETENTION 7
              RS
2076
                       1
                            STOR
              s٧
                           .0963
2077
                       0
2078
              SE
                      45
                              49
2079
              SQ
                       0
                             .73
2080
              ST
                      49
                              20
                                             1.5
                                       3
2081
              ΚK
                      ٧7
2082
              KM
                   RUNOFF FROM VANGUARO ORAINAGE AREA 7
                   .0028
2083
              ВА
                              95
2084
              LS
2085
              U0
                     .06
```

```
ID......1.....2......3.....4......5......6......7.....8......9......10
LINE
2086
               KK
                      PV7
2087
               KM
                    COMBINE HYOROGRAPHS OV5, DV6 ANO V7
2088
               HC
                        3
2089
               ΚK
                      DV7
2090
               KM
                    ROUTE HYDROGRAPH PV7 THROUGH DETENTION BASIN 7
2091
               RS
                        1
                             STOR
               s٧
                        0
                             .3723
2092
                       45
2093
               SE
                               48
2094
               SQ
                        0
                               .73
               ST
                       49
                                        3
                                               1.5
2095
                               20
2096
               KK
                       ٧8
2097
                    RUNOFF FROM VANGUARD DRAINAGE AREA 8
               KM
2098
               ВА
                    .0037
2099
                               92
               LS
2100
               U0
                      .06
2101
                      PV8
               KK
2102
               KM
                    COMBINE HYOROGRAPHS DV7 ANO V8
2103
               HC
                        2
2104
               KK
                      0V8
                    ROUTE HYOROGRAPH PV8 THROUGH OFTENTION BASIN 8
2105
               KM
2106
               RS
                        1
                             STOR
                                        0
2107
               S۷
                        0 1.0022
2108
               SE
                     44.5
                             47.5
2109
               SQ
                        0
                              .73
2110
               ST
                     47.5
                               20
                                        3
                                               1.5
2111
               KK DIV-V8
                    OIVERT OVERFLOW FROM OETENTION BASIN V8 TO DETENTION BASIN V1
2112
               KM
2113
               DT
                     DDV8
2114
               DΙ
                        0
                              .73
                                                2
                                                         5
                                                                10
                                                                       100
                                                                              1000
2115
               DQ
                        0
                                0
                                       .27
                                             1.27
                                                      4.27
                                                              9.27 99.27 999.27
2116
                       ۷9
               ΚK
2117
               KM
                    RUNOFF FROM VANGUARD DRAINAGE AREA 9
2118
               ΒA
                    .0043
                               89
2119
               LS
                      .06
2120
              U0
                      0V9
2121
               KK
2122
               KM
                    ROUTE HYOROGRAPH V9 THROUGH OETENTION BASIN 9
                    OVERFLOW FROM DV9 WILL FLOW TO CATCHBASIN S3 NWHICH IS LOCATED
2123
               KM
                    IN A SUMP
2124
               KM
2125
               RS
                        1
                             STOR
                                        0
               s٧
                        0
                            .3772
2126
               SE
                       45
                               48
2127
                        0
                              .73
2128
               SQ
2129
               ST
                       48
                               20
                                        3
                                              1.5
               * ******* ENO VANGUARO BASINS 5,6,7,8 AND 9 *********
```

```
ID......1.....2.....3.....4......5.....6......7.....8......9.....10
LINE
              KK
2130
                      S3
              KM
                   RUNOFF FROM 87TH BASIN S3
2131
                   .0002
              ВА
2132
                              98
2133
              LS
2134
              UD
                     .06
2135
              KK
                      S4
2136
              KM
                   RUNOFF FROM 87TH BASIN S4
2137
              ВА
                   .0002
                              98
2138
              LS
              UD
2139
                     .06
2140
              KK
                     PS4
                   COMBINE BASINS S4 AND S3 WITH ROUTING RPS6 AND VANGUARD DETENTION DV8
2141
              KM
                   AND VANGUARD DETENTION DV9
2142
              KM
              HC
                       5
2143
2144
              KK
                    RPS4
                   ROUTE CONCENTRATION POINT PS4 TO CONCENTRATION POINT PS2
2145
              KM
                                                    CIRC
                                                             5.5
              RD
                     452
                           .0053
                                   .013
2146
              * ****** START VANGUARD BASINS 1 AND 2 ***********
              KK
                      ٧2
2147
              KM
                   RUNOFF FROM VANGUARD DRAINAGE AREA 2
2148
2149
              ВА
                   .0019
2150
              LS
                              90
2151
              UD
                     .06
2152
              KK
                     DV2
                   ROUTE HYDROGRAPH V2 THROUGH DETENTION BASIN 2
2153
              KM
              RS
                            STOR
                                       0
2154
                       1
                       0
                           .1687
              S۷
2155
              SE
                      42
2156
                              46
                       0
2157
              SQ
                              .85
              ΚK
2158
                   RUNOFF FROM VANGUARD DRAINAGE AREA 1
2159
              KM
                   .0048
2160
              ВА
2161
              LS
                              91
              UD
                     .06
2162
                   RDDV8
2163
              KK
                   RECOVER OVERFLOW FROM VANGUARD DETENTION BASIN 8
              KM
2164
              DR
                    BVdd
2165
```

HEC-1 INPUT PAGE 59

```
ID......1.....2.....3.....4.....5.....6.....7....8.....9....10
LINE
              KK
                    PV1
2166
              KM
                  COMBINE HYDROGRAPHS V1, DV2, AND RECVERED DIVERSION FROM VANGUARD
2167
2168
              KM
                  DETENTION 8
2169
              HC
2170
              KK
                    DV1
2171
              KM
                  ROUTE HYDROGRAPH PV1 THROUGH DETENTION BASIN 1
2172
              RS
                  1
                          STOR
2173
              sv
                      0
                          .6116
2174
              SE
                     41
                            44
2175
              SQ
                      0
                            .73
2176
              ST
                     44
                                     3
                             20
                                          1.5
2177
              KK DIV-V1
2178
              KM DIVERT OVERFLOW FROM DETENTION BASIN V1 TO CATCHBASIN N7
2179
              KM CATCHBASIN N7 IS LOCATED IN A SUMP
2180
              DT
                 DDV1
2181
              DΙ
                      0
                            .73
                                    1
                                            2
                                                  5
                                                        10
                                                              100
                                                                       1000
2182
                      0
                           0
                                   .27
                                        1.27 4.27
                                                        9.27 99.27 999.27
              * ****** END VANGUARD BASINS 1 AND 2 ************
2183
             KK
2184
             KM
                  RUNOFF FROM 87TH BASIN S1
2185
             BA
                  .0006
2186
             LS
                            98
             UD
2187
                   .06
             *
                  ´ $2
2188
             KK
2189
             KM RUNOFF FROM 87TH BASIN S2
2190
             BA
                  .0006
2191
             LS
                            98
2192
             UD
                    .06
2193
             KK
                    PS2
2194
             KM
                 COMBINE BASINS S1 AND S2 WITH ROUTING RPS4
2195
             KM
                  AND WITH DISCHARGE FROM VANGUARD DETENTION BASIN DV1
2196
             HC
                     4
2197
             KK
                  RPS2
2198
             KM
                  ROUTE COMBINATION BASIN PS2 TO PSN
2199
             RD
                    205
                        .0039 .013
                                        CIRC
                                                        5.5
             *
2200
             ΚK
                    N8
2201
                 RUNOFF FROM NORTHSIGHT BLVD BASIN N8
             KM
2202
             ВА
                 .0013
2203
             LS
                            98
2204
             UD
                    .06
```

\* RECOVER DIVERSION FROM DETENTION BASIN V1 AT VANGUARE

<sup>1-</sup>DR-2020 3/9/2021

LINE	ID.	12345678910
2205	KK	RDDV1
2206	KM	RECOVER OVERFLOW FROM VANGUARD DETENTION BASIN 1
2207	DR	DDV1
2207	*	
2208	KK	N7
2209	KM	RUNOFF FROM NORTHSIGHT BLVD BASIN N7
2210	BA	.0014
2211	LS	98
2212	UD *	.06
2213	KK	PN7
2214	KM	COMBINATION POINT FOR BASINS N7 AND N8 AND OVERFLOW FROM
2215	KM	VANGUARD DETENTION BASIN 1 (DDV1)
2216	HC *	3
2217	KK	RN7
2218	KM	ROUTING FROM COMBINATION POINT RN7 TO PSN
2219	RD	153 .0041 .013 CIRC 2
	*	
2220	KK	PSN
2221	KM	COMBINE ROUTING RN7 WITH ROUTING RPS2
2222	HC	2
	*	
2223	KK	RPSN
2224	KM	ROUTE COMBINATION POINT PSN WITH PN6
2225	RD	147 .0071 .013 CIRC 6
	*	
2226	KK	N6
2227	KM	RUNOFF FROM NORTHSIGHT BLVD BASIN N6
2228	BA	.0010
2229	LS	98
2230	UD	.0631
	*	
2231	KK	N5
2232	KM	RUNOFF FROM NORTHSIGHT BLVD BASIN N5
2233	ВА	.0012
2234	LS	98
2235	UD	.0603
	*	
2236	KK	PN6
2237	KM	COMBINE BASINS N6 AND N5 WITH ROUTING RPSN
2238	нс	3
	*	

HEC-1 INPUT PAGE 61

```
ID......1.....2.....3.....4.....5.....6......7....8......9.....10
LINE
2239
               KK
                     RPN6
2240
               KM
                    ROUTE CONCENTRATION POINT PN6 TO DETENTION BASIN 7
2241
               RD
                            .0055
                                     .013
                                                     CIRC
               * ****** MASTER PLAN AREA C1 AND C2 *****************
               * EACH AREA WILL DISCHARGE VIA A INDIVIDUAL 36" PIPE
               * TO DETENTION BASIN 7 IN THE NORTHSIGHT PARK. EACH 36" PIPE
               * WILL COLLECT SOME STREET DRAINAGE
2242
               KK
                       C1
2243
               KM
                    RUNOFF FROM AREA C1 OF THE NORTHSIGHT MASTER PLAN
2244
               ВА
                    .0175
2245
               LS
                               95
2246
               UD
                    .0732
2247
               KK
                      N1
2248
               KM
                    RUNOFF FROM THUNDERBIRD ROAD BASIN N1
2249
               ВА
                    .0007
2250
               LS
                               98
2251
               UD
                    .0679
2252
               KK
                      N2
2253
               KM
                   RUNOFF FROM THUNDERBIRD ROAD BASIN N2
2254
               BA
                    .0007
2255
               LS
                              98
2256
               UD
                      .06
2257
               KK
                    PD71
2258
               KM
                   COMBINE HYDROGRAPHS C1,N1, AND N2 AT DETENTION BASIN 7
2259
              HC
                       3
2260
              KK
2261
              KM
                   RUNOFF FROM AREA C2 OF THE NORTHSIGHT MASTER PLAN
2262
              BA
                   .0183
2263
              LS
                              95
2264
              UD
                   .0677
2265
              KK
                      N3
2266
              KM
                   RUNOFF FROM NORTHSIGHT BLVD BASIN N3
2267
              BA
                   .0009
2268
              LS
                              98
2269
              UD
                     .06
```

```
ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
LINE
             KK
                    N4
2270
                 RUNOFF FROM NORTHSIGHT BLVD BASIN N4
2271
             KM
2272
             ВА
                 .0010
             LS
                           98
2273
2274
             UD
                   .06
2275
             KK
                  PD72
                 COMBINE HYDROGRAPHS C2, N3, AND N4 AT DETENTION BASIN 7
2276
             KM
2277
             HC
2278
             KK
                  CPD7
                 COMBINE HYDROGRAPHAS RPN6, PD71 AND PD72 AT DETENTION BASIN 7
2279
             KM
2280
             HC
             * ******************
             * *********************
             * ******* END INFLOW TO DETENTION BASIN 7 ************
              *************
2281
             KK
                  DB7
                 DETENTION BASIN 7
2282
             KM
2283
                         STOR
                                  0
             RS
                    1
2284
             SA
                .1459 1.1729 1.6063 2.1083
2285
             SE
                 1436
                         1438
                                1440
                                       1442
                         105
                                229
                                       306
2286
             SQ
                  0
             ST
                  1442
                          20
                                       1.5
2287
                                  3
2288
             KK
                 DDB7
                 REMOVE OUTFLOW FROM DETENTION BASIN 7 VIA 2-18" AND 2-15" PIPES AND
2289
             KM
                 1-24" PIPE. FLOW EXITS PARK SITE AND PASSES UNDER THUNDERBIRD ROAD
2290
             KM
2291
            DT
                 D-DT7
                                        306
2292
            DΙ
                    0
                          105
                                 229
2293
             DQ
                    0
                          25
                                 65
                                        87
2294
             ΚK
                  DB6
2295
             KM
                 ROUTE DETENTION BASIN 7 THROUGH DETENTION BASIN 6
2296
             RS
                         STOR
                    1
2297
             SA
                 .8695 1.6308 2.0491
2298
             SE
                  1434
                         1436
                              1438
2299
             SQ
                  0
                          42
                                118 .
2300
             ST
                  1438
                          20
                                  3
                                       1.5
```

LINE	ID.	1 .	2	3.	4 .	5	678910
2301	KK	CP5					
2302	KM	COMBIN	E DETETI	NION BAS	INS 4 AND	6	
2303	HC	2					
	*						
2304	KK	DB5					
2305	KM	ROUTE	DETENTIO	ON BASIN	6 THROUG	H DETENTI	ON BASIN 5
2306	RS	1	STOR	0			
2307	SA	.8118	2.0661	2.55	2.6447	3.4093	
2308	SE	1432	1434	1435.55	1436	1438	
2309	SQ	15	198	350	375	456	
2310	ST	1438	20	3	1.5		
	*						
2311	ZZ						

		HEMATIC DIAGR	RAM OF ST	REAM NETW	ORK			
INPUT LINE	(V) ROUT	TING	(>)	DIVERSION	OR PUMP	FLO	W	
	(.) CON	ECTOR	(<)	RETURN OF	DIVERTE	OR	PUMPED	FLOW
11	AMS1							
17	•	AMS2						
22	PAM2	•						
22		•						
25		AMS5						
30			АМ					
35	PAM6			•				
	•							
38	•	AMS7						
	•	•						
43		•	NA					
	•	•		V				
23	•	•	DNA	49				
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1 styl	РАМ7	•		•				
	•							
64		AMS3						
	•	•						
69	•	•	414	<b>.</b> /				
09	•	•	AM:					
	•			•				
74	•	•		•	NAM7 V			
	•	•			V			
83	•	•			DNAM7			
	•	•		•	•			
91		PAM3	• • • • • • • •	•	•			
		•						
94	•	•	NAI					
	•	•		V V				
103		•	DNA					
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111	•	DNAMR		•				
	•	FRAMO	•••••	•				
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	CPAM1	• • • • • • • • •						
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117	•	STURN						

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123	•	V DSATR		
123	•			
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135	•	•		AMS9
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140	PAM9	•	•	•
140	٧	• • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	
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143	RPAM9			
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147		HRLD		
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154	•	V DHRLD		
124	•			
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161	•	•	BRM	
	•	•	V V	
166	•	•	DBRM	
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175	•	•	•	PCL1
173	•		•	PUL 1
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184	•	2		
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189	•	V		
109	•	DPARK •		
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200	•		> DBUDG	
196	•	DBUDG		
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203	•	•	4	
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208	•	PDET1	•	
200	•	۷	•••••	
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211	•	DET1		
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217	•	•	AM14B	
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227	•	•	V	
223	•	•	D14B	
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242	•	•	PDET2	• • • • • • • • • • • • • • • • • • • •
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261	•		HY1	
267	•	กมรา	•	
201	•	PHY1	• • • • • • • • •	1
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274			> DPHY1	
272	_	DPHY1		
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277	•	•	HY2	
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285	·	•		> DPHY2
	•	•		> DFILE
283	•	•	DPHY2	
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288	PHY2			
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	RPHY2			
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294		W84		
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301	•		> DW84	
299	•	DW84		
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701	•	•		
304	•	•	E84	
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311	-	-		> DE84
309	•	•	p=0/	· DE04
203	•	•	DE84	
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314				UD 1
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320	PSUN		· · · · · · · · · · · · · · · ·	
727	•	DUEL T		
323	•	PKELT		
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336	•	•	AH1	
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341			DAH1			
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350	•	•	•	AH3		
2821318	•	•	•	• •		
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7/7	•	•	•	•	AH2	
363	•	•	•	•	A112	
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368	•			CPAH2		
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774	•	•	•			
371	•	•	•	DAH2		
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379					AH4	
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701	•	•	•	•	•	
384	•	•	•	•	•	AH84
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391		CPAH				
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394	•	DAH4				
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461	•	•	•	DET1 V		
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467	•			DET2		
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478	•	•	•		PAV2	
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484			•		3
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495		•	•	•	CPUG
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501	. CVAN				
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505	•	AHL5	•		
513	. PAHL5				
516		DAL			
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522		D_DAL			
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530	. PDAL	•			
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533	. RPDAL				
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536	. V . RP84				
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550	•	CP11	• • • • • • • • • • • • • • • • • • • •		
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553	•		8		
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558 .	•	CP8	• • • • • • • • • • • • • • • • • • • •		
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561 .			5		
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566 .	•	•	•	6	
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571 .	•	•	CP5.	•	
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574 .	•	•	•	2	
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585 .	-	•	•	•	10

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590	•	•	•		10	• • • • • • • • • • • • • • • • • • • •		
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598				•	•	•	9	
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603	•	•	•		СР3			
005	•	•	•	•	•			
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6D6	•	•	•	•	•	4		
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611	•	•	•	•	•	•	7	
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616		•				CP4		
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440	•	•	CDDET.	•	•	•		
619	•	•	CPDET		• • • • • • • •	• • • • • • •		
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622	•	•	DET					
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628				1				
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636	· ·	•	нүз					
636			нүЗ					
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644			HY3	.<	DBUDG			
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644	: : : :		HY3		DBUDG			
644	: : : : :		HY3		DBUDG			
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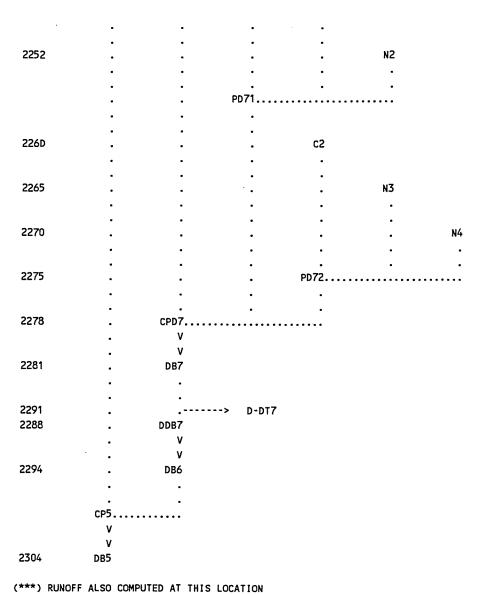
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\* U.S. ARMY CORPS OF ENGINEERS \* HYDROLOGIC ENGINEERING CENTER \* 609 SECOND STREET \* DAVIS, CALIFORNIA 95616 \* (916) 756-1104 \* \*

NORTHSIGHT DRAINAGE MASTER PLAN REVISION

GAI# 100-106

FILE = 106TOM.DAT

BASIN GE IS DEVELOPED

BASIN I IS DEVELOPED

100 YEAR 6 HOUR STORM EVENT

REVISED OCTOBER 10, 2001 FOR PRICE CLUB DETENTION AND NORHTSIGHT VILLAGE II

REVISED NOVEMBER 27, 2001 FOR IPRT DETENTION

10 IO OUTPUT CONTROL VARIABLES

IPRNT 5 PRINT CONTROL

IPLOT D PLOT CONTROL

QSCAL 0. HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN 1 MINUTES IN COMPUTATION INTERVAL

IDATE 1 0 STARTING DATE ITIME 0000 STARTING TIME

NQ 1000 NUMBER OF HYDROGRAPH ORDINATES

NDDATE 1 0 ENDING DATE

NDTIME 1639 ENDING TIME

ICENT 19 CENTURY MARK

COMPUTATION INTERVAL .D2 HOURS

TOTAL TIME BASE 16.65 HOURS

ENGLISH UNITS

DRAINAGE AREA SQUARE MILES PRECIPITATION DEPTH INCHES

LENGTH, ELEVATION FEET

FLOW CUBIC FEET PER SECOND

STORAGE VOLUME ACRE-FEET SURFACE AREA ACRES

TEMPERATURE DEGREES FAHRENHEIT

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₩ NG ROUTED OUTFLOW ( 30.) IS GREATER THAN MAXIMUM OUTFLOW ( 28.) IN STORAGE-OUTFLOW TABLE	₩G ROUTED OUT	FLOW ( 3	30.) IS	GREATER	THAN	MAXIMUM	OUTFLOW	(	28.)	IN	STORAGE-OUTFLOW	TABLE
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## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET1 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIAL	. VALUE	SPILLWAY C	REST TOP	OF DAM	
		ELEVATION		.00	3.0	0	3.00	
		STORAGE		0.	0.	-	0.	
		OUTFLOW		0.	1.	•	1.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	2.55	.00	0.	1.	.00	3.57	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET2 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

<sup>⇒</sup> LAN	1		INITIA	L VALUE	SPILLWAY CR	EST TOP	OF DAM	
		ELEVATION		.00	3.00		3.00	
		STORAGE		0.	1.		1.	
		OUTFLOW		0.	1.		1.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	<b>FAILURE</b>
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1.62	.00	0.	1.	.00	6.55	.00

HYDROGRAPH AT	V5	19.	3.08	1.	0.	0.	.00		
ROUTEO TO	0 <b>V</b> 5	19.	3.08	1.	0.	0.	.00	50.47	3.08
HYOROGRAPH AT	٧6	10.	3.08	1.	0.	0.	.00		
ROUTEO TO	0V6	9.	3.10	1.	0.	0.	.00	49.27	3.10
HYDROGRAPH AT	٧7	13.	3.08	1.	0.	0.	.00		
3 COMBINED AT	PV7	42.	3.08	2.	1.	1.	.01		
ROUTEO TO	DV7	24.	3.18	2.	1.	1.	.01	49.53	3.18
HYOROGRAPH AT	V8	16.	3.08	1.	0.	0.	.00		
2 COMBINEO AT	PV8	34.	3.17	3.	1.	1.	.01		
ROUTEO TO	DV8	1.	6.00	1.	1.	1.	.01	47.53	6.02
OIVERSION TO	8۷00	0.	5.15	0.	0.	0.	.01		
HYOROGRAPH AT	8V-VI0	1.	5.15	1.	1.	1.	.01		
HYOROGRAPH AT	V9	17.	3.08	1.	0.	0.	.00		
ROUTED TO	DV9	1.	3.65	1.	0.	0.	.00	48.01	3.67
HYOROGRAPH AT	<b>S3</b>	1.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	<b>S4</b>	1.	3.08	0.	0.	0.	.00		
5 COMBINED AT	PS4	229.	3.13	51.	23.	23.	.27		
ROUTED TO	RPS4	228.	3.13	51.	23.	23.	.27		
HYOROGRAPH AT	V2	8.	3.08	0.	0.	0.	.00		
ROUTED TO	0V2	1.	3.53	0.	0.	0.	.00	45.74	3.57
HYOROGRAPH AT	V1	20.	3.08	1.	0.	0.	.00		
HYOROGRAPH AT	R00V8	0.	6.00	0.	0.	0.	.00		
3 COMBINEO AT	PV1	21.	3.08	2.	1.	1.	.01		
ROUTED TO	DV1	1.	6.07	1.	0.	0.	.01	43.92	6.18
DIVERSION TO	00V1	0.	6.07	0.	0.	0.	.01		
HYOROGRAPH AT	0IV-V1	1.	6.07	1.	0.	0.	.01		
HYOROGRAPH AT	S1	3.	3.08	0.	0.	0.	.00		
HYOROGRAPH AT	\$2	3.	3.08	0.	0.	0.	.00		
4 COMBINEO AT	PS2	233.	3.13	52.	24.	24.	.28		
ROUTED TO	RPS2	232.	3.13	52.	24.	24.	.28		
HYOROGRAPH AT	. N8	7.	3.08	0.	0.	0.	.00		
HYOROGRAPH AT	RDDV1	0.	.00	0.	0.	0.	.00		

3 COMBINED AT PN7 14. 3.08 1. 0. 0DD  ROUTED TO RN7 14. 3.08 1. 0. 0DD  2 COMBINED AT PSN 243. 3.13 52. 24. 2429  ROUTED TO RPSN 242. 3.13 52. 24. 2429  HYDROGRAPH AT N6 5. 3.08 0. 0. 0. 0DD  HYDROGRAPH AT N5 6. 3.08 0. D. 0  3 COMBINED AT PN6 251. 3.13 53. 24. 2429  ROUTED TO RPN6 249. 3.15 53. 24. 2429  HYDROGRAPH AT C1 79. 3.10 5. 2. 202  HYDROGRAPH AT N1 3. 3.08 0. 0. 0. 0DD  HYDROGRAPH AT N2 4. 3.08 0. 0. 0. 0DD  HYDROGRAPH AT N2 4. 3.08 0. 0. 0. 0DD  HYDROGRAPH AT N3 5. 3.08 6. 2. 202  HYDROGRAPH AT N3 5. 3.08 5. 2. 202  HYDROGRAPH AT N3 5. 3.08 0. 0. 0. 0DD  HYDROGRAPH AT N4 5. 3.08 0. 0. 0. 0DD  HYDROGRAPH AT N4 5. 3.08 0. 0. 0. 0DD  HYDROGRAPH AT N4 5. 3.08 0. 0. 0. 0DD  HYDROGRAPH AT N4 5. 3.08 0. 0. 0. 0DD  HYDROGRAPH AT N4 5. 3.08 6. 2. 202  HYDROGRAPH AT N4 5. 3.08 6. 2. 202  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT CPD7 404. 3.12 64. 28. 2833  ROUTED TO DB7 235. 3.30 64. 28. 2833  ROUTED TO DB7 235. 3.30 48. 21. 2133  ROUTED TO DB6 115. 3.93 47. 21. 2133  ROUTED TO DB6 115. 3.93 47. 21. 2133  ROUTED TO DB5 306. 4.33 127. 54. 54. 5472 1435.11										
2 COMBINED AT PSN 243. 3.13 52. 24. 2429  ROUTED TO RPSN 242. 3.13 52. 24. 2429  HYDROGRAPH AT N6 5. 3.08 0. 0. 0. 0DD  HYDROGRAPH AT N5 6. 3.08 0. 0. 0. 000  3 COMBINED AT PN6 251. 3.13 53. 24. 2429  ROUTED TO RPN6 249. 3.15 53. 24. 2429  HYDROGRAPH AT N1 3. 3.08 0. 0. 0. 000  HYDROGRAPH AT N1 3. 3.08 0. 0. 0. 000  HYDROGRAPH AT N1 3. 3.08 0. 0. 0. 000  HYDROGRAPH AT N2 4. 3.08 0. 0. 0. 000  3 COMBINED AT PD71 86. 3.08 6. 2. 202  HYDROGRAPH AT N3 5. 3.08 5. 2. 202  HYDROGRAPH AT N5 5. 3.08 0. 0. 0. 000  3 COMBINED AT PD71 86. 3.08 6. 2. 202  HYDROGRAPH AT N6 5. 3.08 0. 0. 0. 000  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT CPD7 404. 3.12 64. 28. 2833  ROUTED TO DB7 235. 3.30 64. 28. 2833  HYDROGRAPH AT DD87 169. 3.30 48. 21. 2133  ROUTED TO DB6 115. 3.93 47. 21. 2133	3 COMBINED AT	PN7	14.	3.08	1.	D.	D.	.DD		
ROUTED TO RPSN 242. 3.13 52. 24. 2429  HYDROGRAPH AT N6 5. 3.08 0. 0. 0. 000  HYDROGRAPH AT N5 6. 3.08 0. 0. 0. 000  3 COMBINED AT PN6 251. 3.13 53. 24. 2429  HYDROGRAPH AT C1 79. 3.10 5. 2. 202  HYDROGRAPH AT N1 3. 3.08 0. 0. 0. 000  HYDROGRAPH AT N1 3. 3.08 0. 0. 0. 000  HYDROGRAPH AT N2 4. 3.08 0. 0. 0. 000  HYDROGRAPH AT N2 4. 3.08 0. 0. 0. 000  3 COMBINED AT PD71 86. 3.08 6. 2. 202  HYDROGRAPH AT N3 5. 3.08 5. 2. 202  HYDROGRAPH AT N3 5. 3.08 0. 0. 0. 000  HYDROGRAPH AT N3 5. 3.08 0. 0. 0. 000  HYDROGRAPH AT N3 5. 3.08 0. 0. 0. 000  HYDROGRAPH AT N3 5. 3.08 0. 0. 0. 000  HYDROGRAPH AT N4 5. 3.08 0. 0. 0. 000  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT CPD7 404. 3.12 64. 28. 2833  ROUTED TO DB7 235. 3.30 64. 28. 2833  HYDROGRAPH AT DD87 169. 3.30 48. 21. 2133  ROUTED TO DB6 115. 3.93 47. 21. 2133	ROUTED TO	RN7	14.	3.08	1.	0.	0.	.00		
HYDROGRAPH AT N6 5. 3.08 0. 0. 0. 000 HYDROGRAPH AT N5 6. 3.08 0. D. 000  3 COMBINED AT PN6 251. 3.13 53. 24. 2429 HYDROGRAPH AT C1 79. 3.10 5. 2. 202 HYDROGRAPH AT N1 3. 3.08 0. 0. 0. 000 HYDROGRAPH AT N1 3. 3.08 0. 0. 0. 000 HYDROGRAPH AT N2 4. 3.08 0. 0. 0. 000  3 COMBINED AT PD71 86. 3.08 6. 2. 202 HYDROGRAPH AT C2 85. 3.08 5. 2. 202 HYDROGRAPH AT N3 5. 3.08 0. 0. 0. 000 HYDROGRAPH AT N3 5. 3.08 0. 0. 0. 000 HYDROGRAPH AT N4 5. 3.08 0. 0. 0. 000  3 COMBINED AT PD72 95. 3.08 6. 2. 202 HYDROGRAPH AT N4 5. 3.08 6. 2. 202 3 COMBINED AT PD72 95. 3.08 6. 2. 202 3 COMBINED AT PD73 404. 3.12 64. 28. 2833 ROUTED TO DB7 235. 3.30 64. 28. 2833 ROUTED TO DB7 169. 3.30 17. 7. 7. 3.33 HYDROGRAPH AT DD87 169. 3.30 48. 21. 2133 ROUTED TO DB6 115. 3.93 47. 21. 2133 1437.91 2 COMBINED AT CP5 327. 4.03 127. 52. 5272	2 COMBINED AT	PSN	243.	3.13	52.	24.	24.	.29		
HYDROGRAPH AT N5 6. 3.08 0. 0. 0. 000  3 COMBINED AT PN6 251. 3.13 53. 24. 24. 29  ROUTED TO RPN6 249. 3.15 53. 24. 24. 29  HYDROGRAPH AT C1 79. 3.10 5. 2. 202  HYDROGRAPH AT N1 3. 3.08 0. 0. 000  HYDROGRAPH AT N2 4. 3.08 0. 0. 000  3 COMBINED AT PD71 86. 3.08 6. 2. 202  HYDROGRAPH AT C2 85. 3.08 5. 2. 202  HYDROGRAPH AT N3 5. 3.08 0. 0. 000  HYDROGRAPH AT N5 5. 3.08 5. 2. 202  HYDROGRAPH AT N6 5. 3.08 0. 0. 0. 000  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT CPD7 404. 3.12 64. 28. 2833  ROUTED TO D87 235. 3.30 64. 28. 2833  ROUTED TO D-DT7 67. 3.30 17. 7. 733  RYDROGRAPH AT DD87 169. 3.30 48. 21. 2133  ROUTED TO D86 115. 3.93 47. 21. 2133 1437.91  2 COMBINED AT CP5 327. 4.03 127. 52. 5272	ROUTED TO	RPSN	242.	3.13	52.	24.	24.	.29		
3 COMBINED AT PN6 251. 3.13 53. 24. 2429  ROUTED TO RPN6 249. 3.15 53. 24. 2429  HYDROGRAPH AT C1 79. 3.10 5. 2. 202  HYDROGRAPH AT N1 3. 3.08 0. 0. 0. 000  HYDROGRAPH AT N2 4. 3.08 0. 0. 0. 000  3 COMBINED AT PD71 86. 3.08 6. 2. 202  HYDROGRAPH AT N3 5. 3.08 5. 2. 202  HYDROGRAPH AT N4 5. 3.08 0. 0. 0. 000  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT CPD7 404. 3.12 64. 28. 2833  ROUTED TO DB7 235. 3.30 64. 28. 2833  HYDROGRAPH AT DDB7 169. 3.30 48. 21. 2133  ROUTED TO DB6 115. 3.93 47. 21. 2133 1437.91  2 COMBINED AT CP5 327. 4.03 127. 52. 5272	HYDROGRAPH AT	N6	5.	3.08	0.	0.	0.	.DD		
ROUTED TO RPN6 249. 3.15 53. 24. 2429 HYDROGRAPH AT C1 79. 3.10 5. 2. 202 HYDROGRAPH AT N1 3. 3.08 0. 0. 0. 000 HYDROGRAPH AT N2 4. 3.08 0. 0. 0. 000 3 COMBINED AT PD71 86. 3.08 6. 2. 202 HYDROGRAPH AT N3 5. 3.08 5. 2. 202 HYDROGRAPH AT N3 5. 3.08 0. 0. 0. 000 HYDROGRAPH AT N4 5. 3.08 0. 0. 0. 000  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT CPD7 404. 3.12 64. 28. 2833 ROUTED TO DB7 235. 3.30 17. 7. 733 HYDROGRAPH AT DDB7 169. 3.30 48. 21. 2133 ROUTED TO DB6 115. 3.93 47. 21. 2133 1437.91 2 COMBINED AT CP5 327. 4.03 127. 52. 5272	HYDROGRAPH AT	N5	6.	3.08	0.	D.	0.	.00		
HYDROGRAPH AT C1 79. 3.10 5. 2. 202 HYDROGRAPH AT N1 3. 3.08 0. 0. 0. 000 HYDROGRAPH AT N2 4. 3.08 0. 0. 0. 000  3 COMBINED AT PD71 86. 3.08 6. 2. 202 HYDROGRAPH AT N3 5. 3.08 5. 2. 202 HYDROGRAPH AT N3 5. 3.08 0. 0. 0. 000  3 COMBINED AT PD72 95. 3.08 0. 0. 0. 000  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT CPD7 404. 3.12 64. 28. 2833  ROUTED TO DB7 235. 3.30 64. 28. 2833 HYDROGRAPH AT DDB7 169. 3.30 48. 21. 2133  ROUTED TO DB6 115. 3.93 47. 21. 2133 1437.91 2 COMBINED AT CP5 327. 4.03 127. 52. 5272	3 COMBINED AT	PN6	251.	3.13	53.	24.	24.	.29		
HYDROGRAPH AT N1 3. 3.08 0. 0. 0. 000  HYDROGRAPH AT N2 4. 3.08 0. 0. 0. 000  3 COMBINED AT PD71 86. 3.08 6. 2. 202  HYDROGRAPH AT C2 85. 3.08 5. 2. 202  HYDROGRAPH AT N3 5. 3.08 0. 0. 0. 0DD  HYDROGRAPH AT N4 5. 3.08 0. 0. 0. 000  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT CPD7 404. 3.12 64. 28. 2833  ROUTED TO DB7 235. 3.30 64. 28. 2833 1440.17  DIVERSION TO D-DT7 67. 3.30 17. 7. 733  HYDROGRAPH AT DDB7 169. 3.30 48. 21. 2133  ROUTED TO DB6 115. 3.93 47. 21. 2133 1437.91  2 COMBINED AT CP5 327. 4.03 127. 52. 5272	ROUTED TO	RPN6	249.	3.15	53.	24.	24.	.29		
HYDROGRAPH AT N2 4. 3.08 0. 0. 0. 000  3 COMBINED AT PD71 86. 3.08 6. 2. 202  HYDROGRAPH AT C2 85. 3.08 5. 2. 202  HYDROGRAPH AT N3 5. 3.08 0. 0. 0. 000  HYDROGRAPH AT N4 5. 3.08 0. 0. 0. 000  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT CPD7 404. 3.12 64. 28. 2833  ROUTED TO DB7 235. 3.30 64. 28. 2833 1440.17  DIVERSION TO D-DT7 67. 3.30 17. 7. 733  HYDROGRAPH AT DDB7 169. 3.30 48. 21. 2133  ROUTED TO DB6 115. 3.93 47. 21. 2133 1437.91  2 COMBINED AT CP5 327. 4.03 127. 52. 5272	HYDROGRAPH AT	<b>C1</b>	79.	3.10	5.	2.	2.	.02		
3 COMBINED AT PD71 86. 3.08 6. 2. 202 HYDROGRAPH AT C2 85. 3.08 5. 2. 202 HYDROGRAPH AT N3 5. 3.08 0. 0. 000 HYDROGRAPH AT N4 5. 3.08 0. 0. 0. 000 3 COMBINED AT PD72 95. 3.08 6. 2. 202 3 COMBINED AT CPD7 404. 3.12 64. 28. 2833 ROUTED TO DB7 235. 3.30 64. 28. 2833 1440.17 DIVERSION TO D-DT7 67. 3.30 17. 7. 733 HYDROGRAPH AT DDB7 169. 3.30 48. 21. 2133 ROUTED TO DB6 115. 3.93 47. 21. 2133 1437.91 2 COMBINED AT CP5 327. 4.03 127. 52. 5272	HYDROGRAPH AT	N1	3.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT C2 85. 3.08 5. 2. 202  HYDROGRAPH AT N3 5. 3.08 0. 0. 0. 000  HYDROGRAPH AT N4 5. 3.08 0. 0. 0. 000  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT CPD7 404. 3.12 64. 28. 2833  ROUTED TO DB7 235. 3.30 64. 28. 2833 1440.17  DIVERSION TO D-DT7 67. 3.30 17. 7. 733  HYDROGRAPH AT DDB7 169. 3.30 48. 21. 2133  ROUTED TO DB6 115. 3.93 47. 21. 2133 1437.91  2 COMBINED AT CP5 327. 4.03 127. 52. 5272	HYDROGRAPH AT	N2	4.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT N3 5. 3.08 0. 0. 0. 0DD  HYDROGRAPH AT N4 5. 3.D8 0. 0. 0. 000  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT CPD7 404. 3.12 64. 28. 2833  ROUTED TO DB7 235. 3.30 64. 28. 2833 1440.17  DIVERSION TO D-DT7 67. 3.30 17. 7. 733  HYDROGRAPH AT DDB7 169. 3.30 48. 21. 2133  ROUTED TO DB6 115. 3.93 47. 21. 2133 1437.91  2 COMBINED AT CP5 327. 4.03 127. 52. 5272	3 COMBINED AT	PD71	86.	3.08	6.	2.	2.	.02		
HYDROGRAPH AT N4 5. 3.08 0. 0. 0. 000  3 COMBINED AT PD72 95. 3.08 6. 2. 202  3 COMBINED AT CPD7 404. 3.12 64. 28. 2833  ROUTED TO DB7 235. 3.30 64. 28. 2833 1440.17  DIVERSION TO D-DT7 67. 3.30 17. 7. 733  HYDROGRAPH AT DDB7 169. 3.30 48. 21. 2133  ROUTED TO DB6 115. 3.93 47. 21. 2133 1437.91  2 COMBINED AT CP5 327. 4.03 127. 52. 5272	HYDROGRAPH AT	C2	85.	3.08	5.	2.	2.	.02		
3 COMBINED AT PD72 95. 3.08 6. 2. 202 3 COMBINED AT CPD7 404. 3.12 64. 28. 2833 ROUTED TO DB7 235. 3.30 64. 28. 2833 1440.17 DIVERSION TO D-DT7 67. 3.30 17. 7. 733 HYDROGRAPH AT DDB7 169. 3.30 48. 21. 2133 ROUTED TO DB6 115. 3.93 47. 21. 2133 1437.91 2 COMBINED AT CP5 327. 4.03 127. 52. 5272	HYDROGRAPH AT	N3	5.	3.08	0.	0.	0.	.DD		
3 COMBINED AT CPD7 404. 3.12 64. 28. 2833  ROUTED TO DB7 235. 3.30 64. 28. 2833 1440.17  DIVERSION TO D-DT7 67. 3.30 17. 7. 733  HYDROGRAPH AT DDB7 169. 3.30 48. 21. 2133  ROUTED TO DB6 115. 3.93 47. 21. 2133 1437.91  2 COMBINED AT CP5 327. 4.03 127. 52. 5272	HYDROGRAPH AT	N4	5.	3.D8	0.	0.	0.	.00		
ROUTED TO DB7 235. 3.30 64. 28. 2833 1440.17  DIVERSION TO D-DT7 67. 3.30 17. 7. 733  HYDROGRAPH AT DDB7 169. 3.30 48. 21. 2133  ROUTED TO DB6 115. 3.93 47. 21. 2133 1437.91  2 COMBINED AT CP5 327. 4.03 127. 52. 5272	3 COMBINED AT	PD72	95.	3.08	6.	2.	2.	.02		
DIVERSION TO D-DT7 67. 3.30 17. 7. 733  HYDROGRAPH AT DDB7 169. 3.30 48. 21. 2133  ROUTED TO DB6 115. 3.93 47. 21. 2133 1437.91  2 COMBINED AT CP5 327. 4.03 127. 52. 5272	3 COMBINED AT	CPD7	404.	3.12	64.	28.	28.	.33		
HYDROGRAPH AT DDB7 169. 3.30 48. 21. 2133  ROUTED TO DB6 115. 3.93 47. 21. 2133 1437.91  2 COMBINED AT CP5 327. 4.03 127. 52. 5272	ROUTED TO	DB7	235.	3.30	64.	28.	28.	.33	1440.17	3.30
ROUTED TO DB6 115. 3.93 47. 21. 2133 1437.91 2 COMBINED AT CP5 327. 4.03 127. 52. 5272	DIVERSION TO	D-DT7	67.	3.30	17.	7.	7.	.33		
2 COMBINED AT CP5 327. 4.03 127. 52. 5272	HYDROGRAPH AT	DDB7	169.	3.30	48.	21.	21.	.33		
	ROUTED TO	DB6	115.	3.93	47.	21.	21.	.33	1437.91	3.93
ROUTED TO 0B5 306. 4.33 127. 54. 5472 1435.11	2 COMBINED AT	CP5	327.	4.03	127.	52.	52.	.72		
	ROUTED TO	085	306.	4.33	127.	54.	54.	.72	1435.11	4.33

#### SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

#### INTERPOLATED TO

									COMPUTATIO	N INTERVA	I		
		ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUMI	E DT	PEAK	TIME TO PEAK			
				(MIN)	(CFS)	(MIN	) (IN)	(MIN)	(CFS)	(MIN)	(IN)		
		RPAM9	MANE	.99	29.17	187.27	2.71	1.00	29.12	187.00	2.71		
	CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.4476E+01	EXCESS= .0	000E+00 OUT	TFLOW= .44	74E+01 BASIN	STORAGE=	.5482E-03 PERCENT	FERROR=	.0
		RPHY2	MANE	.78	48.06	188.13	2.45	1.00	48.04	188.00	2.45		
	CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.7270E+01	EXCESS= .0	000E+00 OUT	TFLOW= .726	59E+01 BASIN	STORAGE=	.9771E-03 PERCENT	FERROR=	.0
		RPDAL	MANE	1.00	43.00	195.00	2.07	1.00	43.00	195.00	2.07		
	CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.6208E+01	EXCESS= .0	000E+00 OU1	rFLOW= .620	07E+01 BASIN	STORAGE=	.1069E-02 PERCENT	ERROR=	.0
		RP84	MANE	1.00	42.83	196.00	2.07	1.00	42.83	196.00	2.07		
	CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.6207E+01	EXCESS= .0	000E+00 OUT	FLOW= .620	07E+01 BASIN	STORAGE=	.4220E-03 PERCENT	ERROR=	.0
		RPPCC	MANE	.85	104.54	194.94	2.28	1.00	104.53	195.00	2.28		
	CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.1530E+02	EXCESS= .00	000E+00 OUT	FLOW= .153	SOE+O2 BASIN	STORAGE=	.3632E-02 PERCENT	ERROR=	.0
		RPSUN2	MANE	1.00	106.30	196.00	2.14	1.00	106.30	196.00	2.14		
	CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.1710E+02	EXCESS= .00	000E+00 OUT	FLOW= .170	9E+02 BASIN	STORAGE=	.1155E-01 PERCENT	ERROR=	.0
		RPCE	MANE	.67	115.28	196.43	2.15	1.00	115.25	196.00	2.15		
	CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.1890E+02	EXCESS= .00	000E+00 OUT	FLOW= .189	POE+O2 BASIN	STORAGE=	.7328E-02 PERCENT	ERROR=	.0
٠		RCPV	MANE	1.00	129.49	197.00	2.15	1.00	129.49	197.00	2.15		
	CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.2058E+02	EXCESS= .00	000E+00 OUT	FLOW= .205	66E+02 BASIN	STORAGE=	.2813E-01 PERCENT	ERROR=	1
		RRTAC	MANE	1.00	.85	394.00	.52	1.00	.85	394.00	.52		
	C NUITY	SUMMARY	(AC-FT) -	INFLOW=	.7221E-01	EXCESS= .00	000E+00 OUT	FLOW= .727	3E-01 BASIN	STORAGE=	.6100E-03 PERCENT	ERROR=	-1.6
		RPR1	MANE	1.00	199.43	194.00	1.99	1.00	199.43	194.00	1.99	1_	DR-202

CONTINUITY	SUMMARY	(AC-FT)	INFLOW=	.2382E+02	EXCESS=	.0000E+00	OUTFLOW= .2	381E+02 BASIN	STORAGE=	.8552E-02	PERCENT	ERROR=	.0
	RPF2	MANE	.42	205.64	194.	05 2.	00 1.00	0 205.63	194.00	2.00			
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.2436E+02	EXCESS=	.0000E+00	OUTFLOW= .24	435E+02 BASIN	STORAGE=	.2625E-02	PERCENT	ERROR=	.0
	RPEG84	MANE	.27	210.12	2 194.	04 2.	01 1.00	210.11	194.00	2.01			
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.2479E+02	EXCESS=	.0000E+00	OUTFLOW= .24	479E+02 BASIN	STORAGE=	.1681E-02	PERCENT	ERROR=	.0
	RPN23	MANE	.80	14.21	185.	60 3.	02 1.00	14.16	185.00	3.02			
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.4667E+00	EXCESS=	.0000E+00	OUTFLOW= .46	566E+00 BASIN	STORAGE=	.5615E-04 F	PERCENT	ERROR=	.0
	RPN21	MANE	.55	38.38	s 186.	44 2.	38 1.00	38.21	186.00	2.38			
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.2839E+01	EXCESS=	.0000E+00	OUTFLOW= .28	338E+01 BASIN	STORAGE=	.9914E-03 F	PERCENT	ERROR=	.0
	RPN19	MANE	1.00	41.88	187.	00 2.	41 1.00	) 41.88	187.00	2.41			
רי אענדץ	SUMMARY	(AC-FT) -	INFLOW=	.3080E+01	EXCESS=	.0000E+00	OUTFLOW= .30	067E+01 BASIN	STORAGE=	.2815E-02 F	PERCENT	ERROR=	.3
	R1	MANE	.54	1.28	222.	06 2.	27 1.00	) 1.28	222.00	2.27			
CUNTINIIITY								95E+00 BASIN				FRROR=	.0
CONTINOTIT												·	••
		MANE	.29				44 1.00	2000					
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.4681E+00	EXCESS=	.0000E+00	OUTFLOW= .46	681E+00 BASIN	STORAGE=	.7872E-05 F	PERCENT	ERROR=	.0
	RT4	MANE	.15	5.59	259.	96 2.	27 1.00	5.59	260.00	2.27			
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.1621E+01	EXCESS=	.0000E+00	OUTFLOW= .16	621E+01 BASIN	STORAGE=	.7416E-06 F	PERCENT	ERROR=	.0
	RPN17	MANE	.24	56.77	187.	33 2.	41 1.00	56.58	188.00	2.41			
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.5403E+01	EXCESS=	.0000E+00	OUTFLOW= .54	03E+01 BASIN	STORAGE=	.4723E-03 F	PERCENT	ERROR=	.0
	RPN15	MANE	.62	63.13	187.2	25 2.	43 1.00	62.97	188.00	2.43			

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5660E+01 EXCESS= .0000E+00 OUTFLOW= .5659E+01 BASIN STORAGE= .1268E-02 PERCENT ERROR= .0

RPR6	MANE	.39 14.16	187.51	3.14	1.00 14	4.14 187.00	3.14		
CONTINUITY SUMMARY	(AC-FT) - INFLO	₩= .1725E+01 E	XCESS= .0000E+	+00 OUTFLO₩=	: .1725E+01	BASIN STORAGE=	.2529E-04 PERCENT	ERROR=	.0
RPR9	MANE	.12 77.65	193.01	1.66	1.00 7	7.65 193.00	1.66		
CONTINUITY SUMMARY	(AC-FT) - INFLO	₩= .4678E+01 E	XCESS= .0000E+	-00 OUTFLOW=	: .4678E+01	BASIN STORAGE=	.1122E-04 PERCENT	ERROR=	.0
RPR11	MANE	.19 79.64	193.01	1.69	1.00 79	9.64 193.00	1.69		
CONTINUITY SUMMARY	(AC-FT) - INFLO	W= .4855E+01 EX	XCESS= .0000E+	-00 OUTFLOW=	: .4854E+01	BASIN STORAGE=	.1713E-04 PERCENT	ERROR=	.0
RPN12	MANE	.20 142.99	190.04	2.05	1.00 142	2.98 190.00	2.05		
CONTINUITY SUMMARY	(AC-FT) - INFLO	₩= .1092E+02 EX	XCESS= .0000E+	00 OUTFLOW=	: .1092E+02	BASIN STORAGE=	.4804E-03 PERCENT	ERROR= .	.0
RPN13	MANE	.38 145.49	189.96	2.06	1.00 145	5.49 190.00	2.06		
CONTINUITY SUMMARY	(AC-FT) - INFLO	W= .1106E+02 E)	KCESS= .0000E+	00 OUTFLOW=	.1106E+02	BASIN STORAGE=	.9275E-03 PERCENT	ERROR= .	.0
RPE1	MANE	.25 25.83	189.33	3.03	1.00 25	5.78 189.00	3.03		
UITY SUMMARY	(AC-FT) - INFLO	₩= .1421E+01 E)	CESS= .0000E+	00 OUTFLOW=	.1421E+01	BASIN STORAGE=	.1834E-04 PERCENT	ERROR= .	.0
RPNE	MANE	.26 198.87	190.09	2.02	1.00 198	3.84 190.00	2.02		
CONTINUITY SUMMARY	(AC-FT) - INFLO	₩= .1353E+02 E>	(CESS= .0000E+	00 OUTFLOW=	.1352E+02	BASIN STORAGE=	.6800E-03 PERCENT	ERROR= .	.0
RPN11	MANE	.31 202.31	190.17	2.04	1.00 202	2.23 190.00	2.04		
CONTINUITY SUMMARY	(AC-FT) - INFLO	√= .1397E+02 E>	(CESS= .0000E+	00 OUTFLOW=	.1397E+02	BASIN STORAGE=	.8344E-03 PERCENT	ERROR= .	.0
RPN9	MANE	.20 206.86	189.97	2.05	1.00 206	5.86 190.00	2.05		
CONTINUITY SUMMARY	(AC-FT) - INFLO	√= .1456E+02 EX	(CESS= .0000E+	00 OUTFLOW=	.1456E+02	BASIN STORAGE=	.5617E-03 PERCENT	ERROR= .	.0
RPR1	MANE 1.	.00 5.24	186.00	3.01	1.00 5	i.24 186.00	3.01		
CONTINUITY SUMMARY	(AC-FT) - INFLO	√= .1770E+00 E>	CESS= .0000E+	00 OUTFLOW=	.1766E+00	BASIN STORAGE=	.1370E-03 PERCENT	ERROR= .	.2
RPR3	MANE	.26 7.07	186.02	3.01	1.00 7	.06 186.00	3.01		
CONTINUITY SUMMARY	(AC-FT) - INFLO	√= .2410E+00 E>	(CESS= .0000E+	00 OUTFLOW=	.2409E+00	BASIN STORAGE=	.1514E-04 PERCENT	ERROR= .	.0

	RPR4	MANE	1.00	4.59	185.00	3.00	1.00	4.59	185.00	3.00		
COMTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.1609E+00	EXCESS= .00	000E+00 OUTF	LOW= .1598	E+00 BASIN	STORAGE=	.6728E-04 PERCENT	ERROR=	.6
	RT-N3	MANE	.33	6.98	3 212.24	2.69	1.00	6.98	212.00	2.69		
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.1849E+01	EXCESS= .00	000E+00 OUTF	LOW= .1849	E+01 BASIN	STORAGE=	.3649E-04 PERCENT	ERROR=	.0
	RT-B2	MANE	.67	59.07	190.49	2.31	1.00	58.64	191.00	2.31		
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.3643E+01	EXCESS= .00	000E+00 OUTF	LOW= .36431	E+01 BASIN	STORAGE=	.5746E-04 PERCENT	ERROR=	.0
	RT-D3	MANE	.10	121.97	189.97	2.07	1.00	121.96	190.00	2.07		
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.8574E+01	EXCESS= .00	000E+00 OUTF	LOW= .8574E	E+01 BASIN	STORAGE=	.2202E-04 PERCENT	ERROR=	.0
	CP-A	MANE	.14	48.45	219.19	2.02	1.00	48.45	219.00	2.02		
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.9644E+01	EXCESS= .00	000E+00 OUTF	LOW= .9644E	E+01 BASIN	STORAGE=	.8892E-03 PERCENT	ERROR=	.0
	RCP-A	MANE	1.00	48.43	222.00	2.02	1.00	48.43	222.00	2.02		
Cur , NUITY	SUMMARY	(AC-FT) -	INFLOW=	.9645E+01	EXCESS= .00	000E+00 OUTF	LOW= .9628E	E+01 BASIN	STORAGE=	.1891E-01 PERCENT	ERROR=	.0
	RT-B5	MANE	.88	20.52	184.87	2.95	1.00	20.40	185.00	2.95		
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.6609E+00	EXCESS= .00	000E+00 OUTF	LOW= .6607E	+00 BASIN	STORAGE=	.7083E-04 PERCENT	ERROR=	.0
	RT-D4	MANE	.12	98.11	184.06	2.95	1.00	98.00	184.00	2.95		
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.3178E+01	EXCESS= .00	000E+00 OUTFI	_OW= .3178E	+01 BASIN	STORAGE=	.1163E-04 PERCENT	ERROR=	.0
	RCP-D	MANE	1.00	72.53	201.00	1.90	1.00	72.53	201.00	1.90		
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.9340E+01	EXCESS= .00	000E+00 OUTFL	.O₩= .9331E	+01 BASIN	STORAGE=	.8885E-02 PERCENT	ERROR=	.0
	RPRS	MANE	.30	134.66	187.14	2.12	1.00	134.62	187.00	2.12		
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW=	.2377E+02	EXCESS= .00	00E+00 OUTFL	.OW= .2377E	+02 BASIN	STORAGE=	.3467E-02 PERCENT	ERROR=	.0
	RPS14	MANE	.33	137.35	187.38	2.12	1.00	137.19	187.00	2.12		

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2387E+02 EXCESS= .0000E+00 OUTFLOW= .2387E+02 BASIN STORAGE= .3886E-02 PERCENT FPPOP=

	RPS11	MANE	.49	144.58	187.67	2.16	1.00	144.30	188.00	2.16		
!UITY	'SUMMARY	(AC-FT)	INFLOW= .	.2602E+02 E	XCESS= .0000	E+00 OUTFLO	OW= .2601	IE+02 BASIN	STORAGE=	.5923E-02 PERCENT	ERROR=	.0
	RPS9	MANE	.20	148.87	188.00	2.16	1.00	148.87	188.00	2.16		
CONTINUITY	SUMMARY	(AC-FT) -	· INFLOW= .	2621E+02 E	XCESS= .0000	E+00 OUTFLO	O₩= .2620	DE+02 BASIN	STORAGE=	.2433E-02 PERCENT	ERROR=	.0
	RPS8	MANE	.58	204.14	187.71	2.19	1.00	203.43	188.00	2.19		
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW= .	2814E+02 E	XCESS= .0000	E+00 OUTFLO	OW= .2813	SE+02 BASIN	STORAGE=	.7541E-02 PERCENT	ERROR=	.0
	RPS6	MANE	.14	227.31	187.96	2.23	1.00	227.25	188.00	2.23		
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW= .	3062E+02 E	XCESS= .0000	E+00 OUTFLO	ow= .3061	E+02 BASIN	STORAGE=	.1892E-02 PERCENT	ERROR=	.0
	RPS4	MANE	.56	228.27	188.06	2.17	1.00	228.08	188.00	2.17		
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW= .	3188E+02 E	xcess= .0000	E+00 OUTFLO	ow= .3187	E+02 BASIN	STORAGE=	.8450E-02 PERCENT	ERROR=	.0
	RPS2	MANE	.29	231.87	188.25	2.17	1.00	231.55	188.00	2.17		
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW= .	3267E+02 E	xcess= .0000	E+00 OUTFLO	o₩= .3267	E+02 BASIN	STORAGE=	.4564E-02 PERCENT	ERROR=	.0
	RN7	MANE	.42	13.57	184.86	3.02	1.00	13.56	185.00	3.02		
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW= .	4345E+00 EX	XCESS= .0000	E+00 OUTFLC	)₩= .4343	E+00 BASIN	STORAGE=	.3037E-04 PERCENT	ERROR=	.0
	RPSN	MANE	.16	242.11	188.29	2.17	1.00	241.82	188.00	2.17		
CONTINUITY	SUMMARY	(AC-FT) -	INFLOW= .	3310E+02 E)	xcess= .0000	E+00 OUTFLO	.3310	E+02 BASIN	STORAGE=	.2548E-02 PERCENT	ERROR=	.0
	RPN6	MANE	.87	249.20	188.85	2.18	1.00	248.95	189.00	2.18		

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3345E+02 EXCESS= .0000E+00 OUTFLOW= .3344E+02 BASIN STORAGE= .1425E-01 PERCENT ERROR= .0

#### SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DPARK (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIAL	L VALUE	SPILLWAY	CREST TO	OF DAM	
		ELEVATION	92	2.00	92.	76	92.76	
		STORAGE		0.		0.	0.	
		OUTFLOW		0.		2.	2.	
	RATIO	MAXI MUM	MAXIMUM	MAXIMUM	MAXI MUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	92.82	.06	0.	3.	.43	3.23	.00

#### SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DAH1 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY CR	EST TOP	OF DAM	
		ELEVATION		.00	8.00		8.00	
		STORAGE		0.	0.		0.	
		OUTFLOW		0.	0.		0.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	6.33	.00	0.	0.	.00	6.28	.00

#### SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DAH3 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIAL	VALUE	SPILLWAY	CREST	TOP O	F DAM	
		ELEVATION	96	.50	99.	.50	9	9.50	
		STORAGE		0.		0.		0.	
		OUTFLOW		0.		0.		0.	
	RATIO	MAXI MUM	MAXIMUM	MAXIMUM	MAXIMUN	1 DURA	TION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOV	OVER	TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOU	RS	HOURS	HOURS
	1.00	99.52	.02	0.	0.	. 1.2	20	5.17	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DAH2 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIAL	. VALUE	SPILLWAY (	CREST TOP	OF DAM	
		ELEVATION	99	2.25	99.5	50	99.50	
		STORAGE		0.	(	) <b>.</b>	0.	
		OUTFLOW		0.	7	2.	2.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	99.48	.00	0.	2.	.00	3.13	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DAH4 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

υLAN	1	ELEVATION		L VALUE 7.50	SPILLWAY	CREST	ТОР	OF DAM 99.50	
			71		77	0.		D.	
		STORAGE		0.					
		OUTFLOW		0.		0.		0.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMU	4 D	URATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLO	, 0	VER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS		HOURS	HOURS	HOURS
	1.00	99.78	.28	0.	5.	,	9.78	3.18	.00

#### SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION D\_DAL (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIAL	. VALUE	SPILLWAY C	REST TOP	OF DAM	
		ELEVATION	91	.00	94.00	כ	94.00	
		STORAGE		0.	0.		0.	
		OUTFLOW		0.	0.		0.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MUMIXAM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	94.02	.02	0.	0.	3.42	6.07	.00

#### SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DB1 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1	ELEVATION		L VALUE 3.00	SPILLWAY CR	_	OF DAM 44.00	
		STORAGE		0.	5.		5.	
		OUTFLOW		0.	212.		212.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	<b>FAILURE</b>
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	42.70	.00	3.	177.	.00	3.43	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET1 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY CF	REST TOP	OF DAM	
		<b>ELEVATION</b>		.00	3.00	)	3.00	
		STORAGE		0.	0.		0.	
		OUTFLOW		0.	1.		1.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURAT IÓN	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	2.55	.00	0.	1.	.00	3.57	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET2 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY CR	EST TOP	OF DAM	
		ELEVATION		.00	3.D0	1	3.00	
		STORAGE		0.	1.		1.	
		OUTFLOW		0.	1.		1.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1.62	.00	0.	1.	.00	6.55	.00

WARNING ROUTED OUTFLOW (	30.) IS GREATER T	HAN MAXIMUM	OUTFLOW (	28.) IN STORAGE-OUTFLOW TABLE
WARNING ROUTED OUTFLOW (	29.) IS GREATER T	HAN MAXIMUM	OUTFLOW (	28.) IN STORAGE-OUTFLOW TABLE
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VALUE EXCEEOS TABLE IN LOGLOG	.01667	.01667	6.00000	
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/ALUE EXCEEOS TABLE IN LOGLOG	.01667	.01667	6.00000	
ALUE EXCEEDS TABLE IN LOGLOG	.01667	.01667	6.00000	
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# RUNOFF SUMMARY FLOW IN CUBIC FEET PER SECOND TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE 6-HOUR	FLOW FOR MAXIM	UM PERIOD 72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	AMS1	4.	3.10	0.	0.	0.	.00		
HYDROGRAPH AT	AMS2	4.	3.10	0.	0.	0.	.00		
2 COMBINED AT	PAM2	7.	3.10	1.	0.	0.	.00		
HYDROGRAPH AT	AMS5	2.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	AMS6	1.	3.08	0.	0.	0.	.00		
3 COMBINED AT	PAM6	11.	3.08	1.	0.	0.	.00	•	
HYDROGRAPH AT	AMS7	2.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	NAM9	13.	3.08	1.	0.	0.	.00		
ROUTED TO	DNAM9	2.	3.38	1.	0.	0.	.00	2.54	3.40
3 COMBINED AT	PAM7	14.	3.10	2.	1.	1.	.01		
HYDROGRAPH AT	AMS3	2.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	AMS4	1.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	NAM7	46.	3.08	3.	1.	1.	.01		
ROUTED TO	DNAM7	6.	3.48	3.	1.	1.	.01	2.78	3.48
3 COMBINED AT	PAM3	7.	3.12	3.	1.	1.	.01		
HYDROGRAPH AT	NAM8	41.	3.08	3.	1.	1.	.01		
ROUTED TO	DNAM8	5.	3.50	2.	1.	1.	.01	2.27	3.50
2 COMBINED AT	PNAM8	12.	3.40	5.	2.	2.	.02		
2 COMBINED AT	CPAM1	25.	3.10	7.	3.	3.	.03		
HYDROGRAPH AT	STURN	23.	3.08	1.	1.	1.	.00		
ROUTED TO	DSATR	1.	3.62	1.	0.	0.	.00	7.01	3.62
HYDROGRAPH AT	AMS8	2.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	AMS9	2.	3.08	0.	0.	0.	.00		
4 COMBINED AT	PAM9	30.	3.10	8.	3.	3.	.03		
ROUTED TO	RPAM9	29.	3.12	8.	3.	3.	.03		
HYDROGRAPH AT	HRLD	21.	3.08	1.	0.	0.	.00		
ROUTED TO	DHRLD	1.	3.75	1.	0.	0.	.00	2.52	3.80
HYDROGRAPH AT	BRM	4.	3.08	0.	0.	0.	.00		
ROUTED TO	DBRM	2.	3.22	0.	0.	0.	.00	2.27	1-DR-2

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HYDROGRAPH AT	PCL1	2.	3.08	0.	0.	0.	.00		
4 COMBINED AT	PHRLD	33.	3.12	9.	4.	4.	.04		
HYDROGRAPH AT	2	8.	3.08	1.	0.,	0.	.00		
ROUTED TO	DPARK	3.	3.23	1.	0.	0.	.00	92.82	3.23
DIVERSION TO	DBUDG	1.	3.12	0.	0.	0.	.00		
HYDROGRAPH AT	DBUDG	2.	3.12	1.	0.	0.	.00		
HYDROGRAPH AT	4	3.	3.08	0.	D.	0.	.00		
2 COMBINED AT	PDET1	5.	3.08	1.	0.	0.	.00		
ROUTED TO	DET1	1.	4.08	1.	0.	0.	.00	91.33	4.10
HYDROGRAPH AT	AM14B	11.	3.08	1.	0.	0.	.00		
ROUTED TO	D148	2.	3.40	1.	0.	0.	.00	2.93	3.42
HYDROGRAPH AT	1	4.	3.08	D.	D.	0.	.DD		
HYDROGRAPH AT	3	4.	3.D8	0.	0.	D.	.DO		
3 COMBINED AT	PDET2	8.	3.08	1.	0.	0.	.00		
ROUTED TO	DET2	2.	3.53	1.	0.	D.	.00	93.30	3.53
3 COMBINED AT	PBUDG	35.	3.12	11.	4.	4.	.04		
HYDROGRAPH AT	<b>\$8</b>	1.	3.D8	D.	D.	D.	DD		
HYDROGRAPH AT	HY1	23.	3.18	2.	1.	1.	.D1		
2 COMBINED AT	PHY1	24.	3.18	2.	1.	1.	.01		
DIVERSION TO	DPHY1	17.	2.98	1.	D.	0.	.01		
HYDROGRAPH AT	DPHY1	7.	2.98	1.	1.	1.	.D1		
HYDROGRAPH AT	HY2	15.	3.13	1.	0.	0.	.00		
DIVERSION TO	DPHY2	9.	3.00	0.	0.	D.	.00		
HYDROGRAPH AT	DPHY2	6.	3.00	1.	0.	0.	.00		
3 COMBINED AT	PHY2	48.	3.12	13.	5.	5.	.06		
ROUTED TO	RPHY2	48.	3.13	13.	5.	5 <b>.</b>	.06		
HYDROGRAPH AT	W84	5.	3.10	0.	0.	0.	.00		
DIVERSION TO	DW84	3.	2.98	0.	0.	D.	.00		
HYDROGRAPH AT	DW84	2.	2.98	0.	0.	0.	.00		
HYDROGRAPH AT	E84	6.	3.12	D.	D.	D.	.00		
DIVERSION TO	DE84	4.	2.97	0.	0.	0.	.DO		
HYDROGRAPH AT	DE84	2.	2.97	0.	0.	D.	.DD		4.00

HYOROGRAPH AT	UD 1	3.	3.08	0.	0.	0.	.00		
4 COMBINED AT	PSUN	55.	3.13	14.	6.	6.	.06		
HYDROGRAPH AT	PKELT	35.	3.08	2.	1.	1.	.01		
ROUTED TO	OPKET	1.	4.42	0.	0.	0.	.01	3.45	4.47
HYDROGRAPH AT	AH1	3.	3.08	0.	0.	0.	.00		
ROUTED TO	OAH1	0.	.00	0.	0.	0.	.00	6.33	6.28
HYOROGRAPH AT	2н3	4.	3.08	0.	0.	0.	.00		
ROUTED TO	DAH3	0.	5.15	0.	0.	0.	.00	99.52	5.17
HYDROGRAPH AT	AH2	2.	3.08	0.	0.	0.	.00		
2 COMBINEO AT	CPAH2	2.	3.08	0.	0.	0.	.00		
ROUTED TO	DAH2	2.	3.13	0.	0.	0.	.00	99.48	3.13
HYDROGRAPH AT	AH4	3.	3.08	0.	0.	0.	.00		
HYOROGRAPH AT	AH84	1.	3.08	0.	0.	0.	.00		
5 COMBINED AT	СРАН	6.	. 3.08	1.	0.	0.	.01		
ROUTEO TO	DAH4	5.	3.18	1.	0.	0.	.01	99.78	3.18
HYDROGRAPH AT	FLW	16.	3.35	2.	1.	1.	.01		
HYOROGRAPH AT	L1011	77.	3.08	5.	2.	2.	.02		
ROUTED TO	01011	10.	3.48	4.	2.	2.	.02	4.10	3.48
2 COMBINED AT	PLGU	26.	3.35	6.	2.	2.	.02		
HYDROGRAPH AT	LGU	47.	3.08	3.	1.	1.	.01		
2 COMBINED AT	CPLGU	59.	3.08	9.	3.	3.	.03		
ROUTEO TO	OLGU	33.	3.42	9.	3.	3.	.03	14.61	3.42
HYDROGRAPH AT	1	13.	3.08	1.	0.	0.	.00		
ROUTED TO	DET1	3.	3.32	1.	0.	0.	.00	501.13	3.33
ROUTED TO	DET2	2.	4.12	1.	0.	0.	.00	499.01	4.12
HYOROGRAPH AT	2	9.	3.08	1.	0.	0.	.00		
ROUTED TO	PAV2	7.	3.13	1.	0.	0.	.00	499.55	3.13
HYOROGRAPH AT	3	8.	3.08	1.	0.	0.	.00		
ROUTEO TO	PAV3	7.	3.13	1.	0.	0.	.00	500.56	3.13
ROUTEO TO	CPUG	1.	3.62	0.	0.	0.	.00	5.42	3.65
5 COMBINED AT	CVAN	40.	3.18	12.	4.	4.	.05		
HYDROGRAPH AT	AHL5	6.	3.08	0.	0.	0.	.00		
2 COMBINED AT	PAHL5	44.	3.18	12.	5.	5.	.05		1-D
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HYDROGRAPH AT	OAL	12.	3.12	1.	0.	0.	.00		
ROUTEO TO	O_DAL	0.	6.07	0.	0.	0.	.00	94.02	6.07
2 COMBINED AT	POAL	44.	3.18	12.	5.	5.	.06		
ROUTEO TO	RPDAL	43.	3.25	12.	5.	5.	.06		
ROUTEO TO	RP84	43.	3.27	12.	5.	5.	.06		
HYDROGRAPH AT	11	1.	3.05	0.	0.	0.	.00		
HYOROGRAPH AT	12	2.	3.05	0.	0.	0.	.00		
2 COMBINED AT	CP11	3.	3.05	0.	0.	0.	.00		
HYOROGRAPH AT	8	2.	3.05	0.	0.	0.	.00	•	
2 COMBINED AT	CP8	5.	3.05	0.	0.	0.	.00		
HYDROGRAPH AT	5	6.	3.07	0.	0.	0.	.00		
HYDROGRAPH AT	6	2.	3.05	0.	0.	0.	.00		
2 COMBINED AT	CP5	8.	3.05	0.	0.	0.	.00		
HYDROGRAPH AT	2	9.	3.08	1.	0.	0.	.00		
ROUTED TO	DET2	4.	2.98	1.	0.	0.	.00	88.94	3.20
HYDROGRAPH AT	10	1.	3.05	0.	0.	0.	.00		
2 COMBINED AT	CP10	5.	3.05	1.	0.	0.	.00		
HYDROGRAPH AT	3	2.	3.05	0.	0.	0.	.00		
HYDROGRAPH AT	9	2.	3.05	0.	0.	0.	.00		
3 COMBINED AT	CP3	8.	3.05	1.	0.	0.	.00		
HYOROGRAPH AT	4	3.	3.07	0.	0.	0.	.00		
HYDROGRAPH AT	7	2.	3.05	0.	0.	0.	.00		
2 COMBINEO AT	CP4	5.	3.05	0.	0.	0.	.00		
4 COMBINED AT	CPDET	26.	3.05	2.	1.	1.	.01		
ROUTED TO	OET	1.	4.05	1.	0.	0.	.01	86.69	4.10
HYDROGRAPH AT	1	2.	3.05	0.	0.	0.	.00		
3 COMBINEO AT	CBUIK	44.	3.27	13.	5.	5.	.06		
HYDROGRAPH AT	нүз	9.	3.10	1.	0.	0.	.00		
HYDROGRAPH AT	RDBUDG	1.	3.23	0.	0.	0.	.00		
HYDROGRAPH AT	ROPHY1	17.	3.18	1.	0.	0.	.00		
HYDROGRAPH AT	RDE84	4.	3.12	0.	0.	0.	.00		
HYDROGRAPH AT	RDW84	3.	3.10	0.	0.	0.	.00		1 DD

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5 COMBINED AT	PHY3	29	. 3.13	2.	1.	1.	.00		
DIVERSION TO	DPHY3	18.	3.03	1.	0.	0.	.00		
HYDROGRAPH AT	DPHY3	11.	3.03	1.	0.	0.	.00		
HYDROGRAPH AT	HY4	8.	3.08	1.	0.	0.	.00		
DIVERSION TO	DPHY4	1.	3.07	0.	0.	0.	.00		
HYDROGRAPH AT	DHY4	7.	3.07	1.	0.	0.	.00		
4 COMBINED AT	PPCC	105.	3.25	28.	11.	11.	.13		
ROUTED TO	RPPCC	105.	3.25	28.	11.	11.	.13		
HYDROGRAPH AT	SUNP	81.	3.08	5.	2.	2.	.02		
ROUTED TO	DSUNP	2.	4.05	2.	1.	1.	.02	2.24	4.15
HYDROGRAPH AT	10	8.	3.05	0.	0.	0.	.00		
ROUTED TO	DET8	0.	4.50	0.	0.	0.	.OD	2.75	5.65
HYDROGRAPH AT	11	22.	3.07	1.	0.	0.	.00		
HYDROGRAPH AT	12	1.	3.05	0.	0.	0.	.00		
3 COMBINED AT	CP7	23.	3.07	1.	1.	1.	.D1		
ROUTED TO	DET7	D.	9.30	D.	D.	0.	.D1	3.01	9.72
3 COMBINED AT	PSUN2	106.	3.25	30.	12.	12.	. 15		
ROUTED TO	RPSUN2	106.	3.27	30.	12.	12.	. 15		
HYDROGRAPH AT	PCE	55.	3.1D	4.	1.	1.	.02		
ROUTED TO	DPCE	9.	3.5D	4.	1.	1.	.02	73.43	3.50
2 COMBINED AT	CPCE	115.	3.27	33.	14.	14.	.17		
ROUTED TO	RPCE	115.	3.27	33.	14.	14.	.17		
HYDROGRAPH AT	PCW	41.	3.10	3.	1.	1.	.01		
ROUTED TO	DPCW	10.	3.35	3.	1.	1.	.01	71.87	3.35
HYDROGRAPH AT	NV2	7.	3.10	0.	0.	0.	.00		
3 COMBINED AT	CPCW	128.	3.25	37.	15.	15.	.18		
HYDROGRAPH AT	VI 1	5.	3.08	0.	D.	0.	.OD		
2 COMBINED AT	CPV	130.	3.23	37.	15.	15.	.18		
ROUTED TO	RCPV	129.	3.28	37.	15.	15.	.18		
HYDROGRAPH AT	UD2	63.	3.18	5.	2.	2.	.04		
HYDROGRAPH AT	VI2	7.	3.08	D.	0.	0.	.00		
ROUTED TO	DET1	1.	3.38	1.	D.	0.	.DD	70.85	3.48
ROUTED TO	RET2	1.	3.73	1.	D.	0.	.OD	7D.23	3
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ROUTEO TO	OET3	1.	5.68	1.	0.	0.	.00	70.41	5.72
HYOROGRAPH AT	VI3	5.	3.08	0.	0.	0.	.00		
2 COMBINEO AT	PAC	5.	3.08	1.	0.	0.	.00		
ROUTED TO	RTAC	1.	6.55	0.	0.	0.	.00	70.56	6.57
ROUTED TO	RRTAC	1.	6.57	0.	0.	0.	.00		
HYDROGRAPH AT	83R0	17.	3.15	1.	0.	0.	.00		
4 COMBINED AT	PR1	200.	3.22	43.	17.	17.	.22		
ROUTEO TO	RPR1	199.	3.23	43.	17.	17.	.22		
HYOROGRAPH AT	F2	18.	3.08	1.	0.	0.	.DO		
2 COMBINEO AT	PF2	206.	3.23	44.	18.	18.	.23		
ROUTED TO	RPF2	206.	3.23	44.	18.	18.	.23		
HYDROGRAPH AT	EG84	13.	3.08	1.	0.	0.	.00		
2 COMBINED AT	PEG84	210.	3.23	45.	18.	18.	.23		
ROUTED TO	RPEG84	210.	3.23	45.	18.	18.	.23		
HYDROGRAPH AT	MPE1	30.	3.07	2.	1.	1.	.01		
HYOROGRAPH AT	L	54.	3.13	4.	1.	1.	.02		
3 COMBINED AT	NMPD1	260.	3.20	51.	20.	20.	.26		
ROUTED TO	DB1	177.	3.43	51.	20.	20.	.26	42.70	3.43
HYDROGRAPH AT	N24	7.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	N23	7.	3.08	0.	0.	0.	.00		
2 COMBINEO AT	PN23	14.	3.08	1.	0.	0.	.00		
ROUTED TO	RPN23	14.	3.08	1.	0.	0.	.00		
HYOROGRAPH AT	N22	3.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	N21	3.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	1	13.	3.07	1.	0.	0.	.00		
ROUTEO TO	DET1	1.	3.57	1.	0.	0.	.00	2.55	3.57
HYDROGRAPH AT	2	9.	3.05	0.	0.	0.	.00		
2 COMBINEO AT	CP2	9.	3.05	1.	0.	0.	.00		
ROUTEO TO	0ET2	1.	6.33	1.	0.	0.	.00	1.62	6.55
HYDROGRAPH AT	3	8.	3.05	0.	0.	0.	.00		
2 COMBINED AT	CP3	9.	3.05	1.	1.	1.	.01		
ROUTED TO	DET3	1.	8.83	0.	0.	0.	.01	1.51	1-DF

HYDROGRAPH AT	4	5.	3.05	0.	0.	0.	.00		
2 COMBINED AT	CP4	5.	3.05	1.	0.	0.	.01		
ROUTED TO	0ET4	1.	5.75	1.	0.	0.	.01	1.60	6.02
HYOROGRAPH AT	5	3.	3.05	0.	0.	0.	.00		
2 COMBINED AT	CP5	3.	3.05	· 1.	0.	0.	.01		
ROUTED TO	DET5	1.	5.20	1.	0.	0.	.01	1.71	5.80
HYDROGRAPH AT	6	3.	3.05	0.	0.	0.	.00		
HYOROGRAPH AT	7	14.	3.07	1.	0.	0.	.00		
3 COMBINEO AT	0UM-1	17.	3.07	1.	1.	1.	.01		
HYOROGRAPH AT	8	7.	3.05	0.	0.	0.	.00		
HYDROGRAPH AT	9	12.	3.07	1.	0.	0.	.00		
HYOROGRAPH AT	13	12.	3.07	1.	0.	0.	.00		
4 COMBINED AT	DUM-2	47.	3.07	3.	1.	1.	.02		
HYDROGRAPH AT	CJN	2.	3.08	0.	0.	0.	.00		
2 COMBINED AT	CP6	49.	3.07	3.	1.	1.	.02		
ROUTED TO	DET6	20.	3.18	3.	1.	1.	.02	2.55	3.18
HYDROGRAPH AT	CJS	4.	3.08	0.	0.	0.	.00		
ROUTED TO	0CJS	0.	3.53	0.	0.	0.	.00	79.04	3.60
5 COMBINED AT	PN21	39.	3.10	5.	2.	2.	.02		
ROUTED TO	RPN21	38.	3.10	5.	2.	2.	.02		
HYDROGRAPH AT	N20	3.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	N19	4.	3.08	0.	0.	0.	.00		
3 COMBINED AT	PN19	45.	3.10	5.	2.	2.	.02		
ROUTEO TO	RPN19	42.	3.12	5.	2.	2.	.02		
HYOROGRAPH AT	SUB1A	4.	3.08	0.	0.	0.	.00		
ROUTED TO	DET7	2.	3.20	0.	0.	0.	.00	1484.18	3.20
HYDROGRAPH AT	SUB1B	14.	3.08	1.	0.	0.	.00		
2 COMBINEO AT	CP1	15.	3.08	1.	0.	0.	.00		
ROUTED TO	OET1	1.	3.63	1.	0.	0.	.00	1480.14	3.68
ROUTED TO	R1	1.	3.65	1.	0.	0.	.00		
ROUTED TO	DET2	1.	4.12	1.	0.	0.	.00	1475.35	4.17
HYDROGRAPH AT	SUB2A	14.	3.13	1.	0.	0.	.00		
2 COMBINED AT	CP2	14.	3.13	2.	1.	1.	.01		1-DR-20

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ROUTED TO	DET3	3.	3.57	2.	1.	1.	.01	1476.77	3.57
HYOROGRAPH AT	SUB5	3.	3.08	0.	0.	0.	.00		
ROUTEO TO	0ET8	1.	3.27	0.	0.	0.	.00	1479.65	3.27
HYDROGRAPH AT	SUB4	9.	3.08	1.	0.	0.	.00		
2 COMBINED AT	CP3	9.	3.08	1.	0.	0.	.00		
ROUTED TO	0ET6	2.	3.37	1.	0.	<b>0.</b> .	.00	1480.34	3.38
HYOROGRAPH AT	SUB3	4.	3.08	0.	0.	0.	.00		
2 COMBINEO AT	CP4	5.	3.10	1.	0.	0.	.00		
ROUTED TO	R3	5.	3.10	1.	0.	0.	.00	•	
HYDROGRAPH AT	SUB2B	4.	3.08	0.	0.	0.	.00		
2 COMBINEO AT	CP5	10.	3.08	1.	0.	0.	.00		
ROUTED TO	DET5	3.	3.60	1.	0.	0.	.00	1478.45	3.62
2 COMBINED AT	CP6	6.	3.58	3.	1.	1.	.01		
ROUTED TO	DET4	6.	4.33	3.	1.	1.	.01	1477.23	4.33
ROUTEO TO	RT4	6.	4.33	3.	1.	1.	.01		
HYDROGRAPH AT	N18	10.	3.13	1.	0.	0.	.00		
2 COMBINED AT	CPN18	11.	3.17	4.	1.	1.	.02		
HYOROGRAPH AT	N17	4.	3.08	0.	0.	0.	.00		•
HYDROGRAPH AT	DR	6.	3.08	0.	0.	0.	.00		
ROUTED TO	OETDR	2.	3.30	0.	0.	0.	.00	70.74	3.30
4 COMBINED AT	PN17	57.	3.12	10.	4.	4.	.04		
ROUTED TO	RPN17	57.	3.13	10.	4.	4.	.04		
HYDROGRAPH AT	N16	4.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	N15	4.	3.08	0.	0.	0.	.00		
3 COMBINEO AT	PN15	63.	3.12	10.	4.	4.	.04		
ROUTEO TO	RPN15	63.	3.13	10.	4.	4.	.04		
HYDROGRAPH AT	N14	7.	3.08	0.	0.	0.	.00		
2 COMBINEO AT	PN14	69.	3.12	10.	4.	4.	.05		
HYOROGRAPH AT	R7	2.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	R6	2.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	JRT2B	13.	3.08	1.	0.	0.	.00		
ROUTED TO	DET2B	3.	3.30	1.	0.	0.	.00	1464.83	
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HYDROGRAPH AT	JRT2C	13.	3.10	1.	0.	0.	.00		
2 COMBINED AT	CP2C	16.	3.10	2.	1.	1.	.01		
ROUTED TO	DET2C	8.	3.25	2.	1.	1.	.01	1464.72	3.25
HYDROGRAPH AT	JRT2A	18.	3.07	1.	0.	0.	.D0		
2 COMBINED AT	CP2A	25.	3.08	3.	1.	1.	.01		
ROUTED TO	DET2A	12.	3.30	3.	1.	1.	.01	1463.86	3.30
3 COMBINED AT	PR6	14.	3.12	3.	1.	1.	.D1		
ROUTED TO	RPR6	14.	3.12	3.	1.	1.	.01		
HYDROGRAPH AT	R8	3.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	JPRT	61.	3.22	6.	2.	2.	.04		
HYDROGRAPH AT	R9	3.	3.08	0.	0.	0.	.00		
4 COMBINED AT	PR9	78.	3.22	9.	3.	3.	.05		
ROUTED TO	RPR9	78.	3.22	9.	3.	3.	.05		
HYDROGRAPH AT	R11	5.	3.08	0.	0.	0.	.00		
2 COMBINED AT	PR11	8D.	3.22	10.	4.	4.	.05		
ROUTED TO	RPR11	80.	3.22	10.	4.	4.	.05		
2 COMBINED AT	PNR	140.	3.17	20.	8.	8.	.10		
HYDROGRAPH AT	N12	5.	3.08	0.	0.	0.	.00		
2 COMBINED AT	PN12	143.	3.17	20.	8.	8.	.10		
ROUTED TO	RPN12	143.	3.17	20.	8.	8.	.1D		
HYDROGRAPH AT	N13	4.	3.08	0.	0.	0.	.00		
2 COMBINED AT	PN13	146.	3.17	21.	8.	8.	.10		
ROUTED TO	RPN13	145.	3.17	21.	8.	8.	.10		
HYDROGRAPH AT	NFC	37.	3.08	2.	1.	1.	.01		
ROUTED TO	DNFC	22.	3.17	2.	1.	1.	.01	1.17	3.17
HYDROGRAPH AT	E1	5.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	E2	1.	3.08	0.	0.	0.	.OD		
3 COMBINED AT	PE1	26.	3.15	3.	1.	1.	.01		
ROUTED TO	RPE1	26.	3.15	3.	1.	1.	.D1		
HYDROGRAPH AT	GW	28.	3.17	2.	1.	1.	.02		
3 COMBINED AT	PNE	199.	3.17	26.	10.	10.	.13		
ROUTED TO	RPNE	199.	3.17	26.	1D.	1D.	.13		
HYDROGRAPH AT	N11	5.	3.08	D.	0.	D.	.OD		1-DR-
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HYDROGRAPH AT	V4	9.	3.08	1.	0.	0.	.00		
ROUTED TO	DV4	1.	3.55	0.	0.	0.	.00	50.29	3.58
3 COMBINED AT	PN11	203.	3.17	26.	10.	10.	.13		
ROUTED TO	RPN11	202.	3.17	26.	10.	10.	.13		
HYDROGRAPH AT	พ10	5.	3.08	0.	0.	0.	.00		
2 COMBINED AT	PN10	205.	3.17	27.	10.	10.	.13		
HYDROGRAPH AT	N9	2.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	V3	12.	3.08	1.	0.	0.	.00		
ROUTED TO	DV3	, 2.	3.50	1.	0.	0.	.00	49.06	3.50
3 COMBINED AT	PN9	207.	3.17	27.	11.	11.	.13		
ROUTED TO	RPN9	207.	3.17	27.	11.	11.	.13		
HYDROGRAPH AT	MPE2	26.	3.08	2.	1.	1.	.01		
HYDROGRAPH AT	P1	0.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	P2	0.	3.08	0.	0.	0.	.00		
4 COMBINED AT	PPRK	223.	3.15	29.	11.	11.	. 14		
ROUTED TO	DB2	151.	3.33	29.	11.	11.	.14	45.04	3.33
2 COMBINED AT	CP3	326.	3.35	79.	31.	31.	.40		
ROUTED TO	DB3	269.	3.67	79.	31.	31.	.40	41.46	3.67
ROUTED TO	DB4	214.	4.07	79.	31.	31.	.40	37.96	4.07
HYDROGRAPH AT	R1	2.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	R2	3.	3.08	0.	0.	0.	.00		
2 COMBINED AT	PR1	5.	3.08	0.	0.	0.	.00		
ROUTED TO	RPR1	5.	3.10	0.	0.	0.	.00		
HYDROGRAPH AT	R3	2.	3.08	0.	0.	0.	.00		
2 COMBINED AT	PR3	7.	3.10	0.	0.	0.	.00		
ROUTED TO	RPR3	7.	3.10	0.	0.	0.	.00		
HYDROGRAPH AT	R4	2.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	R5	2.	3.08	0.	0.	0.	.00		
2 COMBINED AT	PR4	5.	3.08	0.	0.	0.	.00		
ROUTED TO	RPR4	5.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	OFFSV1	23.	3.05	1.	1.	1.	.00		
DIVERSION TO	BSNSV1	23.	.00	1.	1.	1.	.00		1-DE
	ROUTED TO  3 COMBINED AT  ROUTED TO  HYDROGRAPH AT  HYDROGRAPH AT  HYDROGRAPH AT  ROUTED TO  3 COMBINED AT  HYDROGRAPH AT  HYDROGRAPH AT  HYDROGRAPH AT  HYDROGRAPH AT  COMBINED AT  ROUTED TO  2 COMBINED AT  ROUTED TO  HYDROGRAPH AT  HYDROGRAPH AT  COUTED TO  HYDROGRAPH AT  HYDROGRAPH AT  HYDROGRAPH AT  HYDROGRAPH AT  HYDROGRAPH AT  COMBINED AT  ROUTED TO  HYDROGRAPH AT  ROUTED TO  HYDROGRAPH AT  ROUTED TO  HYDROGRAPH AT  COMBINED AT  ROUTED TO  HYDROGRAPH AT  COMBINED AT  ROUTED TO  HYDROGRAPH AT	ROUTED TO DV4  3 COMBINED AT PN11  ROUTED TO RPN11  HYDROGRAPH AT N10  2 COMBINED AT PN10  HYDROGRAPH AT V3  ROUTED TO DV3  3 COMBINED AT PN9  HYDROGRAPH AT PN9  HYDROGRAPH AT P1  HYDROGRAPH AT P2  4 COMBINED AT PPRK  ROUTED TO DB2  2 COMBINED AT PPRK  ROUTED TO DB3  ROUTED TO DB3  ROUTED TO DB4  HYDROGRAPH AT R1  HYDROGRAPH AT R2  2 COMBINED AT R2  2 COMBINED AT R2  3 COMBINED AT R2  4 COMBINED AT R3  ROUTED TO RPR1  HYDROGRAPH AT R3  COMBINED AT R5  COMBINED AT R5  ROUTED TO RPR3  HYDROGRAPH AT R5  2 COMBINED AT R5  COMBINED AT R64  HYDROGRAPH AT R65  COMBINED AT R64  HYDROGRAPH AT R65	ROUTED TO DV4 1.  3 COMBINED AT PN11 203.  ROUTED TO RPN11 202.  HYDROGRAPH AT N10 5.  2 COMBINED AT PN10 205.  HYDROGRAPH AT N9 2.  HYDROGRAPH AT V3 12.  ROUTED TO DV3 2.  3 COMBINED AT PN9 207.  ROUTED TO RPN9 207.  HYDROGRAPH AT P1 0.  HYDROGRAPH AT P1 0.  HYDROGRAPH AT P2 0.  4 COMBINED AT PPRK 223.  ROUTED TO DB2 151.  2 COMBINED AT PPRK 223.  ROUTED TO DB2 151.  2 COMBINED AT CP3 326.  ROUTED TO DB3 269.  ROUTED TO DB4 214.  HYDROGRAPH AT R1 2.  HYDROGRAPH AT R2 3.  2 COMBINED AT PR1 5.  ROUTED TO RPR1 5.  HYDROGRAPH AT R3 2.  2 COMBINED AT PR3 7.  ROUTED TO RPR3 7.  HYDROGRAPH AT R4 2.  HYDROGRAPH AT R5 2.  2 COMBINED AT PR3 7.  HYDROGRAPH AT R4 2.  HYDROGRAPH AT R5 2.  2 COMBINED AT PR4 5.  HYDROGRAPH AT R5 2.  2 COMBINED AT PR4 5.  HYDROGRAPH AT R5 2.  ROUTED TO RPR4 5.	ROUTED TO DV4 1. 3.55  3 COMBINED AT PN11 203. 3.17  ROUTED TO RPN11 202. 3.17  HYDROGRAPH AT N10 5. 3.08  2 COMBINED AT PN10 205. 3.17  HYDROGRAPH AT N9 2. 3.08  ROUTED TO DV3 2. 3.50  3 COMBINED AT PN9 207. 3.17  ROUTED TO RPN9 207. 3.17  HYDROGRAPH AT MPE2 26. 3.08  HYDROGRAPH AT P1 0. 3.08  HYDROGRAPH AT P2 0. 3.08  HYDROGRAPH AT P2 0. 3.08  HYDROGRAPH AT P2 3. 3.15  ROUTED TO DB2 151. 3.33  2 COMBINED AT PPRK 223. 3.15  ROUTED TO DB2 151. 3.33  2 COMBINED AT CP3 326. 3.35  ROUTED TO DB4 214. 4.07  HYDROGRAPH AT R1 2. 3.08  HYDROGRAPH AT R2 3. 3.08  ROUTED TO DB4 214. 4.07  HYDROGRAPH AT R2 3. 3.08  ROUTED TO RPR1 5. 3.08  ROUTED TO RPR1 5. 3.08  ROUTED TO RPR3 7. 3.10  HYDROGRAPH AT R4 2. 3.08  HYDROGRAPH AT R5 2. 3.08  HYDROGRAPH AT R6 2. 3.08  ROUTED TO RPR3 7. 3.10  HYDROGRAPH AT R5 2. 3.08  ROUTED TO RPR3 7. 3.10  HYDROGRAPH AT R5 2. 3.08  ROUTED TO RPR3 7. 3.10  HYDROGRAPH AT R5 2. 3.08  ROUTED TO RPR4 5. 3.08	ROUTED TO DV4 1. 3.55 0.  3 COMBINED AT PN11 203. 3.17 26.  ROUTED TO RPN11 202. 3.17 26.  HYDROGRAPH AT N10 5. 3.08 0.  2 COMBINED AT PN10 205. 3.17 27.  HYDROGRAPH AT N9 2. 3.08 0.  HYDROGRAPH AT V3 12. 3.08 1.  ROUTED TO DV3 2. 3.50 1.  3 COMBINED AT PN9 207. 3.17 27.  ROUTED TO RPN9 207. 3.17 27.  HYDROGRAPH AT MPE2 26. 3.08 2.  HYDROGRAPH AT P1 0. 3.08 0.  HYDROGRAPH AT P2 0. 3.08 0.  HYDROGRAPH AT P2 0. 3.08 0.  4 COMBINED AT PPRK 223. 3.15 29.  ROUTED TO DB2 151. 3.33 29.  2 COMBINED AT CP3 326. 3.35 79.  ROUTED TO DB3 269. 3.67 79.  ROUTED TO DB4 214. 4.07 79.  HYDROGRAPH AT R1 2. 3.08 0.  HYDROGRAPH AT R2 3. 3.08 0.  HYDROGRAPH AT R2 3. 3.08 0.  ROUTED TO DB4 214. 4.07 79.  HYDROGRAPH AT R2 3. 3.08 0.  ROUTED TO RPR1 5. 3.08 0.  ROUTED TO RPR1 5. 3.08 0.  ROUTED TO RPR1 5. 3.10 0.  HYDROGRAPH AT R3 2. 3.08 0.  ROUTED TO RPR3 7. 3.10 0.  HYDROGRAPH AT R4 2. 3.08 0.  HYDROGRAPH AT R5 2. 3.08 0.  HYDROGRAPH AT R6 2. 3.08 0.  HYDROGRAPH AT R7 2. 3.08 0.  ROUTED TO RPR3 7. 3.10 0.  HYDROGRAPH AT R4 2. 3.08 0.  HYDROGRAPH AT R5 2. 3.08 0.  HYDROGRAPH AT R6 2. 3.08 0.  HYDROGRAPH AT R7 5. 3.08 0.  HYDROGRAPH AT R6 2. 3.08 0.  HYDROGRAPH AT R7 5. 3.08 0.  HYDROGRAPH AT R6 2. 3.08 0.  HYDROGRAPH AT R7 5. 3.08 0.  HYDROGRAPH AT R6 2. 3.08 0.  HYDROGRAPH AT R7 5. 3.08 0.  HYDROGRAPH AT R6 5. 3.08 0.  HYDROGRAPH AT R7 5. 3.08 0.  HYDROGRAPH AT R6 5. 3.08 0.  HYDROGRAPH AT R7 5. 3.08 0.	ROUTED TO DV4 1. 3.55 0. 0. 10. 3 COMBINED AT PN11 203. 3.17 26. 10. PN10 205. 3.17 26. 10. PN10 205. 3.17 27. 11. PN10 205. 3.08 2. 1. PN10 205. 3.08 2. 3.08 2. 3.08 2. 3.08 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0	ROUTED TO DV4 1. 3.55 0. 0. 0. 0. 3. COMBINED AT PN11 203. 3.17 26. 10. 10. 10. ROUTED TO RPN11 202. 3.17 26. 10. 10. 10. HYDROGRAPH AT N10 5. 3.08 0. 0. 0. 0. 2. COMBINED AT PN10 205. 3.17 27. 10. 10. 110. HYDROGRAPH AT N99 2. 3.08 0. 0. 0. 0. 0. NYDROGRAPH AT N99 2. 3.08 1. 0. 0. 0. NYDROGRAPH AT N99 2. 3.08 1. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.	ROUTED TO DV4 1. 3.55 0. 0. 0. 10. 10. 13 3 COMBINED AT PN11 203. 3.17 26. 10. 10. 13. 13 ROUTED TO RPN11 202. 3.17 26. 10. 10. 13. 13 HYDROGRAPH AT N10 5. 3.08 0. 0. 0. 0	ROUTED TO DV4 1. 3.55 0. 0. 0. 10. 10. 50.29  3 COMBINED AT PN11 203. 3.17 26. 10. 10. 13  ROUTED TO RPN11 202. 3.17 26. 10. 10. 13  HYDROGRAPH AT N10 5. 3.08 0. 0. 0. 0. 0. 00  2 COMBINED AT PN10 205. 3.17 27. 10. 10. 1.3  HYDROGRAPH AT N9 2. 3.08 0. 0. 0. 0. 0. 00  HYDROGRAPH AT N9 2. 3.08 1. 0. 0. 0. 00  HYDROGRAPH AT N9 2. 3.50 1. 0. 0. 0. 00  ROUTED TO DV3 2. 3.50 1. 0. 0. 0. 00  49.06  3 COMBINED AT PN0 207. 3.17 27. 11. 11. 11. 13  ROUTED TO RPN9 207. 3.17 27. 11. 11. 11. 13  HYDROGRAPH AT MPE2 26. 3.08 2. 1. 1. 1. 0.1  HYDROGRAPH AT PP1 0. 3.08 0. 0. 0. 0. 0. 00  HYDROGRAPH AT PP2 0. 3.08 0. 0. 0. 0. 0. 00  HYDROGRAPH AT PP2 0. 3.08 0. 0. 0. 0. 0. 00  HYDROGRAPH AT PP3 326. 3.35 79. 31. 3140  ROUTED TO DB2 151. 3.33 29. 11. 1114  ROUTED TO DB3 269. 3.67 79. 31. 3140 41.46  ROUTED TO DB4 214. 4.07 79. 31. 3140 37.96  HYDROGRAPH AT R2 3. 3.08 0. 0. 0. 0. 0. 00  HYDROGRAPH AT R2 3. 3.08 0. 0. 0. 0. 0. 00  ROUTED TO RPR1 5. 3.08 0. 0. 0. 0. 0. 00  ROUTED TO RPR1 5. 3.08 0. 0. 0. 0. 0. 00  ROUTED TO RPR1 5. 3.08 0. 0. 0. 0. 0. 00  ROUTED TO RPR1 5. 3.08 0. 0. 0. 0. 0. 00  HYDROGRAPH AT R2 3. 3.08 0. 0. 0. 0. 0. 00  ROUTED TO RPR1 5. 3.08 0. 0. 0. 0. 0. 00  ROUTED TO RPR3 7. 3.10 0. 0. 0. 0. 00  HYDROGRAPH AT R3 2. 3.08 0. 0. 0. 0. 0. 00  ROUTED TO RPR3 7. 3.10 0. 0. 0. 0. 00  HYDROGRAPH AT R3 2. 3.08 0. 0. 0. 0. 00  ROUTED TO RPR3 7. 3.10 0. 0. 0. 0. 00  HYDROGRAPH AT R3 2. 3.08 0. 0. 0. 0. 00  ROUTED TO RPR3 7. 3.10 0. 0. 0. 0. 00  HYDROGRAPH AT R4 2. 3.08 0. 0. 0. 0. 00  ROUTED TO RPR3 7. 3.10 0. 0. 0. 0. 00  HYDROGRAPH AT R5 2. 3.08 0. 0. 0. 0. 00  HYDROGRAPH AT R5 2. 3.08 0. 0. 0. 0. 00  ROUTED TO RPR3 7. 3.10 0. 0. 0. 00  ROUTED TO RPR3 7. 3.10 0. 0. 0. 0. 00  ROUTED TO RPR3 7. 3.10 0. 0. 0. 0. 00  HYDROGRAPH AT R5 2. 3.08 0. 0. 0. 0. 00  ROUTED TO RPR3 7. 3.10 0. 0. 0. 0. 00  HYDROGRAPH AT R5 2. 3.08 0. 0. 0. 0. 00  HYDROGRAPH AT R5 3. 0. 0. 0. 0. 00  HYDROGRAPH AT PR4 5. 3.08 0. 0. 0. 0. 00  HYDROGRAPH AT PR4 5. 3.08 0. 0. 0. 0. 00  HYDROGRAPH AT PR4 5. 3.08 0. 0. 0. 0. 00  HYDROGRAPH AT O

UVDDOCDADU AT	DETOU4	0	00	0		2			
HYDROGRAPH AT	DETSV1	0.	.00	0.	0.	0.	.00		
HYDROGRAPH AT	OFFSV2	23.	3.05	1.	0.	0.	.00		
2 COMBINED AT	CP-SV2	23.	3.05	1.	D.	0.	.D1		
DIVERSION TO	BSNSV2	23.	3.08	1.	0.	0.	.01		
HYDROGRAPH AT	DETSV2	15.	3.08	1.	0.	0.	.01		
HYDROGRAPH AT	OFFSV3	35.	3.05	2.	1.	1.	.01		
2 COMBINED AT	CP-SV3	44.	3.08	3.	1.	1.	.02		
DIVERSION TO	BSNSV3	41.	3.10	1.	0.	0.	.02		
HYDROGRAPH AT	DETSV3	36.	3.10	1.	0.	0.	.02		
HYDROGRAPH AT	AML6	59.	3.08	4.	1.	1.	.01		
ROUTED TO	DAML6	7.	3.53	<b>3.</b>	1.	1.	.01	2.76	3.53
ROUTED TO	RT-N3	7.	3.53	3.	1.	1.	.01		
2 COMBINED AT	CP-SV3	40.	3.10	5.	2.	2.	.03		
ROUTED TO	RT-SV7	31.	3.13	5.	2.	2.	.03	1.04	3.13
HYDROGRAPH AT	OFFSV7	6.	3.05	0.	0.	D.	.00		
DIVERSION TO	BSNSV7	6.	3.15	D.	0.	D.	.DD		
HYDROGRAPH AT	DETSV7	2.	3.15	0.	0.	0.	.00		
HYDROGRAPH AT	OFFSV4	65.	3.05	4.	1.	1.	.01		
DIVERSION TO	BSNSV4	18.	3.05	1.	D.	D.	.D1		
HYDROGRAPH AT	DETSV4	65.	3.05	3.	1.	1.	.01		
3 COMBINED AT	CP-SV7	67.	3.05	8.	3.	3.	.D4		
HYDROGRAPH AT	OFFSV5	73.	3.05	5.	2.	2.	.D1		
DIVERSION TO	BSNSV5	65.	3.05	2.	1.	1.	.01		
HYDROGRAPH AT	DETSV5	73.	3.05	3.	1.	1.	.01		
HYDROGRAPH AT	В1	76.	3.05	5.	2.	2.	.02		
2 COMBINED AT	CP-D1	149.	3.05	7.	3.	3.	.03		
ROUTED TO	DET-D1	59.	3.17	7.	3.	3.	.03	1485.11	3.17
ROUTED TO	RT-B2	59.	3.18	7.	3.	3.	.03		
2 COMBINED AT	CP-B2	116.	3.15	15.	6.	6.	.07		
ROUTED TO	RT-D2	113.	3.17	15.	6.	6.	.07	2.27	3.17
HYDROGRAPH AT	B2	28.	3.05	2.	1.	1.	.D1		
2 COMBINED AT	CP-D2	122.	3.17	16.	6.	6.	.D8		
ROUTED TO	DT-D2	122.	3.17	16.	6.	6.	.D8	148D.D4	1-DR-2020 3/9/2021

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ROUTED TO	RT-03	122.	3.17	16.	6.	6.	.08		
HYOROGRAPH AT	в3	54.	3.08	4.	1.	1.	.01		
2 COMBINEO AT	CP-03	159.	3.15	20.	8.	8.	.09		
ROUTED TO	DET-03	48.	3.65	14.	7.	7.	.09	1477.68	3.65
ROUTED TO	CP-A	48.	3.65	14.	7.	7.	.09		
ROUTED TO	RCP-A	48.	3.70	14.	7.	7.	.09		
HYDROGRAPH AT	OFF-N1	26.	3.22	3.	1.	. 1.	.01		
ROUTED TO	RT-N2	17.	3.38	3.	1.	1.	.01	.56	3.38
HYOROGRAPH AT	OFF-N2	67.	3.17	6.	2.	2.	.03		
2 COMBINED AT	CP-N2	77.	3.18	8.	3.	3.	.04		
ROUTED TO	RT-SV6	68.	3.25	8.	3.	3.	.04	1.29	3.25
HYOROGRAPH AT	OFFSV6	71.	3.07	5.	2.	2.	.01		
DIVERSION TO	BSNSV6	71.	4.15	4.	2.	2.	.01		
HYDROGRAPH AT	0ETSV6	2.	4.15	0.	0.	0.	.01		
2 COMBINEO AT	CP-SV6	68.	3.25	9.	3.	3.	.06		
ROUTED TO	RT-B7	67.	3.28	9.	3.	3.	.06	1.60	3.28
HYOROGRAPH AT	B7	3.	3.07	0.	0.	0.	.00		
2 COMBINED AT	CP-B7	67.	3.28	9.	3.	3.	.06		•
ROUTED TO	RT-B8	66.	3.33	9.	3.	3.	.06	1.59	3.33
HYDROGRAPH AT	В4	21.	3.07	1.	0.	0.	.00		
ROUTED TO	RT-B5	20.	3.08	1.	0.	0.	.00		
HYOROGRAPH AT	B5	78.	3.07	5.	2.	2.	.02		
2 COMBINED AT	CP-B5	98.	3.07	6.	2.	2.	.02		
ROUTEO TO	RT-D4	98.	3.07	6.	2.	2.	.02		
HYDROGRAPH AT	В6	63.	3.10	5.	2.	2.	.01		
2 COMBINED AT	CP-D4	158.	3.08	11.	4.	4.	.03		
ROUTED TO	0ET-04	6.	3.72	6.	4.	4.	.03	1472.36	3.73
HYDROGRAPH AT	В8	3.	3.07	0.	0.	0.	.00		
3 COMBINED AT	CP-D	73.	3.33	14.	7.	7.	.09		
ROUTEO TO	RCP-0	73.	3.35	14.	7.	7.	.09		
HYDROGRAPH AT	IPRT	88.	3.10	7.	2.	2.	.02		
HYDROGRAPH AT	IPRT2	33.	3.08	2.	1.	1.	.01		1-DF
									1-115

ROUTED TO	DIPRT	14.	3.22	2.	1.	1.	.01	1464.29	3.22
4 COMBINED AT	PRT3	124.	3.12	36.	17.	17.	.21		
3 COMBINEO AT	PRS	135.	3.12	36.	17.	17.	.21		
ROUTEO TO	RPRS	135.	3.12	36.	17.	17.	.21		
HYDROGRAPH AT	<b>S14</b>	3.	3.08	0.	0.	. 0.	.00		
2 COMBINED AT	PS14	138.	3.12	36.	17.	17.	.21		
ROUTEO TO	RPS14	137.	3.12	36.	17.	17.	.21		
HYOROGRAPH AT	GE	60.	3.10	4.	1.	1.	.01		
ROUTEO TO	OETGE	5.	3.58	4.	1.	1.	.01	1462.40	3.58
HYOROGRAPH AT	S11	4.	3.08	0.	0.	0.	.00		
HYOROGRAPH AT	<b>S12</b>	0.	3.10	0.	0.	0.	.00		
4 COMBINEO AT	PS12	145.	3.12	40.	19.	19.	.23		
ROUTED TO	RPS11	144.	3.13	40.	19.	19.	.23		
HYDROGRAPH AT	<b>S9</b>	3.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	s10	3.	3.08	0.	0.	0.	.00		
3 COMBINEO AT	PS9	149.	3.13	41.	19.	19.	.23		
ROUTED TO	RPS9	149.	3.13	41.	19.	19.	.23		
HYDROGRAPH AT	<b>s7</b>	1.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	<b>S8</b>	0.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	H	57.	3.10	4.	1.	1.	.01		
4 COMBINED AT	PS8	205.	3.12	44.	20.	20.	.24		
ROUTED TO	RPS8	203.	3.13	44.	20.	20.	.24		
HYOROGRAPH AT	\$5	3.	3.08	0.	0.	0.	.00		
HYOROGRAPH AT	\$6	3.	3.08	0.	0.	0.	.00		
HYDROGRAPH AT	1	32.	3.07	2.	1.	1.	.01		
ROUTEO TO	DET1	10.	3.23	2.	1.	1.	.01	1452.41	3.23
HYOROGRAPH AT	2	26.	3.08	2.	1.	1.	.01		
ROUTEO TO	OET2	8.	3.27	2.	1.	1.	.01	1452.07	3.27
HYOROGRAPH AT	3	19.	3.07	1.	0.	0.	.00		
3 COMBINEO AT	CP3	32.	3.08	5.	2.	2.	.02		
ROUTED TO	OET3	22.	3.33	5.	2.	2.	.02	1450.11	3.33
4 COMBINED AT	PS6	227.	3.13	49.	22.	22.	.26		
ROUTED TO	RPS6	227.	3.13	49.	22.	22.	.26		1-DR-2

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#### SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET8 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY C	REST TOP	OF DAM	
		ELEVATION		.00	3.00	)	3.00	
		STORAGE		0.	0.		0.	
		OUTFLOW		0.	0.		0.	
	RATIO	MAXIMUM	MUMIXAM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	2.75	.00	0.	0.	.00	5.65	.00

# SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET7 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY CR	EST TOP	OF DAM	
		ELEVATION		.00	3.00	ſ	3.00	
		STORAGE		0.	1.		1.	
		OUTFLOW		0.	0.		0.	
	RATIO	MAXIMUM	MAXIMUM	MAX I MUM	MAX I MUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	3.01	.01	1.	0.	8.98	9.72	-00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DPCE (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIAL VALUE		SPILLWAY CR	EST TOP	OF DAM	
		ELEVATION	7	71.70 0.			74.70	
		STORAGE					2.	
		OUTFLOW		0.	10.	•	10.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	73.43	.00	1.	9.	.00	3.50	.00

# SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET1 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1	ELEVATION STORAGE OUTFLOW	INITIAL 69	VALUE 2.80 0.	SPILLWAY CREST TO 71.00 0. 1.		P OF DAM 71.00 0. 1.	
	RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS		TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS
	1.00	70.85	.00 -	0.	1.	.00	3.48	.00

# SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION RET2 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

'LAN	1	ELEVAT ION	INITIAL VALUE 67.50		SPILLWAY CREST TO			DAM .00	
		STORAGE		0.		0.		0.	
		OUTFLOW		0.		0.		0.	
	RATIO	MAX I MUM	MAXIMUM	MAXIMUM	MAXIMUM	I DURATI	ON	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER T	OP M.	AX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS		HOURS	HOURS
	1.00	70.23	.23	0.	1.	8.67		3.78	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET3 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

LAN	1		INITIA	L VALUE	SPILLWAY CR	EST TOP	OF DAM	
		ELEVATION		.00	3.00	)	3.00	
		STORAGE		0.	1.		1.	
		OUTFLOW		0.	1.		1.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1.51	.00	0.	1.	.00	9.63	.00

# SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET4 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY (	CREST TOP	OF DAM	
		ELEVATION		.00	3.0	00	3.00	
		STORAGE		0.	C	).	0.	
		OUTFLOW		0.	1		1.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1.60	.00	0.	1.	.00	6.02	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET5 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1			SPILLWAY CREST		TOP OF DAM		
		ELEVATION		.00	3.	.00	3.00	
		STORAGE		0.		0.	0.	
		OUTFLOW		0.		1.	1.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	I DURAT:	ION TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER 1	TOP MAX OUTFLO	√ FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	S HOURS	HOURS
	1.00	1.71	.00	0.	1.	.00	5.80	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET6 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIAL VALUE		SPILLWAY C	REST TOP	OF DAM	
		ELEVATION		.00	3.00	)	3.00	
		STORAGE		0.	1.	•	1.	
		OUTFLOW		0.	23.		23.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	2.55	.00	1.	20.	.00	3.18	.00

# SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DCJS (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY CREST TOP		OF DAM	
		ELEVATION	70	6.20	79.20		79.20	
		STORAGE		0.	0.		0.	
		OUTFLOW		0.	0.		0.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAX I MUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	79.04	.00	0.	0.	.00	3.60	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET7 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIAL	. VALUE	SPILLWAY CR	EST TOP	OF DAM	
		ELEVATION	1482	2.20	1484.30	1	484.30	
		STORAGE		0.	0.		0.	
		OUTFLOW		0.	2.		2.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1484.18	.00	0.	2.	.00	3.20	.00

# SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET1 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY CREST		OF DAM	
		ELEVATION	147	7.60	1481.00	1	481.00	
		STORAGE	0.		1.		1.	
		OUTFLOW			2.		2.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1480.14	.00	0.	1.	.00	3.68	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET2 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY CR	EST TOP	OF DAM	
		ELEVATION	1473	3.80	1477.00	1	477.00	
	•	STORAGE		0.	0.		0.	
		OUTFLOW		0.	2.		2.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1475.35	.00	0.	1.	.00	4.17	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET3 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIAL VALUE		SPILLWAY C	REST TOP	OF DAM	
		ELEVATION	1473	.80	1477.0	00 1	477.00	
		STORAGE		0.	0	) <b>.</b>	0.	
		OUTFLOW		0.	4	•	4.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1476.77	.00	0.	3.	.00	3.57	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET8 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY CR	EST TOP	OF DAM	
		ELEVATION	1478	8.50	1480.60	1	480.60	
		STORAGE		0.	0.		0.	
		OUTFLOW		0.	2.		2.	
	RATIO	MAXIMUM	MAXIMUM	MAX I MUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW!	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1479.65	.00	0.	1.	-00	3.27	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET6 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY C	REST TOP	OF DAM	
		ELEVATION	1478	3.00	1481.00	) 1	481.00	
		STORAGE		0.	0.	•	0.	
		OUTFLOW		0.	3.		3.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1480.34	.00	0.	2.	.00	3.38	.00

# SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET5 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY CR	EST TOP	OF DAM	
		ELEVATION	147	5.40	1478.50	1	478.50	
		STORAGE		0.	0.		0.	
		OUTFLOW		0.	3.		3.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1478.45	<b>:</b> 00	0.	3.	.00	3.62	.00

# SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET4 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIAL	VALUE	SPILLWAY	CREST TO	OP OF DAM	
		ELEVATION	1474	.20	1477.	20	1477.20	
		STORAGE		0.		0.	0.	
		OUTFLOW		0.		5.	5.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1477.23	.03	0.	6.	.53	4.33	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DETDR (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIAL	INITIAL VALUE SPILLWAY		CREST	TOP OF DAM	
		ELEVATION	69	2.00	72.	.00	72.00	
		STORAGE		0.		0.	0.	
		OUTFLOW		0.		3.	3.	
	RATIO	MAXIMUM	MUMIXAM	MAXIMUM	MAXIMUM	DURATIO	N TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TO	P MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	70.74	.00	0.	2.	.00	3.30	.00

#### SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET2B (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY CR	EST TOP	OF DAM	
		ELEVATION	1462	2.00	1465.00	1	465.00	
		STORAGE		0.	0.		0.	
		OUTFLOW		0.	3.		3.	
	RATIO	MAX I MUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1464.83	.00	0.	3.	.00	3.30	.00

# SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET2C (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY C	REST TOP	OF DAM	
		ELEVATION	1462	2.00	1465.0	10 1	465.00	
		STORAGE		0.	O	١.	0.	
		OUTFLOW		0.	9	) <b>.</b>	9.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1464.72	.00	0.	8.	.00	3.25	.00

# SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DET2A (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY CR	EST TOP	OF DAM	
		ELEVATION	146	1.00	1464.00	1	464.00	
		STORAGE		0.	0.		0.	
		OUTFLOW		0.	13.		13.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1463.86	.00	0.	12.	.00	3.30	.00

# SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DNFC (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY CR	EST TOP	OF DAM	
		ELEVATION		.00	1.00		1.00	
		STORAGE		0.	0.		0.	
		OUTFLOW		0.	15.		15.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1.17	.17	0.	22.	.22	3.17	.00

# SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DV4 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	N 1 INITIAL VALUE SPILLW		SPILLWAY CREST TOP (		OF DAM	OF DAM		
		ELEVATION	47	7.30	50.3	0	50.30	
		STORAGE		0.	0		0.	
		OUTFLOW		0.	1	•	1.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	50.29	.00	0.	1.	.00	3.58	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DV3 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY	CREST TO	TOP OF DAM	
		ELEVATION	46	6.00	49.	00	49.00	
		STORAGE		0.		0.	0.	
		OUTFLOW		0.		1.	1.	
	RATIO	MAX I MUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	49.06	.06	0.	2.	.42	3.50	.00

# SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DB2 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

LAN	1	ELEVATION		L VALUE 1.13	SPILLWAY CR 44.60		OF DAM 44.60	TIME OF W FAILURE HOURS
		STORAGE	**	0.	3.		3.	
		OUTFLOW		0.	113.		113.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAI LURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	45.04	.44	3.	151.	.38	3.33	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DB3 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1	ELEVATION		VALUE	SPILLWAY CR 1439.80		OF DAM 439.80	
		STORAGE		0.	4426537.	44	26537.	
		OUTFLOW		0.	68787.		68787.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	41.46	.00	4.	269.	.00	3.67	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DB4 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY CR	EST TOP	OF DAM	
		ELEVATION	33	3.90	38.50	1	38.50	
		STORAGE		0.	9.		9.	
		OUTFLOW		0.	247.		247.	
	RATIO	MAXI MUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	<b>OUTFLOW</b>	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	37.96	.00	7.	214.	.00	4.07	.00

# SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DIPRT (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY CR	EST TOP	OF DAM	
		ELEVATION	146	1.00	1464.30	1	464.30	
		STORAGE		0.	0.		0.	
		OUTFLOW		0.	14.		14.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1464.29	.00	0.	14.	.00	3.22	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DETGE (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1	ELEVATION		VALUE	SPILLWAY CR 1463.00		OF DAM 463.00	
		STORAGE		0.	2.		2.	
		OUTFLOW		0.	6.		6.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1462.40	.00	1.	5.	.00	3.58	.00

## SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DV1 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY (	CREST TOP	OF DAM	
		ELEVATION	4	1.00	44.0	00	44.00	
		STORAGE		0.	•	١.	1.	
		OUTFLOW		0.	1	ı <b>.</b>	1.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	43.92	.00	1.	1.	.00	6.18	.00

# SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DB7 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIA	L VALUE	SPILLWAY CR	EST TOP	OF DAM	
		ELEVATION	1436	6.00	1442.00	1	442.00	
		STORAGE		0.	8.		8.	
		OUTFLOW		0.	306.	·	306.	
	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAX IMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1440.17	.00	4.	235.	.00	3.30	.00

#### SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DB5 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

<sup>⊘</sup> LAN 1		INITIAL	. VALUE	SPILLWAY CR	EST TOP	OF DAM	
	ELEVATION	1432	2.00	1438.00	1	438.00	
	STORAGE		0.	14.		14.	
	OUTFLOW		15.	456.		456.	
RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
1.00	1435.11	.00	5.	306.	.00	4.33	.00

\*\*\* NORMAL END OF HEC-1 \*\*\*

# SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DB6 (PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN	1		INITIAL	VALUE	SPILLWAY CR	EST TOP	OF DAM	
		ELEVATION	1434	.00	1438.00	1	438.00	
		STORAGE		0.	6.		6.	
		OUTFLOW		0.	118.		118.	
		•						
•	RATIO	MAXIMUM	MAXIMUM	MAXIMUM	MAXIMUM	DURATION	TIME OF	TIME OF
	OF	RESERVOIR	DEPTH	STORAGE	OUTFLOW	OVER TOP	MAX OUTFLOW	FAILURE
	PMF	W.S.ELEV	OVER DAM	AC-FT	CFS	HOURS	HOURS	HOURS
	1.00	1437.91	.00	6.	115.	.00	3.93	.00

APPENDIX C -	- FINAL DRAINAGE VANGUARD	E REPORT FOR LI	IBERTY PROPERTY	TRUST FOR

#### Final Drainage Report

for

Liberty Property Trust for Vanguard A Portion of Northsight

#### Prepared for

Liberty Property Trust 65 Valley Stream Parkway Great Valley Corporation Center Malvern, Pennsylvania 19355 (610) 648-1758

Prepared by

DEI Professional Services, L.L.C. 6225 North 24<sup>th</sup> Street Suite 200 Phoenix, AZ 85016



June 8, 2005

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#### 1.0 <u>INTRODUCTION</u>

The proposed Scottsdale Campus Expansion project is located in a portion of the southeast quarter of Section 12, Township 3 North, Range 4 East, of the Gila and Salt River Baseline and Meridian, in the City of Scottsdale, Arizona. The 13.8 acre site is located in a portion of Northsight Master Planned Development at the southeast corner of Raintree Drive and Northsight Boulevard (refer to the Figure 1 Vicinity Map). The project consists of three phases with Phase 1 & 2 being the focus of this report. Phases 1 & 2 consist of approximately 8.4 acres of the western portion of the site. Phase 1 consists of an office building and parking structure fronting Northsight Boulevard along with all site improvements west of the Raintree entrance driveway. Phase 2 consists of an office building fronting Raintree Drive, a limited surface parking lot, and a parking garage addition. Phase 3 comprises approximately 5 adjoining acres to the east and consists of another office building fronting Raintree Drive, a parking garage on the corner of Raintree and 87<sup>th</sup> Street, and all remaining site improvements east of the Raintree entrance driveway.

The site generally slopes at approximately 0.75% from the north to south and is vacant with little vegetation. The site is within the Zone X designation per Flood Insurance Rate Map Panel Number 04013C1685E, dated July 19, 2001. This designation is defined as "Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood" (refer to Figure 2 FIRM Map).

The proposed development will be designed to meet City of Scottsdale drainage guidelines and ordinance criteria.

#### 2.0 EXISTING DRAINAGE

#### Hydrology

The site is located in a portion of Northsight Master Planned Development. Approximately 1 mile north of the site is the Central Arizona Project – Hayden Rhodes Aqueduct that intercepts major drainage flows. Based on the approved Northsight Master Drainage Plan prepared by *Gilbertson Associates, Inc.*, dated January 17, 2002, no significant offsite drainage impacts the site. The site is surrounded by developed parcels with developed roadway and utilities infrastructure. Existing roadway improvements surrounding the site include existing storm drain and catch basins accepting roadway drainage. The adjacent half-street and right-of-way drainage is accepted by the storm drain system located therein.

#### 3.0 PROPOSED DRAINAGE IMPROVEMENTS

#### Retention Basins

The Master Drainage Report for Northsight Commercial Development, prepared by Gilbertson Associates, Inc., dated January 17, 2002, Revised January 28,2002 indicates that area GW (see Northsight Master Drainage Plan Exhibit 2A in back pocket) shall provide onsite retention for post-development discharges to attenuate them to pre-development discharges. Area GE shall retain the full 100-year, 2-hour storm event.

The western portion of the site comprising Phases 1 & 2 essentially lies within area GW (see Areas 1, 2, 3, & 4 on the Preliminary Grading & Drainage Exhibit A in back pocket). Based on the Master Drainage Plan this portion of the site is required to provide storm water detention for the increased storm water runoff associated with development. Areas 1, 2, 3, & 4 are located in area GW and onsite retention will be provided to limit discharges to the pre-development storm water discharges. During Phase 1 a temporary retention basin 0.5' deep with a bleed off to Basin A will be provided in Area 2B and landscape with DG. During Phase 2 the temporary retention basin will be removed and a parking structure addition built. The storm water for this area will be then be conveyed to retention Basin B via roof drains. Likewise Areas 3B and 4 will be landscaped with DG during Phase 1 and sloped to positively drain to Basin D. These areas will be developed in Phase 2 as an office building with some limited parking and storm water will be conveyed to Basin D via roof and storm drains. The storm water retention for Areas 3B & 4 during both Phases 1 & 2 is provided within Basins C & D.

The eastern portion of the site lies within area GE (see Areas 5 & 6 on the Preliminary Grading & Drainage Exhibit A). Areas 5 & 6 will provide onsite retention for the full 100-year, 2-hour storm event as identified in the Master Drainage Report. Retention Basin E is provided for Area 5 which consists of the Raintree entrance driveway that will be constructed as part of Phase 1. During Phase 3 Basin F will be constructed for retention of storm water from Area 6.

Retention volumes have been determined utilizing City of Scottsdale Design Standards and Policy Manual Section 2.2 as indicated on Figure 2-14 therein the hydrologic soil group for the proposed site is "B." This correlates with an existing condition runoff coefficient of 0.31. The post-developed site runoff coefficient of 0.90 is utilized as the post-developed C- coefficient. Volume required calculations were based on the following equation:

$$V_r = (P/12)$$
 AC where:

 $V_r$  = volume required in cubic feet P = 100-year precipitation depth in inches (2.82)  $C = C_{post} - C_{pre}$  = delta runoff coefficient A = area in square feet

Please refer to Appendix A for a summary of retention volume required and provided, Appendix B for volume required calculations, and Appendix C for volume provided calculations.

The project site is divided into six distinct drainage areas. The retention basins are sized based on the 100-year, 2-hour rainfall intensity of 2.82 inches per City of Scottsdale criteria. The retention basins will accept drainage flows from driveways, parking areas, and building areas by surface drainage or by collection from roof drains, storm drains and catch basin system. The proposal conveys flow to each respective retention basin. Refer to the Preliminary Grading and Drainage Exhibit A in the back pocket of this report for subbasin and retention basin locations.

#### Onsite Culverts and Catch Basins

Onsite culverts and catch basins will be incorporated throughout the interior of the project site. The culverts will consist of HDPE pipe that will convey onsite flows to each respective retention basin. Refer to the Preliminary Grading and Drainage Exhibit A for storm drain information.

Phases 1 & 2 pre-development flow will be conveyed to the existing 54" storm drain in Northsight Boulevard via drop inlet headwalls at the north end of retention Basin B and at the south end of retention Basin C. A storm drain pipe will be provided for the flow to enter the existing storm drain.

#### Retention Dissipation

Phases 1 & 2 Basins A, B, C, D & E will be positively metered to the existing storm drain located in Northsight Boulevard via 6" pipes which will dissipate the retained storm water within 24 to 36-hours. Phase 3 will retain the 100-year, 2-hour storm event in Basin F which will be positively metered to the existing storm drain in 87<sup>th</sup> Street.

The dissipation rate for Phases 1 & 2 is 0.79 cfs which will dissipate 68,300 cf in 24 hours. Calculation:

68,300 cf / 0.79 cfs = 84,456 seconds / 60 = 1,441 minutes / 60 = 24 hours

The dissipation rate for Phase 3 will be calculated as part of the final design of that phase.

#### Finish Floor Elevations

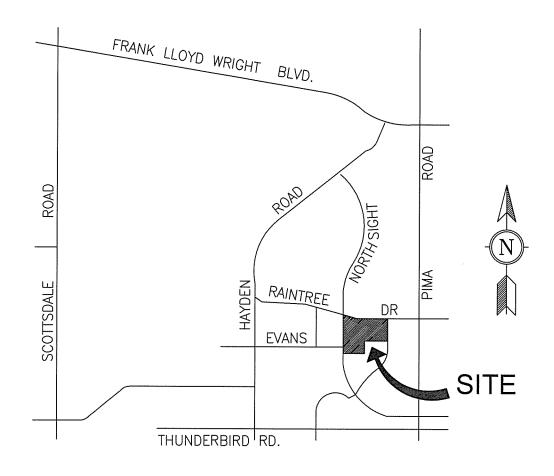
The finished floor elevations are designed to be a minimum of 1 foot above the retention basin 100-year high water elevation.

#### 4.0 <u>CONCLUSIONS</u>

The Scottsdale Campus Expansion is being designed in accordance with City of Scottsdale Drainage Design Criteria and the approved Northsight Master Drainage Report.

Portions of this project will be designed to retain 100-year, 2-hour storm runoff within onsite retention basins. Portions of this project will retain the post development runoff. Roof drains, catch basins, and pipe culverts will be installed to direct runoff to each respective retention basin. Storm water retained onsite will be metered through pipes to the storm drain system in Northsight Boulevard and 87<sup>th</sup> Street to dissipate the retained volume in less than 36-hours.

The drainage design effort on this project has been formulated to not impact upstream or downstream property owners.



YEARS OF EXPERIENCE DEL Professional Services, L.L.C.



6225 N. 24th St., Ste. 200 Phoenix, AZ 85016 Phone: (602)954-0038 Fax: (602)944-8605 Liberty Property Trust for Vanguard Scottsdale, Arizona

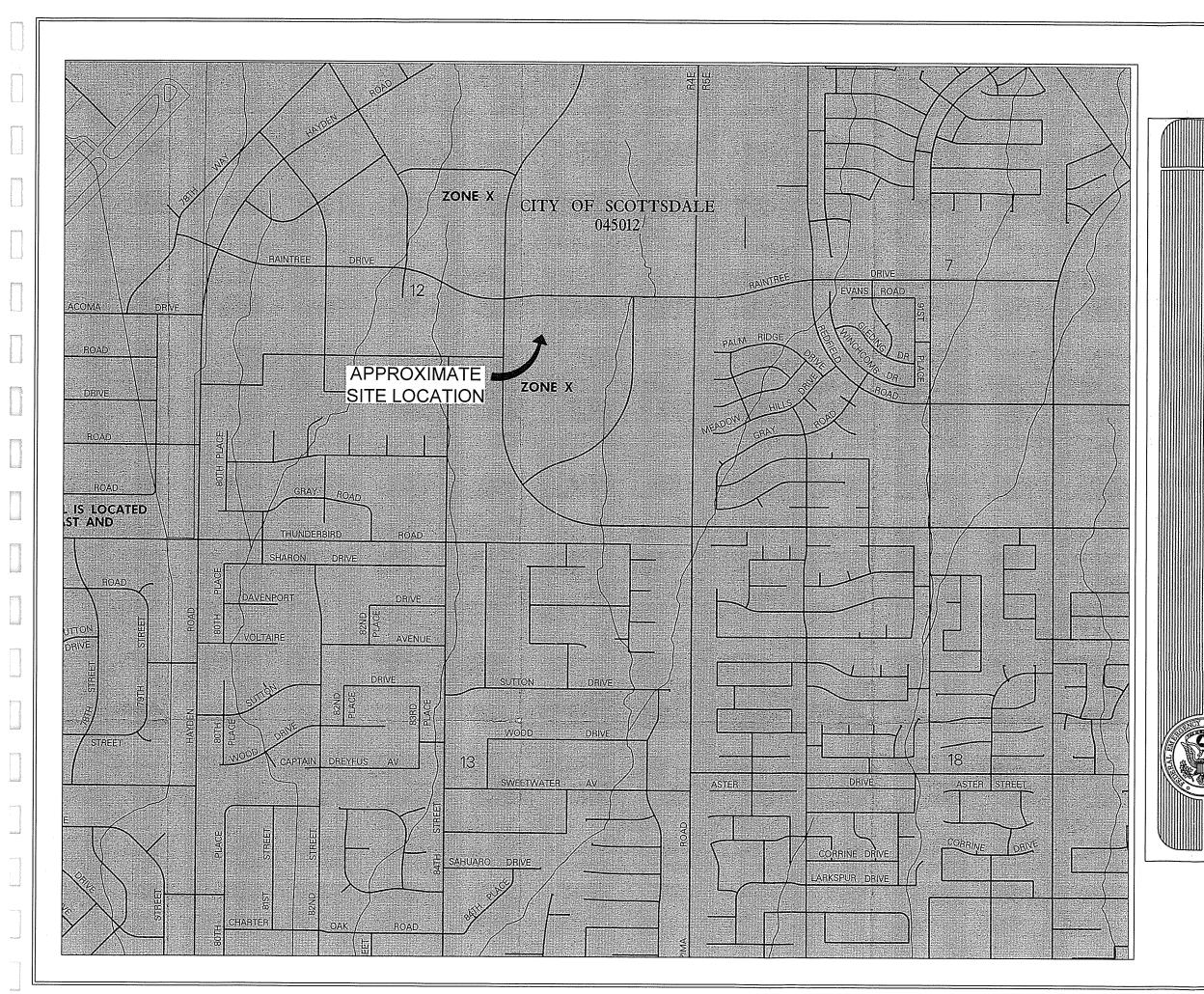
VICINITY MAP

04000 CAD CILE. 4447 LES BASS

FIGURE

1

1-DR-2020 3/9/2021



NATIONAL FLOOD INSURANCE PROGRAM

# FIRM

# FLOOD INSURANCE RATE MAP

MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS

## PANEL 1685 OF 4350

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS: COMMUNITY

NUMBER PANEL SUFFIX

MARICOPA COUNTY, UNINCORPORATED AREAS PARADISE VALLEY, TOWN OF PHOENIX, CITY OF SCOTTSDALE, CITY OF

040037 1685 040049 1685 040051 1685 045012 1685

> MAP NUMBER 04013C1685 E

MAP REVISED: JULY 19, 2001

Federal Emergency Management Agency

FIGURE

2

1-DR-2020 3/9/2021 Appendix A Retention Volume Summary

# RETENTION VOLUME SUMMARY - ALL PHASES

#### 100-Year 2-Hour Storm Event

		200 2011. 2	-110ar Storm Eve	776	
	DRAINAGE	VOLUME	VOLUME	RETENTION	
PHASE	AREA	REQUIRED	PROVIDED	BASIN	
		(ft <sup>3</sup> )	(ft 3)		
	1	1,419	1,700	A	Basin A - bleed off to Basin B
	2A	21,486			Storm drain to Basin B
	2B	4,649	29,000	В	Temporary basin - bleed off to Basin A in Phase 1 Roof/storm drain to Basin B in Phase 2
1 & 2	<i>3A</i>	11,003		C&D	Roof/storm drain to Basin C
	3B	6,709	27,000		Surface drain to Basin C & D in Phase 1
	4	6,095			Roof/storm drain to Basin C & D in Phase 2
	5	5,217	5,800	Е	Storm drain to Basin D
	Subtotal:	56,578	63,500		
3	6	39,667	47,000	F	Roof/storm drain to Basin F
ALL	Total	96,245	110,500		

ALL	Total	96,245	110,500	

Appendix B
Volume Required Calculations

#### Rational Method:

#### $V_r = C (P/12) A$

- V<sub>r</sub> Volume required in cubic feet
- C Coefficient of runoff
- P 100-year 2-hour precipitation depth (2.8 inches)
- A Area in square feet; the developed portion of the entire site in square feet, to the centerline of adjacent streets, on which any man-made change is planned, including, but not limited to: construction, excavation, filling, grading, paving, or mining.

100-Year 2-Hour Storm Event

PHASES 1 & 2 VOLUME REQUIRED								
Tributary	PRECIPITATION	AREA	RUNOFF	VOLUME	RETENTION			
ID	DEPTH	ZITCE/II	COEFFICIENT	REQUIRED	BASIN			
	(in)	(ft²)		(ft <sup>3</sup> )				
1	2.82	10,234	0.59	1,419	A			
2a	2.82	156,072	0.59	21,639	В			
<b>2</b> b	2.82	33,770	0.59	4,682	В			
3a	2.82	79,923	0.59	11,081	C & D			
3b	2.82	48,734	0.59	6,757	C & D			
4	2.82	44,277	0.59	6,139	C & D			
5	2.82	24,844	0.90	5,255	E			
Total:		397,854		56,972				

PHASE 3 VOLUME REQUIRED								
Tributary ID	PRECIPITATION DEPTH	AREA	RUNOFF COEFFICIENT	<i>VOLUME</i> <i>REQUIRED</i>	RETENTION BASIN			
	(in)	(ft <sup>2</sup> )		(ft <sup>3</sup> )				
6	2.82	188,889	0.90	39,950	F			
Total:		188,889		39,950				

# PHASES 1-3 VOLUME REQUIRED

96,922

Appendix C Volume Provided Calculations Average End Method:

 $V_{1-2} = (E_1 - E_2) * ((A_1 + A_2)/2)$ 

V<sub>1-2</sub> Storage Volume in cubic feet.

A<sub>1</sub> Top surface area in square feet.A<sub>2</sub> Bottom surface area in square feet.

 $E_I$  Top elevation in feet.

E<sub>2</sub> Bottom elevation in feet.

100-Year 2-Hour Storm Event

## PHASES 1 & 2 VOLUME PROVIDED

RETENTION	ELEVATION	SURFACE	VOLUME I	PROVIDED
BASIN		AREA		
	(ft)	$(ft^2)$	(ft <sup>3</sup> )	(Ac-ft)
A	53.00	4,100	1,700	0.04
	52.50	2,700		
		Subtotal:	1,700	0.04
В	56.00	10,500	17,800	0.41
	54.00	7,300	6,350	0.15
	53.00	5,400	4,850	0.11
	52.00	4,300		
		Subtotal:	29,000	0.67
$\boldsymbol{C}$	59.00	11,400	10,100	0.23
	58.00	8,800	7,150	0.16
	57.00	5,500	3,750	0.09
	56.00	2,000		
		Subtotal:	21,000	0.48
D	59.00	4,500	3,450	0.08
	58.00	2,400	1,775	0.04
	57.00	1,150	124	0.00
	56.84	400		
		Subtotal:	5,349	0.12
E	59.50	3,336	1,558	0.04
	59.00	2,895	2,495	0.06
	58.00	2,095	1,748	0.04
	57.00	1,400		
		Subtotal:	5,800	0.13
		Phases 1&2 Total:	62,849	1.44

## PHASE 3 VOLUME PROVIDED

	,	V OLUME I K		
RETENTION	ELEVATION	SURFACE	VOLUME I	PROVIDED
BASIN	THE OWNER AND ADDRESS OF THE OWNER AND ADDRESS	AREA		
	(ft)	$(ft^2)$	(ft <sup>3</sup> )	(Ac-ft)
F	60.00	24,700	21,250	0.49
	59.00	17,800	15,100	0.35
	58.00	12,400	10,650	0.24
	57.00	8,900		
	,	Subtotal:	47,000	1.08
		Phase 3 Total;	47,000	1.08

PHASES 1-3 VOLUME PROVIDED

109,849   2.32	109,849	2.52
----------------	---------	------



Civil Engineering Land Surveying Project Management

## **ADDENDUM**

-TO-

## FINAL DRAINAGE REPORT

-FOR-

## LIBERTY PROPERTY TRUST

-FOR -

## **VANGUARD**

A PORTION OF NORTHSIGHT

Prepared for:

### **Liberty Property Trust**

65 Valley Stream Parkway **Great Valley Corporation Center** Malvern, Pennsylvania 19355 Phone: (610) 648-1758

Prepared by:

**DEI Professional Services, L.L.C.** 6225 North 24<sup>th</sup> Street, Suite 200 Phoenix, AZ 85016 Phone: (602) 954-0038 Fax: (602) 94478605



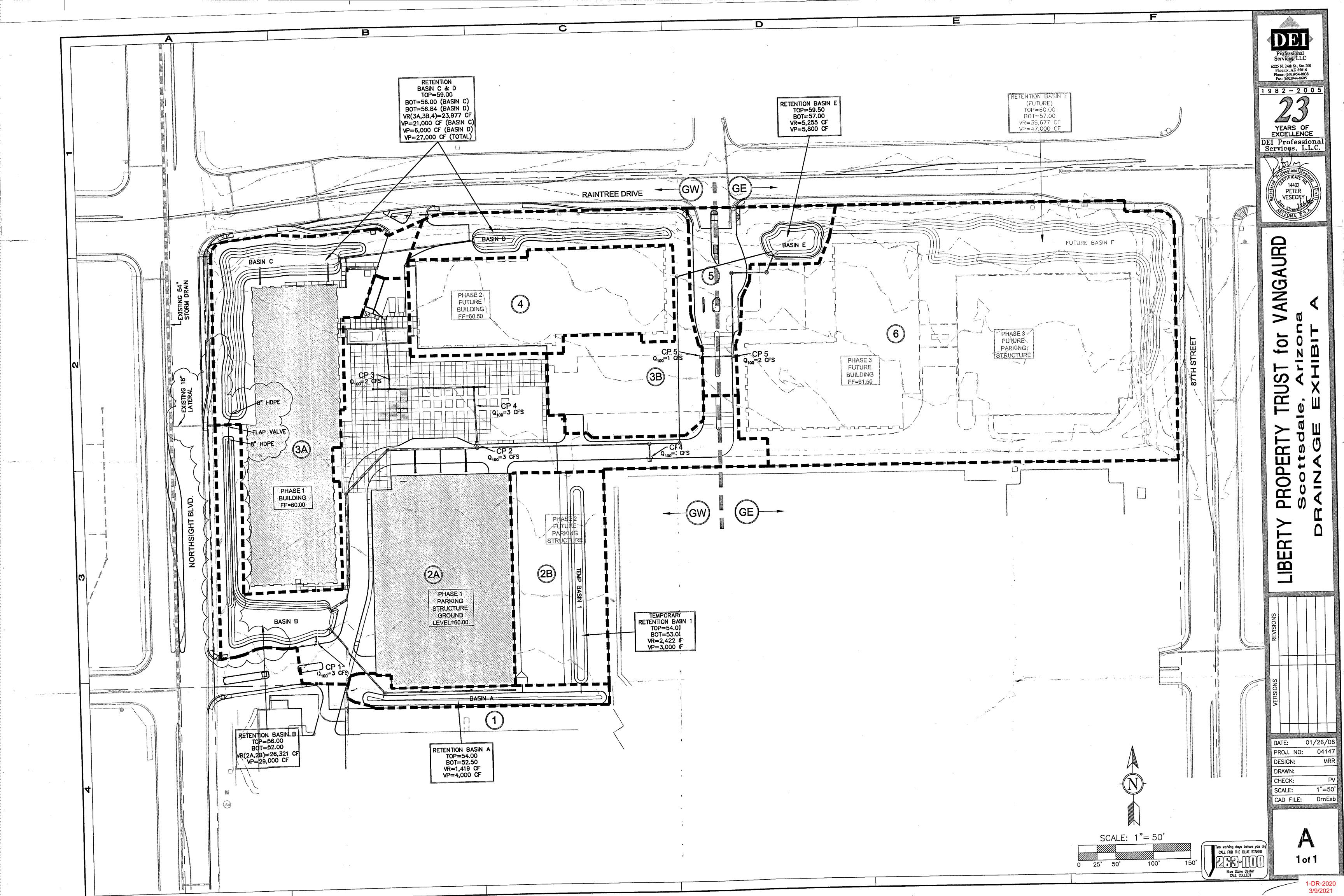
January 26, 2006

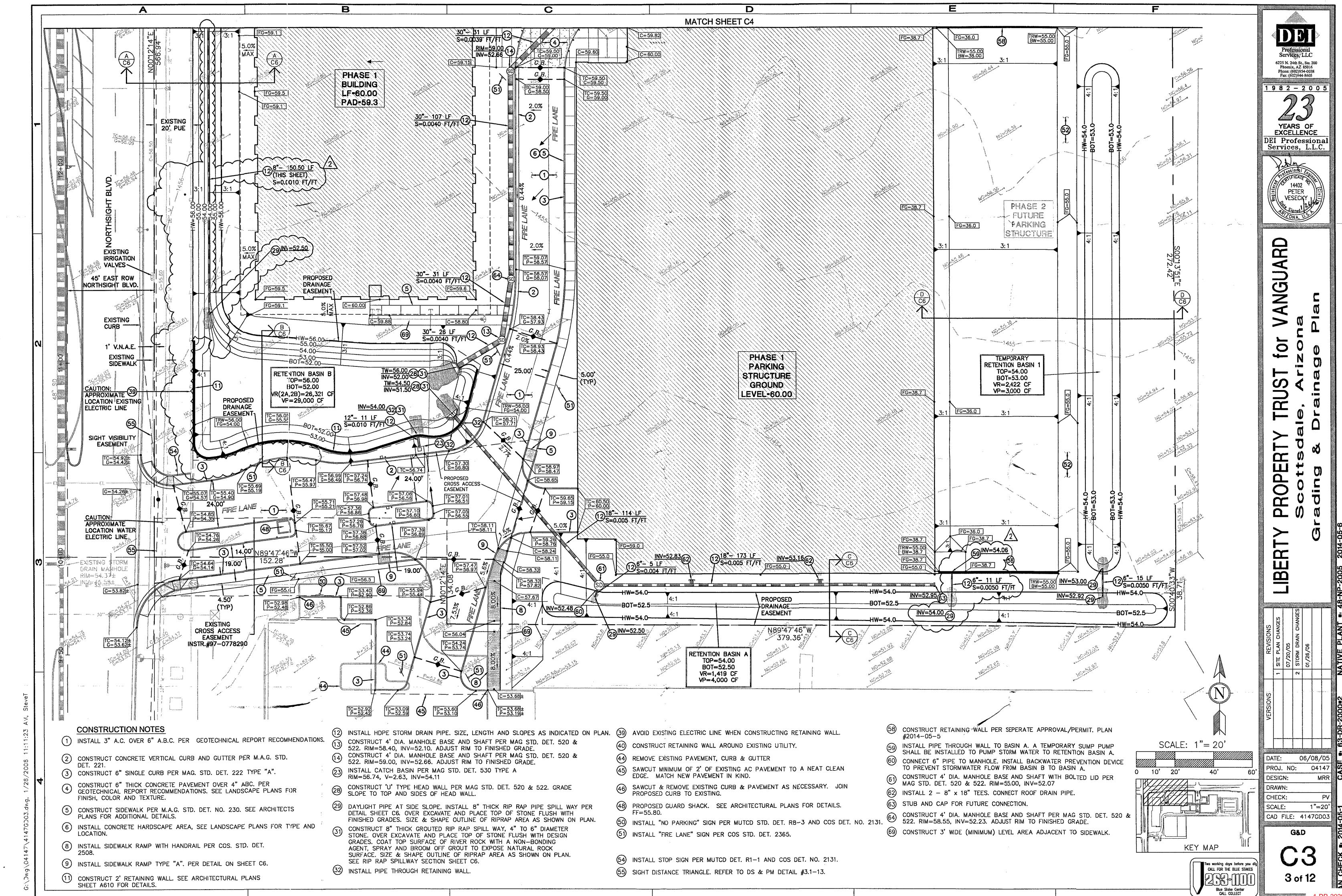
DEI No. 04147

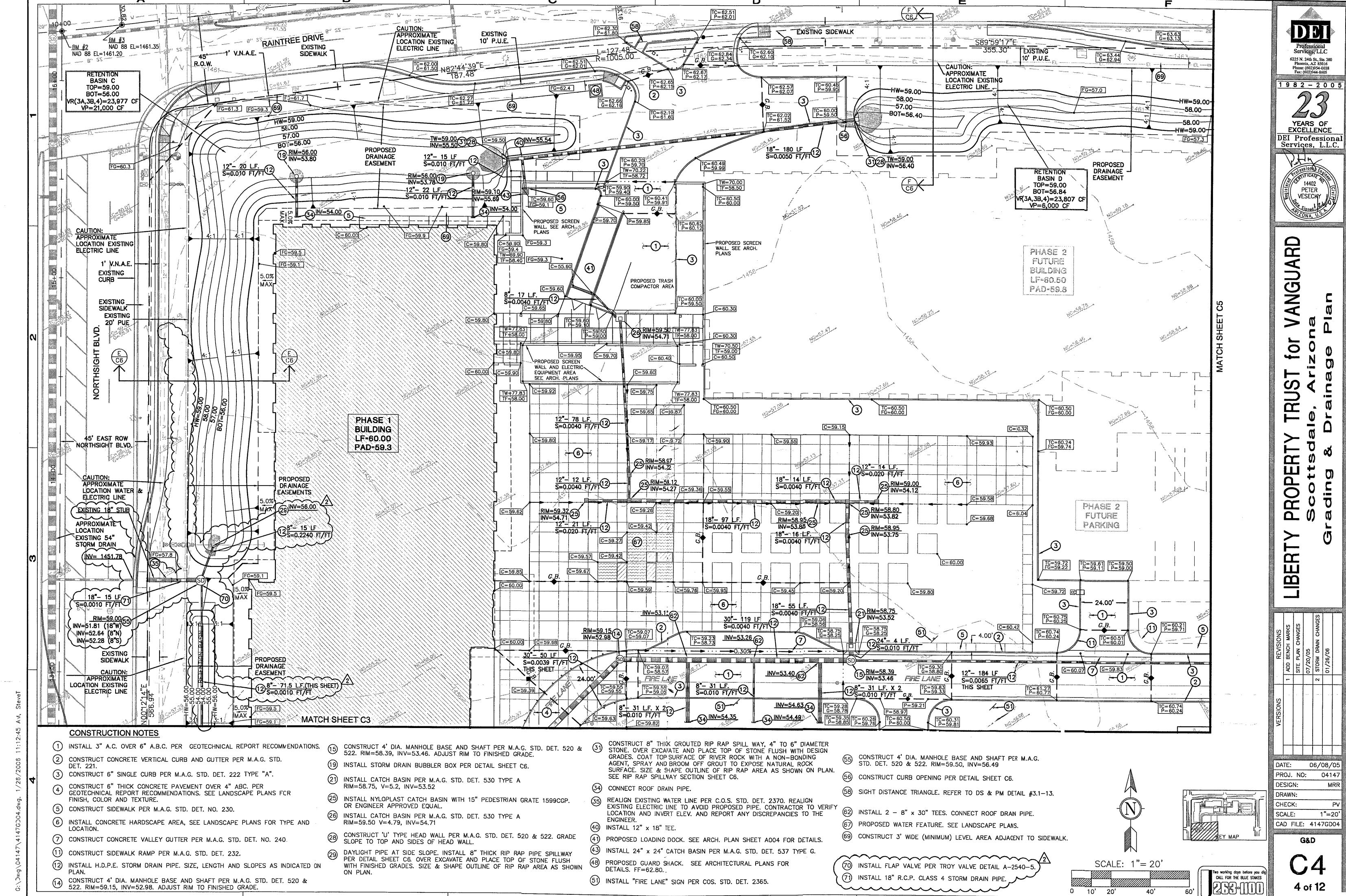
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2.0	Basis of Design	
3.0	Proposed Condition	
4.0	Conclusions	2
		APPENDICES
Appe	ndix A:	Stage Storage Analysis
		BACK POCKET
Back	Pocket	Revised Grading & Drainage Plan
Back	Pocket	Approved Drainage Exhibit









51 INSTALL "FIRE LANE" SIGN PER COS. STD. DET. 2365.

0 10' 20'

522. RIM=59.15, INV=52.98. ADJUST RIM TO FINISHED GRADE.

4 of 12

Blue Stoke Center CALL COLLECT

## 1.0 Purpose

The purpose of this Addendum is to present additional technical data in regard to the discharge of on-site storm water to Northsight Boulevard for approval to utilize the existing 18-inch storm drain discharge line instead of replacing the line with a new 24-inch lateral as identified in the approved final drainage report and the approved construction documents.

#### 2.0 Basis of Design

The initial design relied strictly on the existing 18-inch lateral's ability to convey the 100-year predeveloped peak flow generated from the on-site contributing areas. Per the regional drainage plan, the project site was designed to provide retention for the difference between the post-developed and the predeveloped condition runoff volume.

Based upon additional information received from Gilbertson Associates, Inc., the storm drain facilities located in Northsight Boulevard is designed to convey the peak flow in the roadway right-of-way per City of Scottsdale Street Design Criteria. Additionally, the time of concentration for the upstream generated peak flow to occur in the storm drain adjacent to the project site is 3.17 hours. Since the localized on-site peak discharge will develop in a much shorter period of time, the Northsight Boulevard storm drain system will have the available capacity to convey the on-site pre-developed peak storm discharge without impairing the ability of the roadway/storm drain system to function per its design.

## 3.0 Proposed Condition

In order to quantify the amount of flow entering the existing storm drain system a stage storage analysis was performed using the 100-year 2-hour storm distribution for the Phoenix Sky Harbor Airport (*Table 2.3, Drainage Design Manual for Maricopa County, Arizona, Volume I, Hydrology*). This distribution can be applied throughout Maricopa County for the design of retention/detention facilities. The corresponding hydrograph or Q/Qp template was input into Haested Methods, Inc., PondPack Version 9 software program and the results are presented within Appendix A.

The 100-year peak flow exiting retention basin "C" to the existing storm drain facilities was calculated at 2.59-cfs which is significantly lower than the 12-cfs value presented in the approved final drainage report. Since retention basin "B" also drains into this storm drain system a flap valve will be constructed on the bleed pipe from basin "B." This will allow basin "C" to fully dissipate prior to basin "B" exiting the site. In the event retention basins "B" and "C" overflow, the proposed berms located on the approved construction documents have been removed in order to allow the overflow to exit the site and not inundate the adjacent finish floor.

Based on this analysis, the 100-year water surface elevation within basin "C" is estimated as 1458.6-ft. This is 1.4-ft below the adjacent finish floor elevation.

## 4.0 Conclusions

The existing 18-inch pipe in conjunction with the capacity of the Northsight Boulevard roadway and storm drain system has the capacity to convey the 100-year peak storm from the project site such that the 100-year storm is conveyed within the roadway right-of-way and that the resultant 100-year water surface elevation is at least 1.0 feet below the adjacent finish floor elevation

Appendix "A"
Stage Storage Analysis

Job File: C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW Rain Dir: C:\Program Files\Haestad\PPKW\Libraries\

> \_\_\_\_\_ JOB TITLE

\_\_\_\_\_\_

Project Date: 1/19/2006 Project Engineer: Joseph Cirone Project Title: Vanguard

Project Comments:

SE Corner of Northsight & Raintree

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

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******************* DESIGN STORMS SUMMARY **************
VanguardStorm Rational Storms
**************************************
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**************************************
3A 3B AND 4 RAT  Tc Calcs 5.01
**************************************
OUTFALL Dev100  Node: Addition Summary 6.01

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

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S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

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POND C AND D OUT	Dev100	
	Pond Routing Summary	
	Detention Time	11.07
	Pond Routed HYG (total out)	11.08
******	** RATIONAL METHOD CALCS *********	*****
3A 3B AND 4	РДТ	
311 3B 1111B 4	C and Area	12.01
3A 3B AND 4	Dev100	
	Rational Q/Qp Hyg	12.02
Phoenix Sky Harb	Dev100	
	Q/Qp Template	12.03

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Type.... Master Network Summary

Page 1.01

Name.... Watershed

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW

MASTER DESIGN STORM SUMMARY

Default Network Design Storm File, ID

VanguardStorm

Rainfall

Return Event Type

IDF ID

Dev100

I-D-F Curve

I-D-F 100yr

\_\_\_\_\_

MASTER NETWORK SUMMARY Rational Method -- q/Qp

(\*Node=Outfall; +Node=Diversion;)
(Trun= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left&Rt)

Node ID		Return Event	HYG Vol ac-ft Trun	Qpeak hrs	Qpeak cfs	Max WSEL ft	Max Pond Storage . ac-ft
3A 3B AND 4	AREA	100	.665	1.0829	26.26		
*OUTFALL	JCT	100	.665	1.4161	2.59		
POND C AND D IN	POND	100	. 665	1.0829	26.26		
POND C AND D OUT	POND	100	. 665	1.4161	2.59	1458.59	.480

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

PM Date: 1/26/2006

Type.... Executive Summary (Nodes) Page 2.01 Name.... Watershed Event: 100 yr

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW Storm... I-D-F 100yr Tag: Dev100

NETWORK SUMMARY -- NODES (Trun.= HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID =

Storm Tag Name \_\_\_\_\_\_

Data Type, File, ID =

Total Rainfall Depth= .0000 in
Duration Multiplier = 0
Resulting Duration = .0000 hrs
Resulting Start Time= .0000 hrs Step= .0000 hrs End= .0000 hrs

	Node ID	Туре	HYG Vol ac-ft Trun.	Qpeak hrs	Qpeak cfs	Max WSEL ft
	3A 3B AND 4	AREA	.665	1.0829	26.26	
Outfall	OUTFALL	JCT	.665	1.4161	2.59	
	POND C AND D IN	POND	.665	1.0829	26.26	
	POND C AND D OUT	POND	.665	1.4161	2.59	1458.59

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Type.... Executive Summary (Links) Page 2.02 Name.... Watershed Event: 100 yr

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW Storm... I-D-F 100yr Tag: Dev100

NETWORK SUMMARY -- LINKS

(UN=Upstream Node; DL=DNstream End of Link; DN=DNstream Node) (Trun. = HYG Truncation: Blank=None; L=Left; R=Rt; LR=Left & Rt)

DEFAULT Design Storm File,ID =

Storm Tag Name

\_\_\_\_\_\_

Data Type, File, ID =

Total Rainfall Depth= .0000 in

Duration Multiplier = 0

Resulting Duration = .0000 hrs
Resulting Start Time= .0000 hrs Step= .0000 hrs End= .0000 hrs

Link ID	Туре	HYG Vol ac-ft Tru	Peak Time n. hrs	Peak Q cfs	End Points
HYDROGRAPH LINK	ADD UN DI DN	.665	1.0829 1.0829 1.0829	26.26 26.26 26.26	3A 3B AND 4 POND C AND D IN
OUTLET PIPE	PONDrt UN DI DN	.665	1.0829 1.4161 1.4161 1.4161	26.26 2.59 2.59 2.59	POND C AND D IN POND C AND D OUT

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Type.... Network Calcs Sequence Name.... Watershed

Page 2.03 Event: 100 yr

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW Storm... I-D-F 100yr Tag: Dev100

NETWORK RUNOFF NODE SEQUENCE

Runoff Data Apply to Node Receiving Link ~~~~~

Rat Q/Qp3A 3B AND 4 Subarea 3A 3B AND 4 Add Hyd 3A 3B AND 4

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Type.... Network Calcs Sequence Name.... Watershed

Page 2.04 Event: 100 yr

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW

Storm... I-D-F 100yr Tag: Dev100

NETWORK ROUTING SEQUENCE

Link Operation UPstream Node DNstream Node

Add Hyd HYDROGRAPH LINK Subarea 3A 3B AND 4 Pond POND C AND D IN

POND ROUTE TOTAL OUTFLOW...

Total Pond Outflow Pond POND C AND D IN Outflow POND C AND D OUT

SET POND ROUTING LINK TO TOTAL POND OUTFLOW...

Outlet OUTLET PIPE Outflow POND C AND D OUT Jct OUTFALL

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc

Time: 1:29 PM

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Type.... I-D-F Table Name.... I-D-F 100yr Tag: Dev100

Page 4.01 Event: 100 yr

File.... C:\Program Files\Haestad\PPKW\Libraries\
Storm... I-D-F 100yr Tag: Dev100

Rainfall-Intensity-Duration Curve

Time, hrs	Intens., in/hr
.0830	9.0000
.1670	6.9600
.2500	5.9200
1.0000	2.5100
2.0000	1.3800
3.0000	.9770
6.0000	.5420
12.0000	.3000
24.0000	.1650

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

			=			=		_=:	003		
			Segment	#1	Tim	e:			.083	33	hrs
Segment #1:	Tc: User Defi	ned									
:::::::::	:::::::::::::::::::::::::::::::::::::::	:::::::::::::::::::::::::::::::::::::::		::::	::::	:::	:::	::	::::	:::	:::
TIME OF CON	CENTRATION CALC	ULATOR				-					
File C:\	Program Files\H	aestad\PPKW\1	Libraries\	VANO	GUAR	D.I	PW				
Type Tc Name 3A		Tag: RAT							Page	e 5	5.01

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Type Tc Calcs Name 3A 3B AND 4 Tag: RAT	Page	5.02
File C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW	,	
Tc Equations used		
==== User Defined ====================================		
Tc = Value entered by user		
Where: Tc = Time of concentration		

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Type.... Node: Addition Summary Page 6.01 Name.... OUTFALL Event: 100 yr

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW

Storm... I-D-F 100yr Tag: Dev100

SUMMARY FOR HYDROGRAPH ADDITION at Node: OUTFALL

HYG Directory: C:\Program Files\Haestad\PPKW\Libraries\

Upstream Link ID Upstream Node ID HYG file HYG ID HYG tag OUTLET PIPE POND C AND D IN OUTLET PIPE Dev100

INFLOWS TO: OUTFALL

HYG file HYG ID HYG tag ac-ft hrs cfs

OUTLET PIPE Dev100 .665 1.4161 2.59

TOTAL FLOW INTO: OUTFALL

HYG file HYG ID HYG tag ac-ft hrs cfs OUTFALL Dev100 .665 1.4161 2.59

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc

Time: 1:29 PM Date: 1/26/2006

Type.... Node: Addition Summary Page 6.02 Name.... OUTFALL Event: 100 yr

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW Storm... I-D-F 100yr Tag: Dev100

TOTAL NODE INFLOW... HYG file =

HYG ID = OUTFALL HYG Tag = Dev100

Peak Discharge = 2.59 cfs
Time to Peak = 1.4161 hrs
HYG Volume = .665 ac-ft Time to Peak = HYG Volume =

<b></b> .		HYDROGRAPH O			è
Time		Output Time :			
hrs	Time on lef	t represents	time for	first value	in each row.
.0000	.00	.06	.15	.21	.24
.4165	.26	.33	.53	.76	1.02
.8330	1.20	1.39	1.63	2.06	2.37
1.2495	2.52	2.59	2.59	2.60	2.58
1.6660	2.56	2.54	2.51	2.49	2.47
2.0825	2.43	2.40	2.36	2.32	2.29
2.4990	2.25	2.21	2.17	2.13	2.09
2.9155	2.05	2.00	1.95	1.90	1.86
3.3320 i	1.80	1.75	1.69	1.64	1.58
3.7485	1.52	1.45	1.39	1.32	1.24
4.1650	1.16	1.09	1.00	.90	.81
4.5815	.73	.65	.57	.50	.43
4.9980	.38	.33	.29	.25	.22
5.4145	.20	.18	.16	.14	.12
5.8310	.11	.10	.09	.08	.07
6.2475	.06	.06	.05	.04	.04
6.6640	.03	.03	.03	.02	.02
7.0805	.02	.02	.02	.01	.01
7.4970	.01	.01	.01	.01	.01
7.9135	.01	.01	.00	.00	.00
8.3300 j	.00	.00	.00		

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

S/N: 32160150708F PondPack Ver. 9.0041

Development Engineering Inc Time: 1:29 PM

Type.... Time-Elev
Name.... POND C AND D OUT Tag: Dev100 Page 7.01 Event: 100 yr

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW Storm... I-D-F 100yr Tag: Dev100

### TIME vs. ELEVATION (ft)

Time hrs		Output Time represents		= .0833 hrs	each row.
.0000	1456.00	1456.06	1456.16	1456.22	1456.26
.4165	1456.27	1456.31	1456.43	1456.58	1456.73
.8330	1456.87	1457.02	1457.26	1457.77	1458.23
1.2495	1458.46	1458.57	1458.59	1458.59	1458.57
1.6660	1458.53	1458.49	1458.45	1458.41	1458.38
2.0825	1458.32	1458.27	1458.21	1458.15	1458.10
2.4990	1458.04	1457.99	1457.93	1457.87	1457.81
2.9155	1457.76	1457.69	1457.63	1457.57	1457.52
3.3320	1457.45	1457.39	1457.33	1457.27	1457.21
3.7485	1457.14	1457.08	1457.02	1456.96	1456.90
4.1650	1456.84	1456.78	1456.72	1456.66	1456.61
4.5815	1456.56	1456.51	1456.46	1456.42	1456.38
4.9980	1456.34	1456.31	1456.28	1456.26	1456.24
5.4145	1456.21	1456.19	1456.17	1456.15	1456.13
5.8310	1456.12	1456.10	1456.09	1456.08	1456.07
6.2475	1456.07	1456.06	1456.05	1456.05	1456.04
6.6640	1456.04	1456.03	1456.03	1456.03	1456.02
7.0805	1456.02	1456.02	1456.02	1456.02	1456.01
7.4970	1456.01	1456.01	1456.01	1456.01	1456.01
7.9135	1456.01	1456.01	1456.01	1456.01	1456.00
8.3300 J	1456.00	1456.00	1456.00		

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Type.... Time vs. Volume Page 8.01 Name.... POND C AND D OUT Tag: Dev100 Event: 100 yr

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW Storm... I-D-F 100yr Tag: Dev100

## TIME vs. VOLUME (ac-ft)

Time hrs	Time on	Output Ti left represents		nt = .0833 hr first value i	
.0000	.000	.003	.008	.012	.014
.4165	.015	.018	.028	.041	.059
.8330	.075	.098	.138	.247	.369
1.2495	.440	.475	.480	.480	.473
1.6660	.461	.449	.436	.424	.413
2.0825	.397	.380	.364	.347	.332
2.4990	.316	.301	.285	.270	.256
2.9155	.243	.228	.214	.201	.189
3.3320	.176	.163	.151	.140	.129
3.7485	.118	.108	.099	.089	.080
4.1650	.072	.064	.057	.050	.044
4.5815	.039	.035	.031	.027	.023
4.9980	.020	.018	.016	.015	.013
5.4145	.011	.010	.009	.008	.007
5.8310	.006	.005	.005	.004	.004
6.2475	.003	.003	.003	.002	.002
6.6640	.002	.002	.001	.001	.001
7.0805	.001	.001	.001	.001	.001
7.4970	.001	.000	.000	.000	.000
7.9135	.000	.000	.000	.000	.000
8.3300	.000	.000	.000		

S/N: 32160150708F PondPack Ver. 9.0041

Development Engineering Inc Time: 1:29 PM

Name.... POND C AND D

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW

Elevation (ft)	Planimeter (sq.in)	Area (acres)	A1+A2+sqr(A1*A2) (acres)	Volume (ac-ft)	Volume Sum (ac-ft)
1456.00		.0459	.0000	.000	.000
1457.00		.1547	.2849	.095	.095
1458.00		.2709	.6303	.210	.305
1459.00		.3650	.9503	.317	.622

#### POND VOLUME EQUATIONS

 $^{\star}$  Incremental volume computed by the Conic Method for Reservoir Volumes.

Volume = (1/3) \* (EL2-EL1) \* (Area1 + Area2 + sq.rt.(Area1\*Area2))

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Type.... Outlet Input Data Page 10.01 Name.... 8" Outlet File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW REQUESTED POND WS ELEVATIONS: Min. Elev.= 1456.00 ft Increment = .25 ft Max. Elev.= 1459.00 ft \*\*\*\*\*\*\*\*\*\*\*\*\* OUTLET CONNECTIVITY \*\*\*\*\*\*\*\*\*\*\*\* ---> Forward Flow Only (UpStream to DnStream) <--- Reverse Flow Only (DnStream to UpStream) <---> Forward and Reverse Both Allowed Structure No. Outfall E1, ft E2, ft

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW

#### OUTLET STRUCTURE INPUT DATA

```
= 1
Structure ID
Structure Type = Culvert-Circular
______
No. Barrels = 1
Barrel Diameter = 6667
Barrel Diameter
                       .6667 ft
Upstream Invert =
                   1456.00 ft
Dnstream Invert =
                     1450.69 ft
Horiz. Length
Barrel Length
                     30.00 ft
                       30.47 ft
Barrel Slope
                     .17700 ft/ft
OUTLET CONTROL DATA...
Mannings n
                      .0130
              =
Ke
                       .5000 (forward entrance loss)
                     .053695 (per ft of full flow)
Kb
Kr
                     .5000 (reverse entrance loss)
                       .001 +/- ft
HW Convergence
INLET CONTROL DATA...
Equation form
Inlet Control K
                       .0098
Inlet Control M
                      2.0000
Inlet Control c
                      .03980
Inlet Control Y
                       .6700
T1 ratio (HW/D)
                       1.071
T2 ratio (HW/D)
                      1.218
Slope Factor
                       -.500
Calc inlet only
                = Yes
```

Use unsubmerged inlet control Form 1 equ. below T1 elev. Use submerged inlet control Form 1 equ. above T2 elev.

In transition zone between unsubmerged and submerged inlet control, interpolate between flows at T1 & T2...

At T1 Flow = 1456 71 ft ---> Flow = 1 00 ofc

At T1 Elev = 1456.71 ft ---> Flow = 1.00 cfs At T2 Elev = 1456.81 ft ---> Flow = 1.14 cfs

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc

Time: 1:29 PM Date: 1/26/2006

```
Type.... Outlet Input Data
                                                           Page 10.03
Name.... 8" Outlet
File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW
             OUTLET STRUCTURE INPUT DATA
             Structure ID
                              = TW
             Structure Type = TW SETUP, DS Channel
             ______
             USE DOWNSTREAM CHANNEL NORMAL DEPTH FOR TW...
             Channel Type: Elev-Flow
             Channel ID: 18" Lateral
             CONVERGENCE TOLERANCES...
             Maximum Iterations= 30
             Min. TW tolerance =
             Max. TW tolerance =
                                  .01 ft
             Min. HW tolerance =
                                   .01 ft
             Max. HW tolerance =
                                   .01 ft
            Min. Q tolerance = Max. Q tolerance =
                                   .10 cfs
                                   .10 cfs
```

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Type.... Outlet Input Data Page 10.04

Name.... 8" Outlet

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW

USE DOWNSTREAM CHANNEL NORMAL DEPTH FOR TW... Channel Type: Elev-Flow

Channel Type: Elev-Flow Channel ID: 18" Lateral

Solution to Mannings Open Channel Flow Equation (Computed values are based on normal depth.)

Slope = .000000 ft/ft

Mannings n = 0.00000

Invert Elev. = 1451.78 ft Top of Channel = 1459.00 ft

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc . Time: 1:29 PM

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Name.... 8" Outlet

#### File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW

#### RATING TABLE FOR ONE OUTLET TYPE

Structure ID = 1 (Culvert-Circular)

Mannings open channel maximum capacity: 5.47 cfs

Upstream ID = (Pond Water Surface)
DNstream ID = TW (Pond Outfall)

WS Elev, De	evice Q	Tail Wa	ter	N	otes		
WS Elev.	Q.	TW Elev	Conver	ge Computati			
1456.00	.00	1451.78	.000				<del></del>
1456.25	.24 IN	1452.01 LET CONTR	.009	tream TW < I Equ.1: HW =	.25	dc=.224	Ac=.1029
1456.50	.63	1452.09	.009				
1456.75	1.05	1452.19	.010				
1457.00 1457.25	1.37 IN	1452.26 LET CONTR	.005 OL	Submerged:	HW =1	.00	
1457.25 1457.50				Submerged:	HW =1	.25	
	IN	LET CONTR	OT	Submerged:	HW =1	.50	
1457.75 1458.00				Submerged:	HW =1	.75	
	IN	LET CONTR	OL	Submerged:	HW =2	.00	
1458.25	IN	LET CONTR	OL	Submerged:	H₩ =2	.25	-
1458.50 1458.75	2.54 IN	1452.53 LET CONTR		Submerged:	HW =2	.50	
1458.75	IN	LET CONTR	OL	Submerged:	HW =2	.75	
1439.00				Submerged:	HW =3	.00	

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Name.... 8" Outlet

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW

\*\*\*\*\* COMPOSITE OUTFLOW SUMMARY \*\*\*\*

CUMULATIVE HGL CONVERGENCE ERROR .010 (+/- ft) FLOW PATH: Elev= 1456.75; Branch: 1-TW

\* Max. convergence errors shown may also occur for flow paths other than the ones listed above.

WS Elev,	Total Q			Notes
			Converge	
Elev.	Q	TW Elev	Error	
ft	cfs	ft	+/-ft	Contributing Structures
1456.00	.00	1451.78	.000	None contributing
1456.25	.24	1452.01	.009	1
1456.50	.63	1452.09	.009	1
1456.75	1.05	1452.19	.010	1
1457.00	1.37	1452.26	.005	1
1457.25	1.62	1452.30	.005	1
1457.50	1.84	1452.37	.006	1
1457.75	2.04	1452.40	.006	1
1458.00	2.22	1452.45	.006	1
1458.25	2.39	1452.48	.006	1
1458.50	2.54	1452.53	.007	1
1458.75	2.69	1452.56	.007	1
1459.00	2.83	1452.58	.007	1

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Type... Elev-Flow Page 11.01 Name... 18" LATERAL

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW

#### ELEVATION-FLOW TABLE

Elev, ft	Flow, cfs
1451.78	.00
1452.00	.23
1453.00	4.67
1454.00	9.82
1455.00	13.22
1456.00	15.92
1457.00	18.22
1458.00	20.26
1459.00	22.11

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Type.... Diverted Hydrograph

Name.... OUTLET PIPE

File.... C:\Program Files\Haestad\PPKW\Libraries\
Storm... I-D-F 100yr Tag: Dev100

DIVERTED HYDROGRAPH...

HYG file =

HYG ID = OUTLET PIPE

HYG Tag = Dev100

Peak Discharge = 2.59 cfs
Time to Peak = 1.4161 hrs
HYG Volume = .665 ac-ft

Time   hrs		utput Time i	RDINATES (cfs .ncrement = . time for fin	0833 hrs	each row.
.0000	.00 .26	.06 .33	.15 .53	.21 .76	.24 1.02
.8330 I	1.20	1.39	1.63	2.06	2.37
1.2495	2.52	2.59	2.59	2.60	2.58
1.6660	2.56	2.54	2.51	2.49	2.47
2.0825	2.43	2.40	2.36	2.32	2.29
2.4990	2.25	2.21	2.17	2.13	2.09
2.9155	2.05	2.00	1.95	1.90	1.86
3.3320	1.80	1.75	1.69	1.64	1.58
3.7485	1.52	1.45	1.39	1.32	1.24
4.1650	1.16	1.09	1.00	.90	.81
4.5815	.73	.65	.57	.50	.43
4.9980	.38	.33	.29	.25	.22
5.4145	.20	.18	.16	.14	.12
5.8310	.11	.10	.09	.08	.07
6.2475	.06	.06	.05	.04	.04
6.6640	.03	.03	.03	.02	.02
7.0805	.02	.02	.02	.01	.01
7.4970	.01	.01	.01	.01	.01
7.9135   8.3300	.01	.01	.00	.00	.00

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Date: 1/26/2006

Page 11.02

Event: 100 yr

Type.... Pond E-V-Q Table Page 11.03

Name.... POND C AND D

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW

#### LEVEL POOL ROUTING DATA

HYG Dir = C:\Program Files\Haestad\PPKW\Libraries\ Inflow HYG file = NONE STORED - POND C AND D IN Dev100 Outflow HYG file = NONE STORED - POND C AND D OUT Dev100

Data = POND C AND D Pond Node Pond Volume Data = POND C AND D Pond Outlet Data = 8" Outlet

No Infiltration

#### INITIAL CONDITIONS

Starting WS Elev = 1456.00 ftStarting Volume = .000 ac.000 ac-ft Starting Outflow = Starting Infiltr. = .00 cfs .00 cfs .00 cfs

\_\_\_\_\_\_

Starting Total Qout= Time Increment = .0833 hrs

Elevation ft	Outflow cfs	Storage ac-ft	Area acres	Infilt. cfs	Q Total cfs	2S/t + 0 cfs
1456.00	.00	.000	.0459	.00	.00	.00
1456.25	.24	.014	.0671	.00	.24	4.31
1456.50	.63	.034	.0923	.00	.63	10.47
1456.75	1.05	.061	.1215	00	1.05	18.63
1457.00	1.37	.095	.1547	.00	1.37	28.95
1457.25	1.62	.137	.1807	.00	1.62	41.38
1457.50	1.84	.185	.2087	.00	1.84	55.73
1457.75	2.04	.241	.2388	.00	2.04	72.17
1458.00	2.22	.305	.2709	.00	2.22	90.84
1458.25	2.39	.376	.2931	.00	2.39	111.48
1458.50	2.54	.452	.3162	.00	2.54	133.76
1458.75	2.69	.534	.3402	.00	2.69	157.74
1459.00	2.83	.622	.3650	.00	2.83	183.48

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Type.... Node: Pond Inflow Summary Page 11.04 Name.... POND C AND D IN Event: 100 yr

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW

Storm... I-D-F 100yr Tag: Dev100

SUMMARY FOR HYDROGRAPH ADDITION at Node: POND C AND D IN

HYG Directory: C:\Program Files\Haestad\PPKW\Libraries\

Upstream Link ID Upstream Node ID HYG file HYG ID HYG tag \_\_\_\_\_ 3A 3B AND 4 Dev100 HYDROGRAPH LINK 3A 3B AND 4 

INFLOWS TO: POND C AND D IN

----- Volume Peak Time Peak Flow HYG file HYG ID HYG tag ac-ft hrs cfs \_\_\_\_\_\_\_ 3A 3B AND 4 Dev100 .665 1.0829 26.26

TOTAL FLOW INTO: POND C AND D IN

YG file HYG ID HYG tag ac-ft hrs cfs HYG file HYG ID \_\_\_\_\_\_\_\_\_\_ POND C AND D IN Dev100 .665 1.0829 26.26

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc

Time: 1:29 PM Date: 1/26/2006

Type.... Node: Pond Inflow Summary Page 11.05 Name.... POND C AND D IN Event: 100 yr

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW Storm... I-D-F 100yr Tag: Dev100

TOTAL NODE INFLOW...

HYG file =

HYG ID = POND C AND D IN

HYG Tag = Dev100

 Peak Discharge =
 26.26 cfs

 Time to Peak =
 1.0829 hrs

 HYG Volume =
 .665 ac-ft

Time	1	HYDROGRAPH ( Output Time		•	
hrs	I Time on	left represent	s time for	first value	in each row.
.0000	.00	1.05	.79	.53	.53
.4165	.26	í 1.31	2.37	2.90	3.69
.8330	3.69	5.26	9.20	26.26	13.76
1.2495	11.60	3.73	2.90	2.37	.80
1.6660	1 .79	.79	.53	1.05	.79

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc

Time: 1:29 PM Date: 1/26/2006

```
Type.... Pond Routing Summary
                                                         Page 11.06
 Name.... POND C AND D OUT Tag: Dev100
                                                      Event: 100 yr
 File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW
 Storm... I-D-F 100yr Tag: Dev100
                   LEVEL POOL ROUTING SUMMARY
                 = C:\Program Files\Haestad\PPKW\Libraries\
  Inflow HYG file = NONE STORED - POND C AND D IN Dev100
  Outflow HYG file = NONE STORED - POND C AND D OUT Dev100
  Pond Node Data = POND C AND D
  Pond Volume Data = POND C AND D
  Pond Outlet Data = 8" Outlet
· No Infiltration
  INITIAL CONDITIONS
  Starting WS Elev = 1456.00 ft
 Starting Volume = .000 ac-ft
Starting Outflow = .00 cfs
Starting Infiltr. = .00 cfs
                       .00 cfs
.00 cfs
.00 cfs
 Starting Total Qout=
 Time Increment = .0833 hrs
 INFLOW/OUTFLOW HYDROGRAPH SUMMARY
  _____
 Peak Inflow = 26.26 cfs at 1.0829 hrs
Peak Outflow = 2.60 cfs at 1.4161 hrs
  ______
 Peak Elevation = 1458.59 ft
Peak Storage = .480 ac-f
                     .480 ac-ft
  _______
 MASS BALANCE (ac-ft)
  ______
+ Initial Vol = .000
+ HYG Vol IN =
                     .665
                  .000
- Infiltration =
- HYG Vol OUT =
                .665
.000
- Retained Vol =
 Unrouted Vol = -.000 ac-ft (.004% of Inflow Volume)
```

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Type.... Detention Time Page 11.07 Name.... POND C AND D OUT Tag: Dev100 Event: 100 yr File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW Storm... I-D-F 100yr Tag: Dev100 DETENTION TIMES SUMMARY = C:\Program Files\Haestad\PPKW\Libraries\ Inflow HYG file = NONE STORED - POND C AND D IN Dev100 Outflow HYG file = NONE STORED - POND C AND D OUT Dev100 Pond Node Data = POND C AND D Pond Volume Data = POND C AND D Pond Outlet Data = 8" Outlet No Infiltration APPROXIMATE DETENTION TIME ------Tp, Outflow + Infilt. = 1.4994 hrs Tp, Total Inflow = 1.0829 hrs Peak to Peak .4165 hrs Qout+Infilt. Centroid = 2.5645 hrs Inflow Centroid 1.0751 hrs Centroid to Centroid = 1.4895 hrs

> 1.7008 hrs 1.8904 hrs

.138 ac-ft

(From 1.0829 to 1.1662 hrs)

S/N: 32160150708F PondPack Ver. 9.0041

Weighted Avg. Plug Time =
Max.Plug Vol. Plug Time =

Max.Inflow Plug Volume =

Development Engineering Inc Time: 1:29 PM

Type.... Pond Routed HYG (total out) Page 11.08 Name.... POND C AND D OUT Tag: Dev100 Event: 100 yr

File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW Storm... I-D-F 100yr Tag: Dev100

POND ROUTED TOTAL OUTFLOW HYG...

HYG file =

HYG ID = POND C AND D OUT

HYG Tag = Dev100

Peak Discharge = 2.59 cfs
Time to Peak = 1.4161 hrs
HYG Volume = .665 ac-ft

Time   hrs	Time on le	HYDROGRAPH OF Output Time is eft represents	ncrement =	.0833 hrs	n each row.
.0000	.00	.06	.15	.21	.24
.4165	.26	.33	.53	.76	1.02
.8330 I	1.20	1.39	1.63	2.06	2.37
1.2495	2.52	2.59	2.59	2.60	2.58
1.6660	2.56	2.54	2.51	2.49	2.47
2.0825	2.43	2.40	2.36	2.32	2.29
2.4990	2.25	2.21	2.17	2.13	2.09
2.9155	2.05	2.00	1.95	1.90	1.86
3.3320	1.80	1.75	1.69	1.64	1.58
3.7485	1.52	1.45	1.39	1.32	1.24
4.1650	1.16	1.09	1.00	.90	.81
4.5815	.73	.65	.57	.50	.43
4.9980	.38	.33	.29	.25	.22
5.4145	.20	.18	.16	.14	.12
5.8310	.11	.10	.09	.08	.07
6.2475	.06	.06	.05	.04	.04
6.6640	.03	.03	.03	.02	.02
7.0805	.02	.02	.02	.01	.01
7.4970	.01	.01	.01	.01	.01
7.9135	.01	.01	.00	.00	.00
8.3300	.00	.00	.00		

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Type.... C and Area Page 12.01 Name.... 3A 3B AND 4 Tag: RAT File.... C:\Program Files\Haestad\PPKW\Libraries\VANGUARD.PPW RATIONAL C COEFFICIENT DATA \_\_\_\_\_ acres -----.9500 2.045 .5000 1.925 Payement and Roofs 1.943 Deser Landscaping 2 WEIGHTED C & TOTAL AREA ---> .7318 3.970 2.905

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

Type.... Rational Q/Qp Hyg

Page 12.02 g: Devl00 Event: 100 yr

Name.... 3A 3B AND 4 Tag: Dev100

File.... C:\Program Files\Haestad\PPKW\Libraries\

Storm... I-D-F 100yr Tag: Dev100

RATIONAL METHOD HYDROGRAPH USING Q/Qp TEMPLATE Q/Qp Template File/ID: Phoenix Sky Harb

Q = CiA \* Units Conversion; Where Conversion = 43560 / (12 \* 3600)

Tc = .0833 hrs

				• -		<b>-</b>		
Tag	Freq (years)	С	C adj factor			I in/hr	Area   acres	Peak Q cfs
Dev100	100	.732	1.000	-	.732	8.9920	3.970	26.34

HYG file =

HYG ID = 3A 3B AND 4

HYG Tag = Dev100

Peak Discharge = 26.26 cfs Time to Peak = 1.0829 hrs HYG Volume = .665 ac-ft

HYDROGRAPH ORDINATES (cfs)

Time	01	itput Time	increment =	= .0833 hrs	
hrs	Time on left	represents	time for f	Eirst value i	n each row.
.0000	.00	1.05	.79	.53	.53
.4165	.26	1.31	2.37	2.90	3.69
.8330	3.69	5.26	9.20	26.26	13.76
1.2495	11.60	3.73	2.90	2.37	.80
1.6660	. 79	. 79	.53	1.05	. 79

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc

Time: 1:29 PM Date: 1/26/2006

Page 12.03 Event: 100 yr

Type.... Q/Qp Template
Name.... Phoenix Sky Harb
File... C:\Program Files\Haestad\PPKW\Libraries\
Title... Q/Qp Template Based Upon 5-min. Increments
Storm... I-D-F 100yr Tag: Dev100

q/Qp RATIONAL METHOD HYDROGRAPH TEMPLATES

Tc Ranges ---> Tc => .0833 hrs

t/Tc	q/Qp
.0000	.0000
1.0000	.0400
2.0000	.0300
3.0000	.0200
4.0000	.0200
5.0000	.0100
6.0000	.0500
7.0000	.0900
8.0000	.1100
9.0000	.1400
10.0000	.1400
11.0000	.2000
12.0000	.3500
13.0000	1.0000
14.0000	.5200
15.0000	.4400
16.0000	.1400
17.0000	.1100
18.0000	.0900
19.0000	.0300
20.0000	.0300
21.0000	.0300
22.0000	.0200
23.0000	.0400
24,0000	.0300

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

S/N: 32160150708F PondPack Ver. 9.0041

Development Engineering Inc Time: 1:29 PM

Index of Starting Page Numbers for ID Names

---- 1 -----

18" LATERAL... 11.01

---- 3 -----3A 3B AND 4 RAT... 5.01, 12.01,

12.02

----- 8 -----8" Outlet... 10.01, 10.05, 10.06

---- I -----I-D-F 100yr Dev100... 4.01

---- 0 -----OUTFALL Dev100... 6.01 OUTLET PIPE Dev100... 11.02

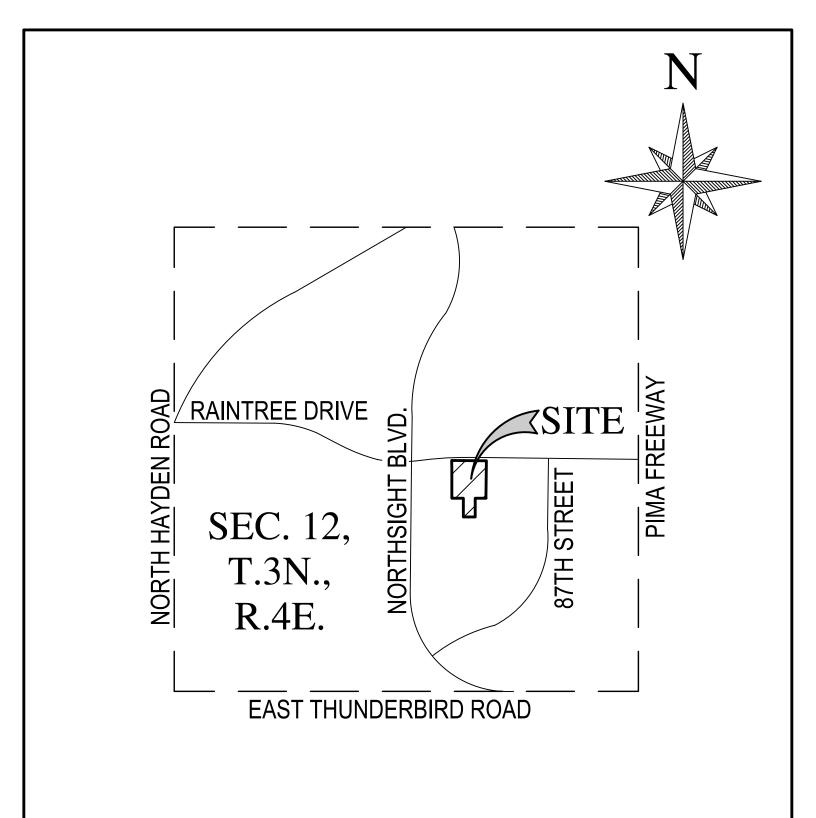
---- P ----Phoenix Sky Harb Dev100... 12.03 POND C AND D... 9.01, 11.03 POND C AND D IN Dev100... 11.04 POND C AND D OUT Dev100... 7.01, 8.01, 11.06, 11.07, 11.08

----- v -----VanguardStorm... 3.01

---- W ----Watershed... 1.01, 2.01, 2.02, 2.03

S/N: 32160150708F PondPack Ver. 9.0041 Development Engineering Inc Time: 1:29 PM

**EXHIBIT 1 – VICINITY MAP** 



FOR CONSTRUCTION OR RECORDING

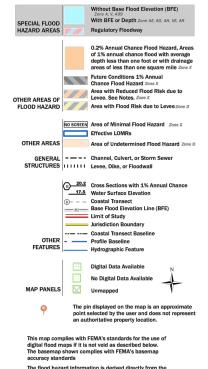


## RAINTREE DRIVE RESIDENTIAL

EXHIBI	T	1	
<b>VICINITY</b>	N	ΙAΙ	P

DATE	03-04-2021	SCALE	N/A	SHEET	01 OF 01
JOB NO.	195063	DESIGN	AF	CHECK	JGR
		DRAWN	AF	RFI#	N/A

1-DR-2020 3/9/2021 **EXHIBIT 2 – FEMA FIRM** 



SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

Legend



PROJECT AREA This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

authoritative NFHL web services provided by FEMA. This map was exported on 2/28/2019 at 4:21:33 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

FOR CONSTRUCTION OR RECORDING



## RAINTREE DRIVE RESIDENTIAL

## EXHIBIT 2 FEMA FIRM MAP

DATE 03-04-2021 SCALE N/A SHEET 01 OF 01 JOB NO. 195063 DESIGN JGR DRAWN AF

Z:\2019\195063\Project Support\Reports\Drainage\Exhibits\5063-FIRMMap.dwg

1-DR-2020 3/9/2021 EXHIBIT 3 – EXISTING DRAINAGE MAP

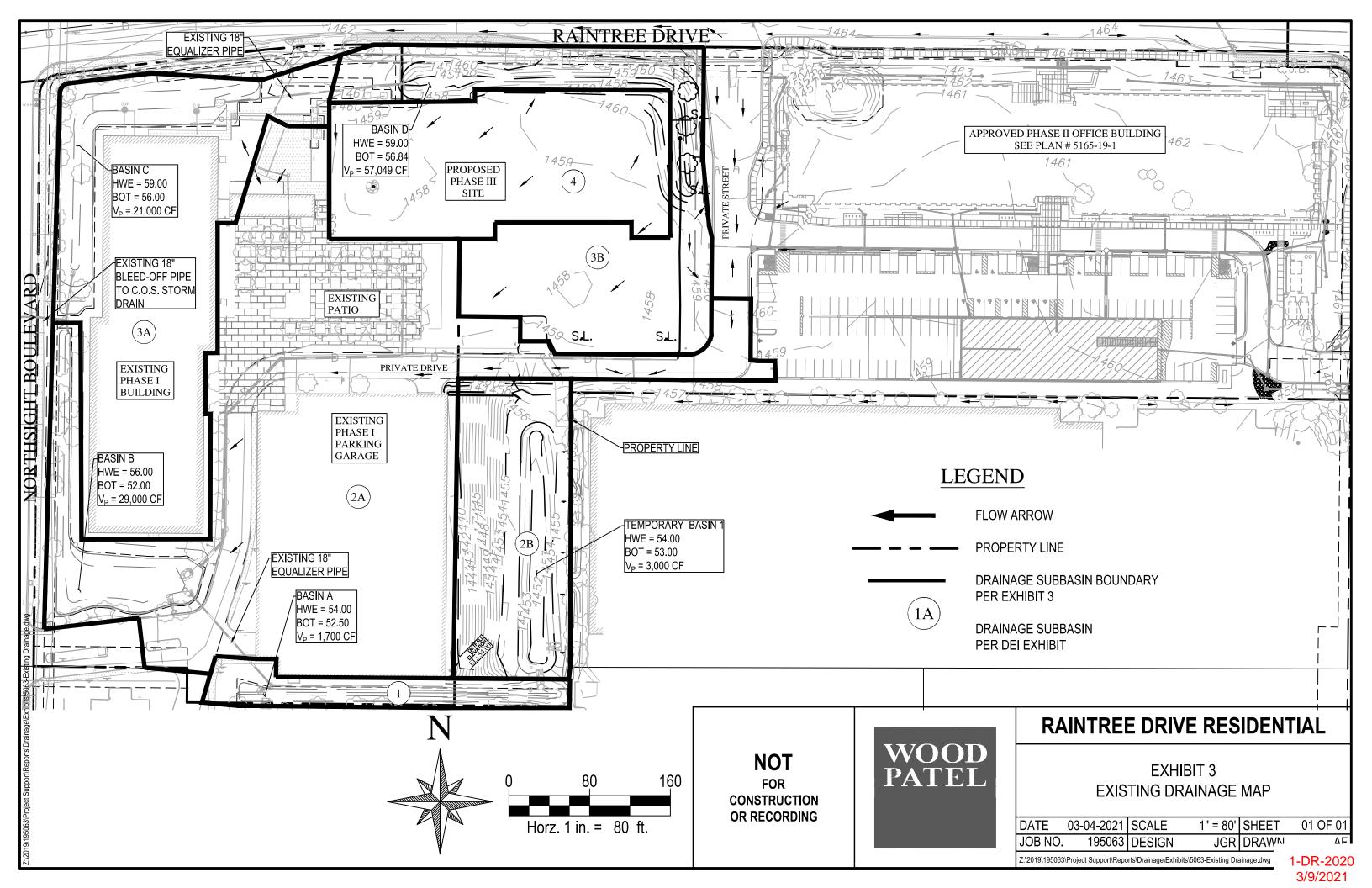
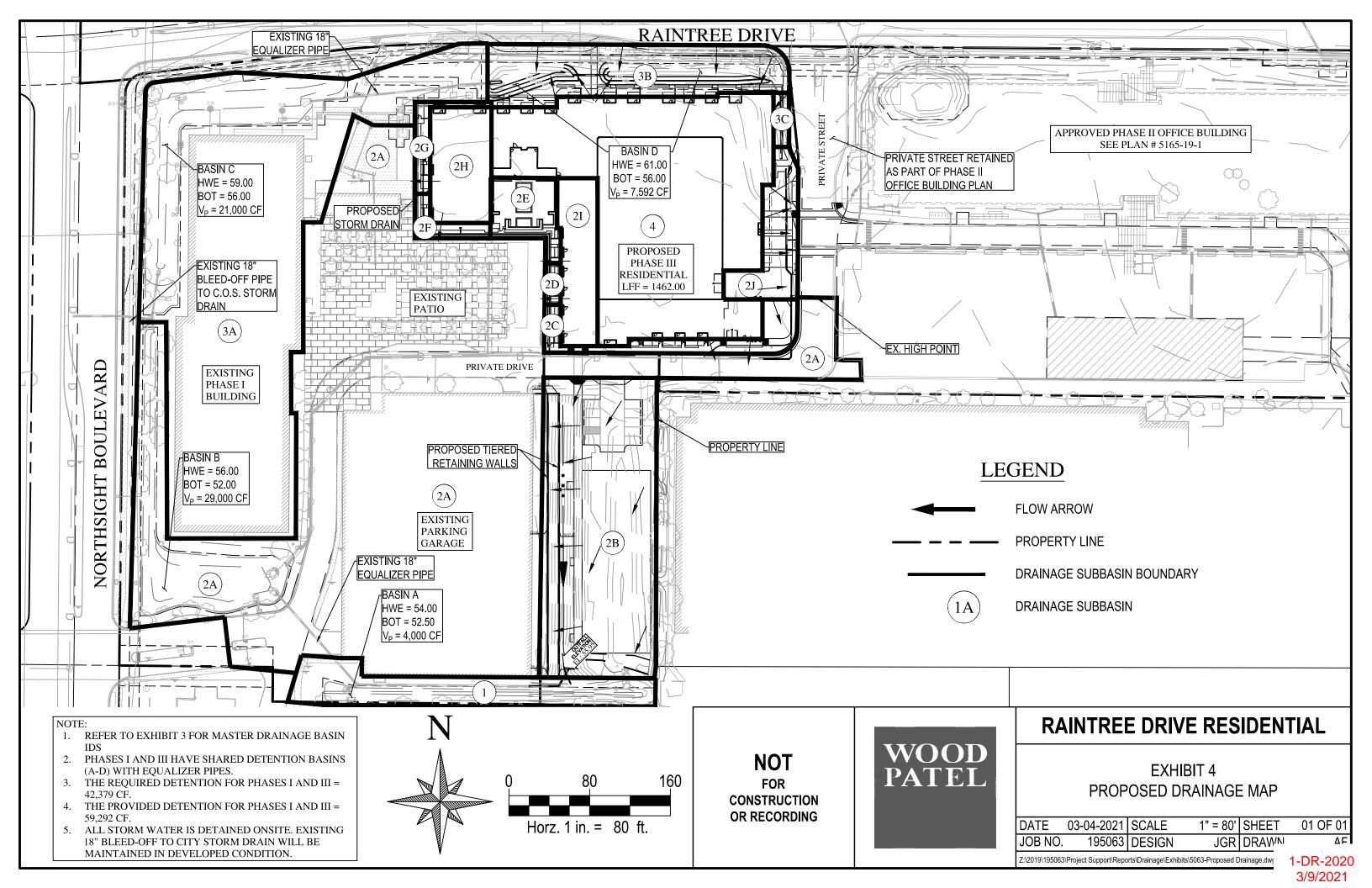


EXHIBIT 4 – PROPOSED DRAINAGE MAP

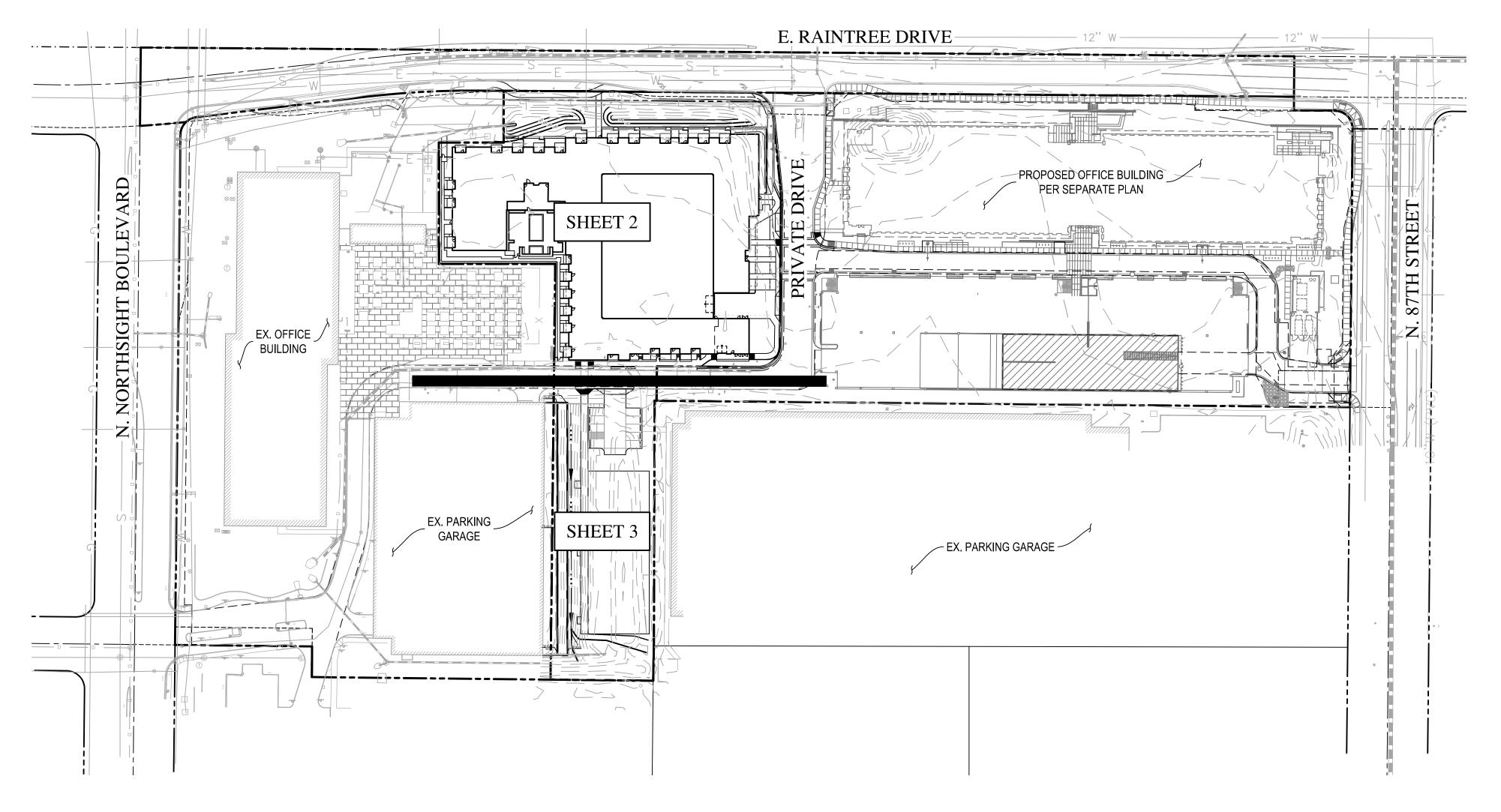


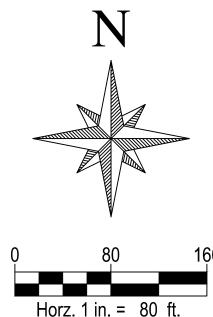
**EXHIBIT 5 – GRADING AND DRAINAGE PLAN** 

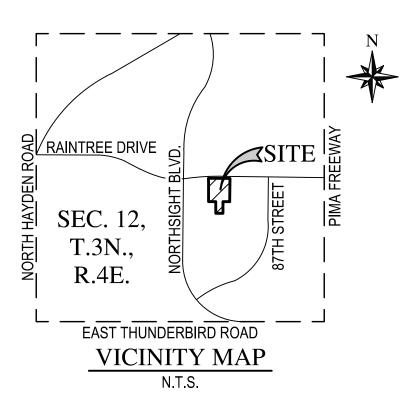
# RAINTREE PHASE 3 RESIDENTIAL BUILDING

# PRELIMINARY GRADING & DRAINAGE PLAN SCOTTSDALE, ARIZONA

A PORTION OF SECTION 12, TOWNSHIP 3 NORTH, RANGE 4 EAST OF THE GILA AND SALT RIVER MERIDIAN, MARICOPA COUNTY, ARIZONA







WOOD PATEL

Wood, Patel & Associates, Inc

Construction Management

www.woodpatel.com

PRELIMIN,

## OWNER / DEVELOPER HIGH STREET RESIDENTIAL

2575 EAST CAMELBACK, SUITE 400 PHOENIX, AZ 85016 CONTACT: STEPHEN KRAGER PHONE: (602) 222-4000 FAX: (602) 285-3141

## **ENGINEER**

WOOD, PATEL & ASSOCIATES, INC. 2051 WEST NORTHERN AVENUE, SUITE 100 PHOENIX, ARIZONA 85021 CONTACT: DARIN L. MOORE, P.E. PHONE: (602) 335-8500 FAX: (602) 335-8580

## **ARCHITECT**

ELNESS SWENSON GRAHAM ARCHITECTS, INC. 500 WASHINGTON AVE. SOUTH, SUITE 1080 MINNEAPOLIS, MN 55415 CONTACT: GRETCHEN CAMP, AIA, LEED AP PHONE: (612) 339-5508 FAX: (612) 335-8580

## PROJECT SITE DATA

ASSESSOR PARCEL NUMBER(S):

PROJECT SITE ADDRESS: 8501 EAST RAINTREE DRIVE SCOTTSDALE, ARIZONA 85260 PROJECT SITE AREA(S): NET AREA = 8.24 AC DISTURBED AREA = 8.24± AC

EXISTING: I-1 PCD

PROPOSED: PCP-AMU-R-PSD (RESIDENTIAL) AND PCP-AMU-PSD (OFFICE)

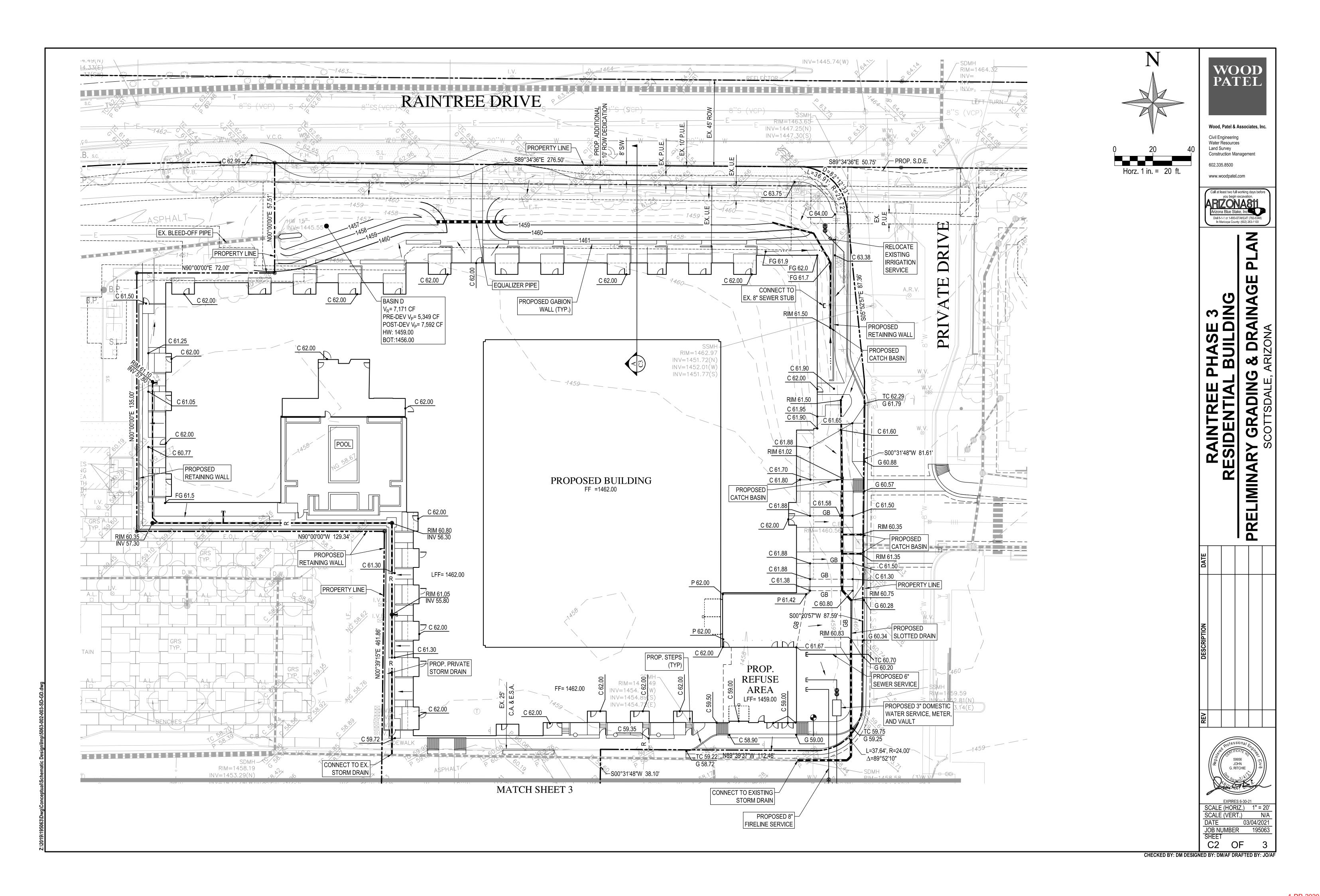
## SHEET INDEX

SHEET 1 COVER SHEET

SHEET 2 PRELIMINARY IMPROVEMENT PLAN SHEET 3 PRELIMINARY IMPROVEMENT PLAN

LEGEND/ABE	BREVIA	ATIONS		
EXISTING SURVEY	PROPOSED GRADING, DRAINAGE & PAVING		7 1 1 1 1	
		— SLOPE ARROW — WALL PROPOSED WATER & SEWER S— SEWER LNE "W— WATER LINE PLUG SEWER CLEANOUT AREA DRAIN	DESCRIPTION	
SEWER LINE	DE	DRAINAGE EASEMENT		
W — WATER LINE	D.W. E.O.L.	DRYWELL EDGE OF LANDSCAPE	REV	
STORM DRAIN PIPE	J.B.	JUNCTION BOX	8	
S SEWER MANHOLE	FH	FIRE HYDRANT		
STORM DRAIN MANHOLE	E.C.B.	ELECTRICAL CABINET BOX		Professional English Specific
<u>PO.00</u> PAVEMENT ELEVATION	HW	HEAD WALL		Professional English
NG 0.00 NATURAL GROUND ELEVATION	INV	INVERT ELEVATION		2 59956 2 JOHN VIEW
© 0.00 CONCRETE ELEVATION	LFF WE	LOWEST FINISHED FLOOR ELEVATION WATER EASEMENT		G. RITCHIE
TC 0.00 TOP OF CURB ELEVATION	LF <sub>88</sub> =	LOWEST FINISH FLOOR ELEVATION		Signed 3 / A
	TC 0.00	TOP OF CURB		
FIRE HYDRANT	FG 0.00	FINISH GRADE ELEVATION		
⊗ WATER VALVE	C 0.00	CONCRETE ELEVATION	$\vdash$	EXPIRES 6-30-21
□ □ □ STREET/PARKING LIGHT	C.A	CROSS ACCESS		SCALE (HORIZ.) N/A SCALE (VERT.) N/A
	E.S.A	EMERGENCY SERVICE ACCESS		DATE 03/04/2021
	P.U.E	PUBLIC UTILITY EASEMENT		JOB NUMBER 195063
	U.E P.A.E	PUBLIC ACCESS EASEMENT	3	SHEET
	I L'YY'E	PUDLIC ACCESS EASEMENT		C1 OF 3 I

CHECKED BY: DM DESIGNED BY: DM/AF DRAFTED BY: JO/A



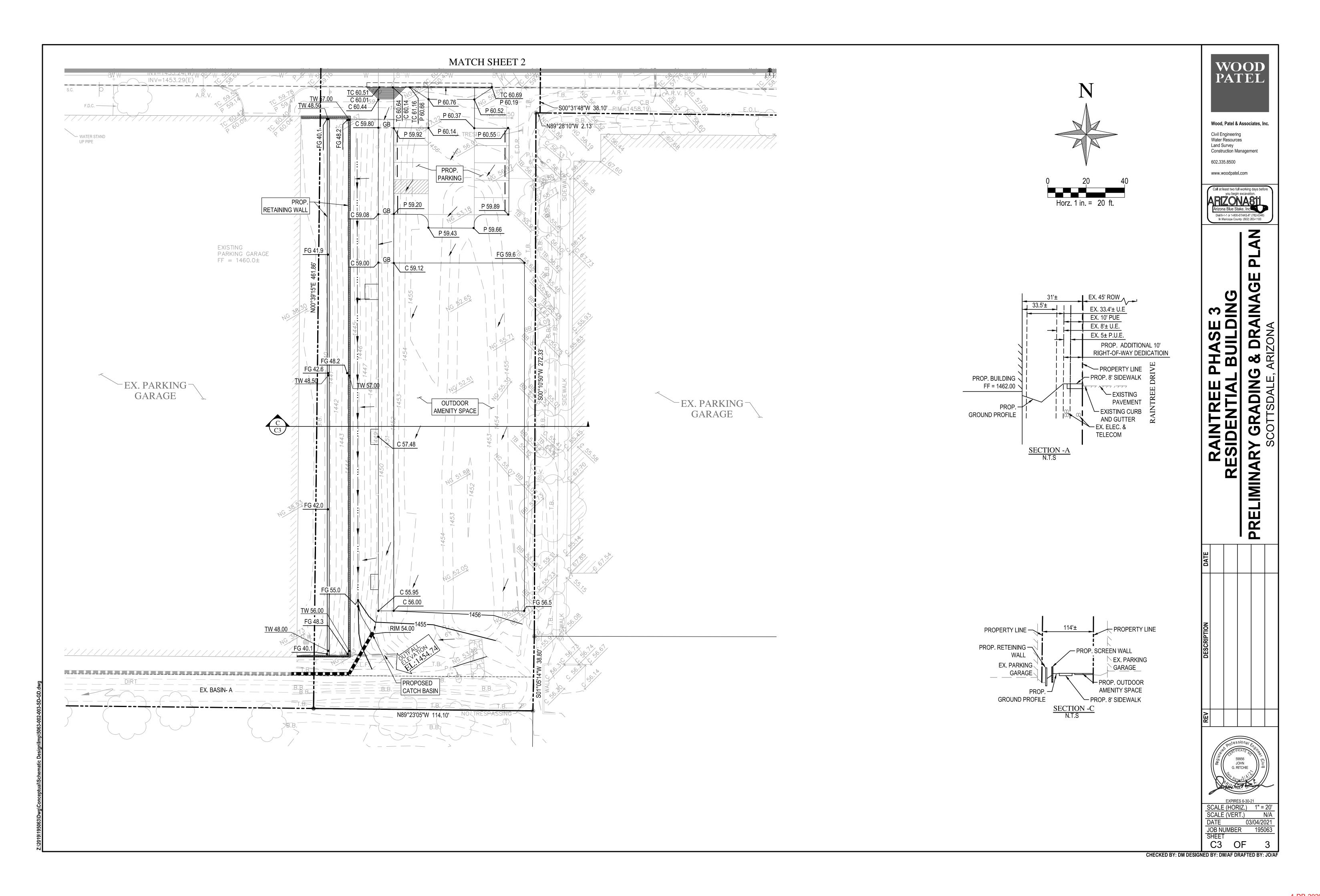


EXHIBIT 6 – DRAINAGE PROPERTY	EXHIBIT A FROM FINA TRUST FOR VANGUA	ORT FOR LIBERTY

