APPENDIXE

Left Turn Storage Analysis

LEFT TURN STORAGE ANALYSIS - POISSON METHOD

WEST LEG OF WASHINGTON AT STEWART
AM PEAK

VEHICLES PER HOUR: ll VPH

CYCLE LENGTH: 65 SECONDS

NUMBER OF LANES: 1 LANE(S)

REQUIRED STORAGE LENGTH = [(VEHICLES/CYCLE/LANE)+z(VEHCLES/CYCLE/LANE)"0.5] X 25(fUveh)

(VEHICLES/CYCLE/LANE)= [VPH X (CYCLE(sec)/3600) Xv]/ LANE

IF NUMBER OF LANES = 1, THEN v = 1.00.

IF NUMBER OF LANES = 2, THEN v = 1.05.

IF NUMBER OF LANES= 3, THEN v = 1.10.

z = 1.645 FOR 95% CONFIDENCE LEVEL

REQUIRED STORAGE LENGTH = **25.79** FEET **PER LANE**

LEFT TURN STORAGE ANALYSIS - POISSON METHOD

WEST LEG OF WASHINGTON AT STEWART
PM PEAK

VEHICLES PER HOUR: 21 VPH

CYCLE LENGTH: 65 SECONDS

NUMBER OF LANES: 1 LANE(S)

REQUIRED STORAGE LENGTH = [(VEHICLES/CYCLE/LANE)+z(VEHCLES/CYCLE/LANE)"0.5] X 25(fUveh)

(VEHICLES/CYCLE/LANE)= [VPH X (CYCLE(sec)/3600) Xv]/ LANE

IF NUMBER OF LANES = 1, THEN v = 1.00.

IF NUMBER OF LANES = 2, THEN v = 1.05.

IF NUMBER OF LANES = 3, THEN v = 1.10.

z = 1.645 FOR 95% CONFIDENCE LEVEL

REQUIRED STORAGE LENGTH = 34.80 FEET PER LANE

LEFT TURN STORAGE ANALYSIS - POISSON METHOD

NORTH LEG OF CARSON AT WILLIAMS
AM PEAK

VEHICLES PER HOUR: **264** VPH

CYCLE LENGTH: 100 SECONDS

NUMBER OF LANES: 1 LANE(S)

REQUIRED STORAGE LENGTH = [(VEHICLES/CYCLE/LANE)+z(VEHCLES/CYCLE/LANE)"0.5) X 25(ft/veh)

(VEHICLES/CYCLE/LANE) = [VPH X (CYCLE(sec)/3600) X *v]* / LANE

IF NUMBER OF LANES = 1, THEN v = 1.00.

IF NUMBER OF LANES = 2, THEN v = 1.05.

IF NUMBER OF LANES = 3, THEN v = 1.10.

z = 1.645 FOR 95% CONFIDENCE LEVEL

REQUIRED STORAGE LENGTH= 294.70 FEET PER LANE

LEFT TURN STORAGE ANALYSIS - POISSON METHOD

NORTH LEG OF CARSON AT WILLIAMS
PM PEAK

VEHICLES PER HOUR: 228 VPH

CYCLE LENGTH: 100 SECONDS

NUMBER OF LANES: 1 LANE(S)

REQUIRED STORAGE LENGTH = [(VEHICLES/CYCLE/LANE}+z(VEHCLES/CYCLE/LANE}"0.5] X 25(fUveh)

(VEHICLES/CYCLE/LANE) = [VPH X (CYCLE(sec}/3600) X v] / LANE

IF NUMBER OF LANES = 1, THEN v = 1.00.

IF NUMBER OF LANES = 2, THEN v = 1.05.

IF NUMBER OF LANES = 3, THEN v = 1.10.

z = 1.645 FOR 95% CONFIDENCE LEVEL

REQUIRED STORAGE LENGTH = 261.83 FEET PER LANE

LEFT TURN STORAGE ANALYSIS - POISSON METHOD

SOUTH LEG OF STEWART AT WILLIAMS
AM PEAK

VEHICLES PER HOUR: 55 VPH

CYCLE LENGTH: **100** SECONDS

NUMBER OF LANES: 1 LANE(S)

REQUIRED STORAGE LENGTH = [(VEHICLES/CYCLE/LANE)+z(VEHCLES/CYCLE/LANE)"0.5] X 25(ft/veh)

(VEHICLES/CYCLE/LANE)= [VPH X (CYCLE(sec)/3600) *Xv] I* LANE

IF NUMBER OF LANES = 1, THEN v = 1.00.

IF NUMBER OF LANES = 2, THEN v = 1.05.

IF NUMBER OF LANES= 3, THEN *v* = 1.10.

z = 1.645 FOR 95% CONFIDENCE LEVEL

REQUIRED STORAGE LENGTH = 89.03 FEET PER LANE

LEFT TURN STORAGE ANALYSIS - POISSON METHOD

SOUTH LEG OF STEWART AT WILLIAMS
PM PEAK

VEHICLES PER HOUR: 140 VPH

CYCLE LENGTH: 100 SECONDS

NUMBER OF LANES: 1 LANE(S)

REQUIRED STORAGE LENGTH = [(VEHICLES/CYCLE/LANE)+z(VEHCLES/CYCLE/LANE)"0.5) X 25(ft/veh)

(VEHICLES/CYCLE/LANE) = [VPH X (CYCLE(sec)/3600) X v] / LANE

IF NUMBER OF LANES = 1, THEN v = 1.00.

IF NUMBER OF LANES = 2, THEN v = 1.05.

IF NUMBER OF LANES = 3, THEN v = 1.10.

z = 1.645 FOR 95% CONFIDENCE LEVEL

REQUIRED STORAGE LENGTH = **178.32** FEET **PER LANE**

LEFT TURN STORAGE ANALYSIS - POISSON METHOD

WEST LEG OF WILLIAMS AT STEWART
AM PEAK

VEHICLES PER HOUR: 189 VPH

CYCLE LENGTH: 100 SECONDS

NUMBER OF LANES: 1 LANE(S)

REQUIRED STORAGE LENGTH = [(VEHICLES/CYCLE/LANE)+z(VEHCLES/CYCLE/LANE)"0.5) X 25(ft/veh)

(VEHICLES/CYCLE/LANE) = [VPH X (CYCLE(sec)/3600) X v] / LANE

IF NUMBER OF LANES = 1, THEN v = 1.00.

IF NUMBER OF LANES = 2, THEN v = 1.05.

IF NUMBER OF LANES= 3, THEN v = 1.10.

z = 1.645 FOR 95% CONFIDENCE LEVEL

REQUIRED STORAGE LENGTH = **225.48** FEET **PER LANE**

LEFT TURN STORAGE ANALYSIS - POISSON METHOD

WEST LEG OF WILLIAMS AT STEWART
PM PEAK

VEHICLES PER HOUR: 135 VPH

CYCLE LENGTH: 100 SECONDS

NUMBER OF LANES: 1 LANE(S)

REQUIRED STORAGE LENGTH = [(VEHICLES/CYCLE/LANE)+z(VEHCLES/CYCLE/LANE)AQ.5] X 25(fUveh)

(VEHICLES/CYCLE/LANE) = [VPH X (CYCLE(sec)/3600) X v] / LANE

IF NUMBER OF LANES = 1, THEN v = 1.00.

IF NUMBER OF LANES = 2, THEN v = 1.05.

IF NUMBER OF LANES= 3, THEN v = 1.10.

z = 1.645 FOR 95% CONFIDENCE LEVEL

REQUIRED STORAGE LENGTH= 173.39 FEET PER LANE

LEFT TURN STORAGE ANALYSIS - POISSON METHOD

WEST LEG OF WILLIAMS AT ROOP
PM PEAK

VEHICLES PER HOUR: 99 VPH

CYCLE LENGTH: **120** SECONDS

NUMBER OF LANES: 1 LANE(S)

REQUIRED STORAGE LENGTH = [(VEHICLES/CYCLE/LANE)+z(VEHCLES/CYCLE/LANE)"0.5] X 25(tuveh)

(VEHICLES/CYCLE/LANE)= [VPH X (CYCLE(sec)/3600) **Xv]/** LANE

IF NUMBER OF LANES = 1, THEN v = 1.00.

IF NUMBER OF LANES = 2, THEN v = 1.05.

IF NUMBER OF LANES = 3, THEN v = 1.10.

z = 1.645 FOR 95% CONFIDENCE LEVEL

REQUIRED STORAGE LENGTH = **157.21** FEET **PER LANE**

LEFT TURN STORAGE ANALYSIS - POISSON METHOD

WEST LEG OF WILLIAMS AT ROOP
AM PEAK

VEHICLES PER HOUR: **34** VPH

CYCLE LENGTH: **120** SECONDS

NUMBER OF LANES: 1 LANE(S)

REQUIRED STORAGE LENGTH = [(VEHICLES/CYCLE/LANE)+z(VEHCLES/CYCLE/LANE)A0.5] X 25(fUveh)

(VEHICLES/CYCLE/LANE) = [VPH X (CYCLE(sec)/3600) X v] / LANE

IF NUMBER OF LANES = 1, THEN v = 1.00.

IF NUMBER OF LANES = 2, THEN v = 1.05.

IF NUMBER OF LANES = 3, THEN v = 1.10.

z = 1.645 FOR 95% CONFIDENCE LEVEL

REQUIRED STORAGE LENGTH = 72.11 FEET PER LANE

Carson City Property Inquiry

Property Information

Parcel ID	002-161-07	**Parcel Acreage**	3.9800
Tax Year	2021		
Land Use Group	COM	**Assessed Value**	617,276
Land Use	400 - General Commercial	**Tax Rate**	3.5700
Zoning	DTMU	**Total Tax**	$19,503.66
Tax District	015	**Fiscal Year (2021 - 2022)**	
Site Address	201 E WILLIAM ST 911 N PLAZA ST	**Total Unpaid All Years**	$9,750.84
			Pay Taxes
Public Notes	AVERAGE STORY HEIGHT: 8 FT, ROOFED PORCH, STONE VENEER		

Sketches & Photos

Converted Sketch

Assessments

Taxable Value	Land	Building	Per. Property	Totals
Residential	0	0	0	0
Com / Ind.	1,664,342	99,303	0	1,763,645
Agricultural	0	0	0	0
Exempt	0	0	0	0
Pers. Exempt				0
Total	1,664,342	99,303	0	1,763,645

Assessed Value	Land	Building	Per. Property	Totals
Residential	0	0	0	0
Com / Ind.	582,520	34,756	0	617,276
Agricultural	0	0	0	0
Exempt	0	0	0	0
Pers. Exempt				0
Total	582,520	34,756	0	617,276

	New Land	New Const.	New P.P.	Omit Bldg
Residential	0	0	0	0
Com / Ind.	0	0	0	0
Agricultural	0	0	0	0
Exempt	0	0	0	0
Totals	0	0	0	0

No Assessor Descriptions

No Personal Exemptions

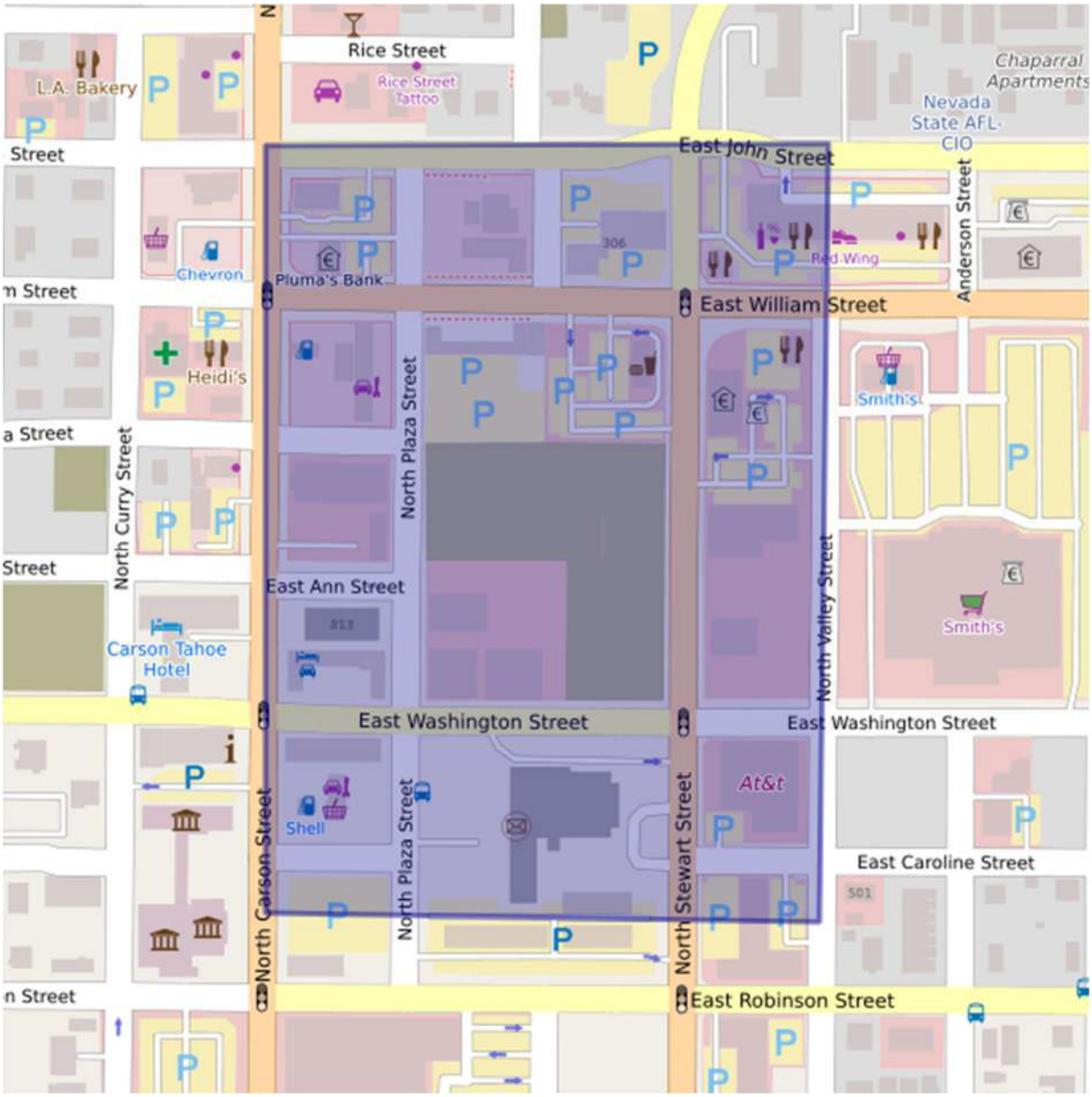
Billing Fiscal Year (2021 - 2022)

Installment	Date Due	Date Paid	Tax Billed	Cost Billed	Penalty/Interest	Total Due	Amount Paid	Total Unpaid
1	8/16/2021	8/16/2021	$4,877.40	$0.00	$0.00	$4,877.40	$4,877.40	$0.00
2	10/4/2021	8/16/2021	$4,875.42	$0.00	$0.00	$4,875.42	$4,875.42	$0.00
3	1/3/2022		$4,875.42	$0.00	$0.00	$4,875.42	$0.00	$4,875.42
4	3/7/2022		$4,875.42	$0.00	$0.00	$4,875.42	$0.00	$4,875.42
Total			**$19,503.66**	**$0.00**	**$0.00**	**$19,503.66**	**$9,752.82**	**$9,750.84**

Payment History

	Fiscal Year	Total Due	Total Paid	Amount Unpaid	Date Paid
⊕	(2021 - 2022)	$19,503.66	$9,752.82	$9,750.84	8/16/2021
⊕	(2020 - 2021)	$18,994.28	$18,994.28	$0.00	2/25/2021
⊕	(2019 - 2020)	$18,152.72	$18,152.72	$0.00	3/4/2020

Show 23 More


Rice Street
Rice Street Tattoo
L.A. Bakery
Chaparral Apartments
Nevada State AFL-CIO
East John Street
Anderson Street
Chevron
Pluma's Bank
306
Red Wing
East William Street
Heidi's
Smith's
North Curry Street
North Plaza Street
East Ann Street
Carson Tahoe Hotel
North Valley Street
East Washington Street
East Washington Street
Shell
At&t
North Carson Street
North Plaza Street
North Stewart Street
East Caroline Street
East Robinson Street

Farm Parameters

This Report Is Based On The Following Selections

Latitude
BETWEEN 39171137 And 39167518

Longitude
BETWEEN -119766963 And -119763637

26 Records Found . . .

6 Line Farm

Tuesday, June 29, 2021

Parcel:	00214409	**Site:**	402 E William St Carson City NV 89701					**Page:**			
Owner:	Sweetland Family Trust	**Mail:**	1326 Denney Ln Minden NV 89423					**Date:**	9/30/1998		
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,969	**Pool:** ☐	**Assd:** $0	**Price:**			N
Use:	General Commercial	**Bath:**	2	**Units:**	0	**Gar:** ☐	**Acre:** 0.132	**PID:**	No		
Tract:	Van Winkle and Proctor Lot 1++					**Occ:** ☐	**Yr Blt:** 1969	**LTV:**			
1st:							CNV				
2nd:							CNV				**1**

Parcel:	00215401	**Site:**	1111 N Carson St Carson City NV 89701					**Page:**			
Owner:	Bland Family Trust	**Mail:**	4950 Aberfeldy Rd Reno NV 89519					**Date:**	1/24/2020		
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,973	**Pool:** ☐	**Assd:** $0	**Price:**			N
Use:	General Commercial	**Bath:**	2	**Units:**	0	**Gar:** ☐	**Acre:** 0.33	**PID:**	No		
Tract:	Van Winkle and Proctor					**Occ:** ☐	**Yr Blt:** 1973	**LTV:**			
1st:							CNV				
2nd:							CNV				**2**

Parcel:	00215403	**Site:**	1101 N Carson St Carson City NV 89701					**Page:**			
Owner:	Stephan Family Trust	**Mail:**	35 S Lindan Ave Quincy CA 95971					**Date:**	11/10/2009		
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,967	**Pool:** ☐	**Assd:** $0	**Price:**			N
Use:	General Commercial	**Bath:**	2	**Units:**	0	**Gar:** ☐	**Acre:** 0.27	**PID:**	No		
Tract:	Van Winkle and Proctor					**Occ:** ☐	**Yr Blt:** 1967	**LTV:**			
1st:							CNV				
2nd:							CNV				**3**

Parcel:	00215502	**Site:**	203 E John St Carson City NV 89706					**Page:**			
Owner:	Lauder, Robert & Judith	**Mail:**	3362 Cortez St Carson City NV 89701					**Date:**	11/13/2015		
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,959	**Pool:** ☐	**Assd:** $0	**Price:**	$120,000		F
Use:	General Commercial	**Bath:**	1	**Units:**	0	**Gar:** ☐	**Acre:** 0.07	**PID:**	No		
Tract:	Van Winkle and Proctor					**Occ:** ☐	**Yr Blt:** 1959	**LTV:**			
1st:							CNV				
2nd:							CNV				**4**

Parcel:	00215503	**Site:**	205 E John St Carson City NV 89706					**Page:**			
Owner:	Gary Family Trust	**Mail:**	507 E Spear St Carson City NV 89701					**Date:**	9/21/2020		
Phone:	N/A **DNC:** ☐	**Bed:**	3	**Sqft:**	4,649	**Pool:** ☐	**Assd:** $107,928	**Price:**	$550,000		F
Use:	Offices, Professional and	**Bath:**	3	**Units:**		**Gar:** ☐	**Acre:** 0.156	**PID:**	No		
Tract:						**Occ:** ☐	**Yr Blt:** 1953	**LTV:**			
1st:							CNV				
2nd:							CNV				**5**

Parcel:	00215506	**Site:**	220 E William St Carson City NV 89701					**Page:**			
Owner:	THE B GROUP LLC	**Mail:**	14150 Quiet Meadow Ct Reno NV 89511					**Date:**	12/8/2003		
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,958	**Pool:** ☐	**Assd:** $0	**Price:**	$400,000		F
Use:	General Commercial	**Bath:**	1	**Units:**	0	**Gar:** ☐	**Acre:** 0.42	**PID:**	No		
Tract:	Van Winkle and Proctor					**Occ:** ☐	**Yr Blt:** 1958	**LTV:**			
1st:							CNV				
2nd:							CNV				**6**

6 Line Farm

Tuesday, June 29, 2021

Parcel:	00215602	**Site:**	309 E John St Carson City NV 89706					**Page:**			
Owner:	JOHN STREET LLC	**Mail:**	1512 Wildrose Dr Gardnerville NV 89410					**Date:**	10/22/2019		
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,976	**Pool:** ☐	**Assd:** $0	**Price:**			N
Use:	Offices, Professional and	**Bath:**	2	**Units:**	0	**Gar:** ☐	**Acre:** 0.22	**PID:**	No		
Tract:						**Occ:** ☐	**Yr Blt:** 1976	**LTV:**			
1st:							CNV				
2nd:							CNV				**7**

Parcel:	00215605	**Site:**	302 E William St Carson City NV 89701					**Page:**			
Owner:	Vram Properties Llc	**Mail:**	302 E William St Carson City NV 89701					**Date:**	3/30/2021		
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	4,070	**Pool:** ☐	**Assd:** $120,946	**Price:**	$537,000		F
Use:	Offices, Professional and	**Bath:**	2	**Units:**		**Gar:** ☐	**Acre:** 0.208	**PID:**	No		
Tract:	Van Winkel and Proctor					**Occ:** ☑	**Yr Blt:** 1989	**LTV:**			
1st:	3/30/2021 Plumas Bank						$290,000 CNV				
2nd:	3/30/2021 Plumas Bank						$232,000				**8**

Parcel:	00215606	**Site:**	306 E William St Carson City NV 89701					**Page:**			
Owner:	Faber, Sherrie	**Mail:**	10 Liberty Ship Way # 4133 Sausalito CA 94965					**Date:**	1/26/2006		
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,960	**Pool:** ☐	**Assd:** $0	**Price:**			N
Use:	General Commercial	**Bath:**	2	**Units:**	0	**Gar:** ☐	**Acre:** 0.2	**PID:**	No		
Tract:						**Occ:** ☐	**Yr Blt:** 1960	**LTV:**			
1st:							CNV				
2nd:							CNV				**9**

Parcel:	00216102	**Site:**	301 E William St Carson City NV 89701					**Page:**			
Owner:	Bruce Family Trust	**Mail:**	614 Morrill Ave Unit A Reno NV 89512					**Date:**	4/5/2017		
Phone:	N/A **DNC:** ☐	**Bed:**	4	**Sqft:**	1,961	**Pool:** ☐	**Assd:** $0	**Price:**			N
Use:	Mixed Use with Multi-Fam	**Bath:**	3	**Units:**	3	**Gar:** ☐	**Acre:** 0.043	**PID:**	No		
Tract:						**Occ:** ☐	**Yr Blt:** 1961	**LTV:**			
1st:							CNV				
2nd:							CNV				**10**

Parcel:	00216106	**Site:**	222 E Washington St Carson City NV 89701					**Page:**			
Owner:	Larquier Family Trust	**Mail:**	PO Box 964 Carson City NV 89702					**Date:**	11/26/2012		
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,962	**Pool:** ☐	**Assd:** $0	**Price:**			N
Use:	General Commercial	**Bath:**	2	**Units:**	0	**Gar:** ☐	**Acre:** 0.95	**PID:**	No		
Tract:	Van Winkle and Proctor					**Occ:** ☐	**Yr Blt:** 1962	**LTV:**			
1st:							CNV				
2nd:							CNV				**11**

Parcel:	00216107	**Site:**	201 E William St Carson City NV 89701					**Page:**			
Owner:	Virginia And Truckee, An	**Mail:**	PO Box 964 Carson City NV 89702					**Date:**	11/16/1990		
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,959	**Pool:** ☐	**Assd:** $0	**Price:**			N
Use:	General Commercial	**Bath:**	14	**Units:**	0	**Gar:** ☐	**Acre:** 3.98	**PID:**	No		
Tract:						**Occ:** ☐	**Yr Blt:** 1959	**LTV:**			
1st:							CNV				
2nd:							CNV				**12**

6 Line Farm

Tuesday, June 29, 2021

Parcel:	00216108	**Site:**	305 E William St Carson City NV 89701						**Page:**		
Owner:	Hall Family Trust	**Mail:**	PO Box 10415 Zephyr Cove NV 89448						**Date:**	9/26/1995	
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	2,004	**Pool:** ☐	**Assd:**	$0	**Price:**		N
Use:	Parking and/or Parking S	**Bath:**	0	**Units:**	0	**Gar:** ☐	**Acre:**	0.33	**PID:**	No	
Tract:						**Occ:** ☐	**Yr Blt:**	2004	**LTV:**		
1st:								CNV			
2nd:								CNV			**13**

Parcel:	00216109	**Site:**	309 E William St Carson City NV 89701						**Page:**		
Owner:	BLADOW PROPERTIES	**Mail:**	169 Saxony Rd Ste 206 Encinitas CA 92024						**Date:**	2/22/2006	
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,994	**Pool:** ☐	**Assd:**	$0	**Price:**		N
Use:	General Commercial	**Bath:**	2	**Units:**	0	**Gar:** ☐	**Acre:**	0.6	**PID:**	No	
Tract:						**Occ:** ☐	**Yr Blt:**	1994	**LTV:**		
1st:								CNV			
2nd:								CNV			**14**

Parcel:	00216401	**Site:**	813 N Carson St Carson City NV 89701						**Page:**		
Owner:	Carson City	**Mail:**	900 N Roop St Carson City NV 89701						**Date:**	2/24/2021	
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	14,096	**Pool:** ☐	**Assd:**	$271,068	**Price:**		F
Use:	General Commercial	**Bath:**	3	**Units:**		**Gar:** ☐	**Acre:**	0.332	**PID:**	No	
Tract:	Van Winkle and Proctor					**Occ:** ☐	**Yr Blt:**	1946	**LTV:**		
1st:								CNV			
2nd:								CNV			**15**

Parcel:	00216402	**Site:**	801 N Carson St Carson City NV 89701						**Page:**		
Owner:	CAPITAL CITY FLATS LLC	**Mail:**	PO Box 6736 Incline Village NV 89450						**Date:**	10/3/2019	
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,962	**Pool:** ☐	**Assd:**	$0	**Price:**	$1,600,000	F
Use:	Commercial Living Acco	**Bath:**	0	**Units:**	0	**Gar:** ☐	**Acre:**	0.33	**PID:**	No	
Tract:	Van Winkle and Proctor					**Occ:** ☐	**Yr Blt:**	1962	**LTV:**		
1st:	8/12/2020 American River Bank						$1,320,000	CNV	Refi		
2nd:								CNV			**16**

Parcel:	00217104	**Site:**	951 N Stewart St Carson City NV 89701						**Page:**		
Owner:	Davis/Bentham Family Tr	**Mail:**	PO Box 616 Carson City NV 89702						**Date:**	10/10/2018	
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,971	**Pool:** ☐	**Assd:**	$0	**Price:**		N
Use:	General Commercial	**Bath:**	3	**Units:**	0	**Gar:** ☐	**Acre:**	0.54	**PID:**	No	
Tract:	Van Winkle and Proctor					**Occ:** ☐	**Yr Blt:**	1971	**LTV:**		
1st:								CNV			
2nd:								CNV			**17**

Parcel:	00217106	**Site:**	901 N Stewart St Carson City NV 89701						**Page:**		
Owner:	Ball Family Trust	**Mail:**	3030 McKinney Ave Unit 906 Dallas TX 75204						**Date:**	1/3/2017	
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,982	**Pool:** ☐	**Assd:**	$0	**Price:**	$335,000	F
Use:	General Commercial	**Bath:**	4	**Units:**	0	**Gar:** ☐	**Acre:**	0.79	**PID:**	No	
Tract:	Van Winkle and Proctor					**Occ:** ☐	**Yr Blt:**	1982	**LTV:**		
1st:								CNV			
2nd:								CNV			**18**

6 Line Farm

Tuesday, June 29, 2021

Parcel:	00217107	**Site:**	415 E William St Carson City NV 89701					**Page:**		
Owner:	Pederson, Eric	**Mail:**	4450 Quartz Dr Carson City NV 89706					**Date:**	12/30/1988	
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,316	**Pool:** ☐	**Assd:** $65,141	**Price:**		F
Use:	General Commercial	**Bath:**	1	**Units:**		**Gar:** ☐	**Acre:** 0.23	**PID:**	No	
Tract:	Van Winkle and Proctor					**Occ:** ☐	**Yr Blt:** 1975	**LTV:**		
1st:	12/30/1988						CNV		0.76%	
2nd:							CNV			**19**

Parcel:	00217110	**Site:**	1001 N Stewart St Carson City NV 89701					**Page:**		
Owner:	U S BANK OF NEVADA	**Mail:**	LAKE 0012 Minneapolis MN 55408					**Date:**	9/17/1992	
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,991	**Pool:** ☐	**Assd:** $0	**Price:**	$950,000	F
Use:	General Commercial	**Bath:**	2	**Units:**	0	**Gar:** ☐	**Acre:** 0.89	**PID:**	No	
Tract:	Van Winkle and Proctor					**Occ:** ☐	**Yr Blt:** 1991	**LTV:**		
1st:							CNV			
2nd:							CNV			**20**

Parcel:	00425201	**Site:**	709 N Stewart St Carson City NV 89701					**Page:**		
Owner:	NEVADA BELL	**Mail:**	1010 Pine St # 9E-L-01 Saint Louis MO 63101					**Date:**		
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,963	**Pool:** ☐	**Assd:** $0	**Price:**		N
Use:	General Industrial - light i	**Bath:**	0	**Units:**	0	**Gar:** ☐	**Acre:** 0.66	**PID:**	No	
Tract:						**Occ:** ☐	**Yr Blt:** 1963	**LTV:**		
1st:							CNV			
2nd:							CNV			**21**

Parcel:	00426101	**Site:**	113 E Washington St Carson City NV 89701					**Page:**		
Owner:	Masonic, Lodge	**Mail:**	PO Box 771 Carson City NV 89702					**Date:**		
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,872	**Pool:** ☐	**Assd:** $0	**Price:**		N
Use:	General Commercial	**Bath:**	2	**Units:**	0	**Gar:** ☐	**Acre:** 0.2	**PID:**	No	
Tract:	Van Winkle and Proctor					**Occ:** ☐	**Yr Blt:** 1872	**LTV:**		
1st:							CNV			
2nd:							CNV			**22**

Parcel:	00426102	**Site:**	705 N Carson St Carson City NV 89701					**Page:**		
Owner:	Lamkin, Robert & Robert	**Mail:**	705 N Carson St Carson City NV 89701					**Date:**	4/28/1995	
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,961	**Pool:** ☐	**Assd:** $0	**Price:**	$358,000	F
Use:	General Commercial	**Bath:**	0	**Units:**	0	**Gar:** ☐	**Acre:** 0.47	**PID:**	No	
Tract:	Van Winkle and Proctor					**Occ:** ☑	**Yr Blt:** 1961	**LTV:**		
1st:							CNV			
2nd:							CNV			**23**

Parcel:	00426199	**Site:**	729 N Carson St Carson City NV 89701					**Page:**		
Owner:	Masonic, Lodge	**Mail:**	PO Box 771 Carson City NV 89702					**Date:**		
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**		**Pool:** ☐	**Assd:** $0	**Price:**		N
Use:	General Commercial	**Bath:**	0	**Units:**	0	**Gar:** ☐	**Acre:** 0	**PID:**	No	
Tract:						**Occ:** ☐	**Yr Blt:** 0	**LTV:**		
1st:							CNV			
2nd:							CNV			**24**

6 Line Farm

Tuesday, June 29, 2021

Parcel:	00426202	**Site:**	705 N Plaza St Carson City NV 89701						**Page:**		
Owner:	Unknown Owner	**Mail:**	705 N PLAZA ST Carson City NV 89701						**Date:**		
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,970	**Pool:** ☐	**Assd:**	$0	**Price:**		N
Use:	Offices, Professional and	**Bath:**	8	**Units:**	0	**Gar:** ☑	**Acre:**	3.78	**PID:**	No	
Tract:	Van Winkle and Proctor					**Occ:** ☑	**Yr Blt:**	1970	**LTV:**		
1st:								CNV			
2nd:								CNV			**25**

Parcel:	00426301	**Site:**	617 N Carson St Carson City NV 89701						**Page:**		
Owner:	ADAMS CARSON LLC	**Mail:**	5598 N Eagle Rd Ste 102 Boise ID 83713						**Date:**	2/17/2011	
Phone:	N/A **DNC:** ☐	**Bed:**	0	**Sqft:**	1,996	**Pool:** ☐	**Assd:**	$0	**Price:**		N
Use:	General Commercial	**Bath:**	0	**Units:**	0	**Gar:** ☐	**Acre:**	0.51	**PID:**	No	
Tract:						**Occ:** ☐	**Yr Blt:**	1996	**LTV:**		
1st:								CNV			
2nd:								CNV			**26**

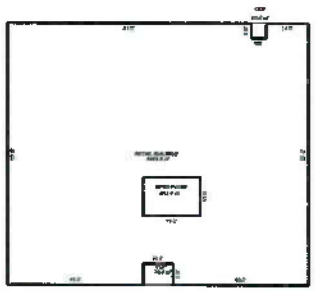
Carson City Property Inquiry

Property Information

Parcel ID	002-161-06	**Parcel Acreage**	0.9500
Tax Year	2021		
Land Use Group	COM	**Assessed Value**	278,341
Land Use	400 - General Commercial	**Tax Rate**	3.5700
Zoning	DTMU	**Total Tax**	$9,938.74
Tax District	015	**Fiscal Year (2021 - 2022)**	
Site Address	222 E WASHINGTON ST 813 N PLAZA ST 801 N PLAZA ST 204 E WASHINGTON ST 200 E WILLIAM ST	**Total Unpaid All Years**	$4,966.40
			Pay Taxes
Public Notes	RETAIL STORE #1 - AVERAGE STORY HEIGHT: 11 FT, ROOFED PORCH, 2-HALF BATHS OFFICE BLDG #2 - AVERAGE STORY HEIGHT: 10 FT, ROOFED PORCH, 2-HALF BATHS OFFICE BLDG #3 - AVERAGE STORY HEIGHT: 12 FT, ROOFED PORCH, 2-HALF BATHS		

Sketches & Photos

Converted Sketch



Assessments

Taxable Value	Land	Building	Per. Property	Totals
Residential	0	0	0	0
Com / Ind.	271,979	523,279	0	795,258
Agricultural	0	0	0	0
Exempt	0	0	0	0
Pers. Exempt				0
Total	271,979	523,279	0	795,258

Assessed Value	Land	Building	Per. Property	Totals
Residential	0	0	0	0
Com / Ind.	95,193	183,148	0	278,341
Agricultural	0	0	0	0
Exempt	0	0	0	0
Pers. Exempt				0
Total	95,193	183,148	0	278,341

	New Land	New Const.	New P.P.	Omit Bldg
Residential	0	0	0	0
Com / Ind.	0	0	0	0
Agricultural	0	0	0	0
Exempt	0	0	0	0
Totals	0	0	0	0

Assessor Descriptions

Assessor Descriptions	Subdivision Name	Section	Township	Range	Block & Lot
	VAN WINKLE & PROCTOR	17	T15N	R20E	

No Personal Exemptions

Billing Fiscal Year (2021 - 2022)

Installment	Date Due	Date Paid	Tax Billed	Cost Billed	Penalty/Interest	Total Due	Amount Paid	Total Unpaid
1	8/16/2021	8/16/2021	$2,486.17	$0.00	$0.00	$2,486.17	$2,486.17	$0.00
2	10/4/2021	8/16/2021	$2,484.19	$0.00	$0.00	$2,484.19	$2,484.19	$0.00
3	1/3/2022	8/16/2021	$2,484.19	$0.00	$0.00	$2,484.19	$1.98	$2,482.21
4	3/7/2022		$2,484.19	$0.00	$0.00	$2,484.19	$0.00	$2,484.19
Total			**$9,938.74**	**$0.00**	**$0.00**	**$9,938.74**	**$4,972.34**	**$4,966.40**

Payment History

	Fiscal Year	Total Due	Total Paid	Amount Unpaid	Date Paid
⊕	(2021 - 2022)	$9,938.74	$4,972.34	$4,966.40	8/16/2021
⊕	(2020 - 2021)	$9,819.41	$9,819.41	$0.00	3/24/2021
⊕	(2019 - 2020)	$9,357.27	$9,357.27	$0.00	3/4/2020

Show 23 More

PRELIMINARY DRAINAGE STUDY

FOR

THE ALTAIR

CARSON CITY, NEVADA

Prepared for:

Kingsbarn Realty Capital
1645 Village Center Circle, Suite 200
Las Vegas, NV 89134

December 14, 2021

Prepared by:

Wood Rodgers, Inc.
1361 Corporate Boulevard
Reno, Nevada 89502
775.823.4068

PROFESSIONAL ENGINEER - STATE OF NEVADA
MEGAN W. OVERTON
Exp. 12/31/2021
CIVIL
No. 18689

12/14/21
Megan Overton, P.E.
Associate

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

TABLE OF CONTENTS

Appendices

INTRODUCTION

This report shall serve as the Preliminary Drainage Study for development of the proposed Altair project in Carson City, Nevada. The purpose of this report is to address drainage issues that result from development of the proposed project site in accordance with the *Carson City Development Standards, Carson City Drainage Manual* (CCDM), and sound design and engineering practices. This report describes the existing drainage condition on and around the project site, details the proposed routing of storm water, quantifies the estimated on-site storm water flow to be generated from development, compares it to the existing condition, and defines the design measures proposed to mitigate increased runoff.

GENERAL LOCATION AND DEVELOPMENT DESCRIPTION

The proposed project site (APN's 002-161-06 and 002-161-07) is approximately 4.9± acres in size and is located within a portion of Section 17 in T15N, R20E, MDB&M, in Carson City. It is bounded by E. William Street to the north, N. Stewart Street to the east, E. Washington Street to the south, and N. Plaza Street to the west. An existing Jack in the Box restaurant is located outside the northeast corner of the project site. (Reference the Vicinity Map in Appendix A of this report.)

The project site is located within the Carson River Basin as delineated by the State of Nevada Division of Environmental Protection. Existing public storm drain is located north and south of the site in William Street and Washington Street, respectively.

PROPERTY DESCRIPTION

The parcel is currently a mix of developed and undeveloped land with both private and public utilities crossing throughout the property. The north end and southwest corner are developed with buildings, parking lots, and minimal landscape area. The remainder of the site is sparsely vegetated with native grasses and sagebrush, and it is generally covered in a compacted gravel. The site is generally flat, sloping from northwest to southeast at an average slope of less than 1%. The lowest existing elevation occurs at the southeast corner of the site. The site, consisting of minimal slope, has no current erosion, sedimentation, or drainage issues.

Soils on the site were characterized by Wood Rodgers during a field investigation in September of 2021. Generally, the site soils were found to be medium dense to dense sandy soils overlaid by gravelly sand.

PROJECT DESCRIPTION

The Altair project is a multi-family apartment complex consisting of 5 three-story apartment buildings totaling approximately 89,000 square feet, amenities, landscaping, associated utilities, and surface parking in support of 207 residential units. The Preliminary Storm Drain Layout in Appendix A shows the

proposed site development layout.

The project will likely be constructed in one phase, initiated by site-wide clearing, grubbing, demolition, and mass grading, followed by civil infrastructure and building construction. Once completed, the site will be accessed from Stewart Street near the middle of the block.

EXISTING DRAINAGE BASIN DESCRIPTION

OFF-SITE & ON-SITE DRAINAGE DESCRIPTION

The current historic drainage pattern is characterized by shallow overland flow, generally flowing from northwest to southeast across minimally-sloping, compacted gravel and pavement. Due to surrounding site characteristics, which include roadways and developed land, there is no off-site flow entering the property. Storm water collecting within right of way and adjacent properties is collected and conveyed to curb and gutter within the public right of way.

The existing condition of the site is subdivided into 4 hydrologic basins. The first basin (E-1) covers the development at the north end of the site. This basin sheet flows to William Street where storm water is captured in the street gutter and conveyed east to a drain inlet near the intersection with Stewart Street. The second basin (E-2) sheet flows in an easterly direction. It is collected in a valley gutter in the Jack in the Box parking lot and conveyed to the gutter on Stewart Street, which flows south to a drain inlet near the intersection with Washington Street. The third basin (E-3) flows to the existing parking lot in the southeast corner where it is intercepted by a drain inlet and directly deposited into a 56-inch public storm drain main in Washington Street right of way. The forth basin (E-4) sheet flows directly to Stewart Street and is routed similarly to basin E-2. Basin E-1 is the only basin that flows to the public storm drain network in William Street. The remaining basins (E-2 through E-4) flow to the public storm drain network in Washington Street. An Existing Hydrology Exhibit showing the drainage basins, land use, and flow paths is included in Appendix B.

FLOODPLAIN INFORMATION

According to Flood Insurance Rate Map (FIRM) Panel 3200010092G, effective December 22, 2016, prepared by the Federal Emergency Management Agency (FEMA, 2016), the project parcel is located within a Shaded X Flood Zone. A Shaded X Flood Zone does not include base flood elevations. An excerpt of the FIRM panel ("FIRMette") for the subject area is included in Appendix A.

PROPOSED DRAINAGE FACILITIES & HYDRAULICS

GENERAL DESCRIPTION

The proposed preliminary drainage system generally consists of sheet flow from the parking lot areas, building roofs, and landscape areas into gutters and landscape swales, which collect and convey runoff to drain inlets. Storm water runoff generated on site is conveyed a few different directions. Small areas of landscaping and sidewalks around the perimeter, including basins P-1, P-2, P-6, P-7, and P-8, are

preliminarily designed to drain directly to the adjacent streets whereas the majority of the site, including basins P-3, P-4, and P-5, drain to the proposed on-site storm drain network, which discharges to an underground detention system at the southeast corner of the site. A copy of the Proposed Hydrology Exhibit showing basin areas and flow paths is included in Appendix B.

The detention system is proposed to attenuate the peak flow in order to match the existing condition runoff flow rate and provide consistency for the downstream public storm drain network during the 10-year storm event. The outlet structure for the detention system will include a low-flow orifice for the 10-year storm event and an overflow weir in order to pass flows in excess of the 10-year storm. The system will connect to the existing public 56-inch storm drain main within Washington Street right of way.

HYDROLOGIC ANALYSIS

The hydrologic analysis included in this report consists of preliminary peak runoff flow computations for the existing and proposed conditions for required storm drain design. 2-year, 10-year, and 100-year storm event runoff for the project area was analyzed using the Rational Method per the CCDM for sites less than 100 acres. Rational Method input includes rainfall frequency, runoff coefficients, and drainage areas. Rainfall input was generated from the NOAA Atlas 14 Point Precipitation Frequency Estimates at the site. A copy of the frequency table is included in Appendix B. Runoff coefficients (C-values) were estimated using standard C-value estimates published in the Truckee Meadows Regional Drainage Manual (TMRDM) based on surface characteristics. A copy of the runoff coefficient table is included in Appendix B.

A Rational Method spreadsheet was used to preliminarily calculate runoff from the design storm events. Copies of the spreadsheets are included in Appendix B of this report. Calculations are included for the 2-year event in the proposed condition as well as the 10-year and 100-year events for both the existing and proposed conditions. Results from the calculations are summarized in the following table.

Drainage Outlet	**Included Basins**	**2-Year Flow Rate (cfs)**	**10-Year Flow Rate (cfs)**	**100-Year Flow Rate (cfs)**
Existing Site				
William St. Storm Drain	E-1	-	0.4	0.8
Washington St. Storm Drain	E-2, 3, 4	-	3.5	9.7
Total		**-**	**3.9**	**10.5**
Proposed Site				
William St. Storm Drain	P-1, 2	0.2	0.4	0.8
Washington St. via Detention	P-3, 4, 5	5.0	8.2	16.7
Washington St. Storm Drain	P-6, 7, 8	0.7	1.1	2.4
Total		**5.9**	**9.7**	**19.9**

Development of the project site results in a 10-year and 100-year runoff increase of 5.8 cfs and 9.4 cfs, respectively. There is no measurable flow increase to the William Street storm drain system. The increase in flow to the Washington Street storm drain system will be detained to perpetuate the existing flow condition downstream during the 10-year storm event.

PROPOSED STORM DRAIN NETWORK & DESIGN CALCULATIONS

The on-site private storm drain network and detention basin have been preliminarily sized to capture and convey the 100-year storm event, detain the 10-year storm event, and treat the 2-year storm event. Preliminary calculations for pipe sizing was conducted using FlowMaster. The pipe sizes were estimated based on a minimum pipe slope of 0.5%, roughness coefficient of 0.012, and flow rates provided in Appendix B. The resulting pipe sizes range from 12-inch diameter at the upstream end of the system and at drain inlet laterals, to 24-inch diameter before discharging into the detention system and through to the existing public main. FlowMaster output spreadsheets are included in Appendix C and the preliminary storm drain layout is included in Appendix A.

The preliminary detention system size was calculated using the TMRDM specifications. The calculation requires a time of concentration and flow rate for the existing and proposed conditions, all of which were extracted from the Rational Method spreadsheets included in Appendix B. The TMRDM was also used to preliminarily size the outlet orifice. As a result of these calculations, the detention system has been preliminarily sized to hold 1,740 cubic feet, to match the existing condition for the 10-year storm, with a 7-inch diameter outlet orifice and an overflow weir for larger storm events. A copy of the detention and orifice calculations are included in Appendix C.

A storm water treatment device, as required by the CCDM, is proposed upstream of the detention system. It will be sized to treat the 2-year storm event, which is estimated at 5 cfs, and bypass larger storm events directly to the detention system.

REGULATORY PERSPECTIVE

The project site is located within the jurisdiction of Carson City. The drainage facilities proposed on site are to be privately owned and maintained by the owner and operator of the Altair project. As the site is located entirely within FEMA designated Shaded Zone X (500-year flood zone), there are no FEMA or unique Carson City regulations associated with development on this site.

There are no requests for variances from the drainage criteria requirements for this site.

MAINTENANCE ISSUES

Sediment transport and erosion will be controlled through landscaping measures as well as sizing of outlet and inlet protection and through conformance with the Storm Water Pollution Prevention Plan (SWPPP) that will be prepared for this site. The SWPPP will include Best Management Practices (BMPs), a maintenance schedule, and a list of the responsible parties for maintenance to insure the storm drain

system operates correctly and prevents excessive sediment transport. The SWPPP will be prepared prior to construction and will be maintained on the project site through the duration of construction.

CONCLUSION

The proposed Altair project has been preliminarily designed to collect, convey, treat, and detain storm flows generated on site in accordance with drainage laws, Carson City Municipal Code, FEMA requirements and development standards. The proposed drainage facilities are adequately sized to ensure flow leaving the site during the design storm event in the proposed condition is at or below existing condition levels and will therefore not impact downstream flow rates or storage requirements. This report is preliminary in nature and a final technical drainage study will be completed to support final design.

REFERENCES

Bentley Systems, Incorporated, Flowmaster V8i (Select Series 1), Copyright 2009.

Carson City Municipal Code, Title 18 Appendix – Carson City Development Standards, November 30, 2021.

Carson City Drainage Manual, July 1, 2021. (CCDM)

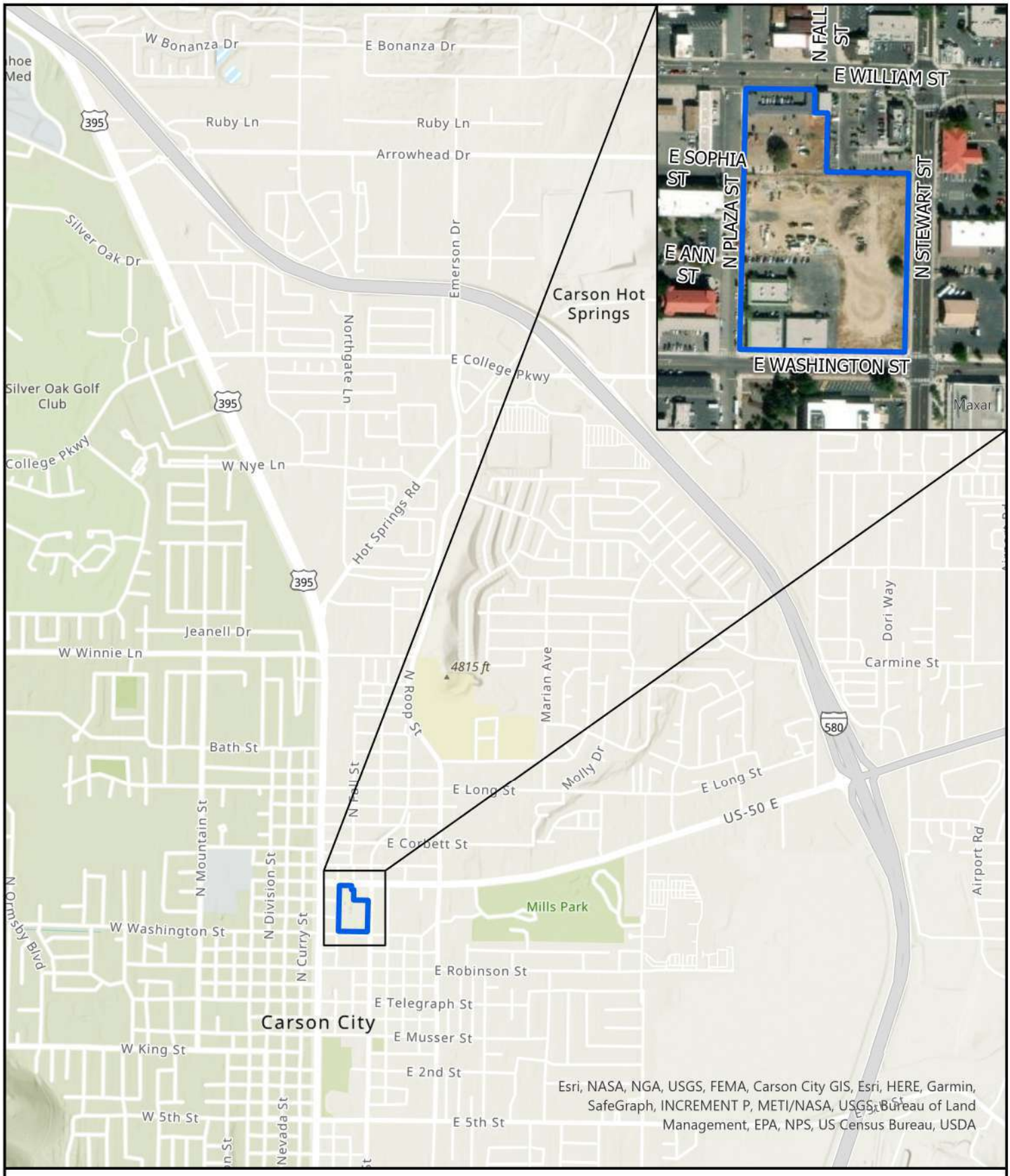
Federal Emergency Management Agency, Flood Insurance Rate Map for Carson City, Nevada, Effective December 22, 2016.

Geotechnical Investigation, Roundhouse Apartments, Carson City, NV. Wood Rodgers, Inc. October 8, 2021.

NOAA Atlas 14, Volume 1, Version 5. Downloaded November 9, 2021.

Truckee Meadows Regional Drainage Manual, April 30, 2009. (TMRDM)

Appendix A – General Figures



VICINITY MAP

THE ALTAIR
CARSON CITY, NV
DECEMBER 2021

Project Area

0 900 1,800 3,600
Feet

NORTH

WOOD RODGERS

J:\Jobs\4104_Williams_ST\Williams_ST_OA\GIS\ArcGIS_Pro\Sewer_Study_20211102_V1\Sewer_Study_20211102_V1.aprx 12/12/2021 12:00 PM sbarrow

National Flood Hazard Layer FIRMette

FEMA

119°46'14"W 39°10'24"N

119°45'37"W 39°9'56"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

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

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/5/2021 at 5:41 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.

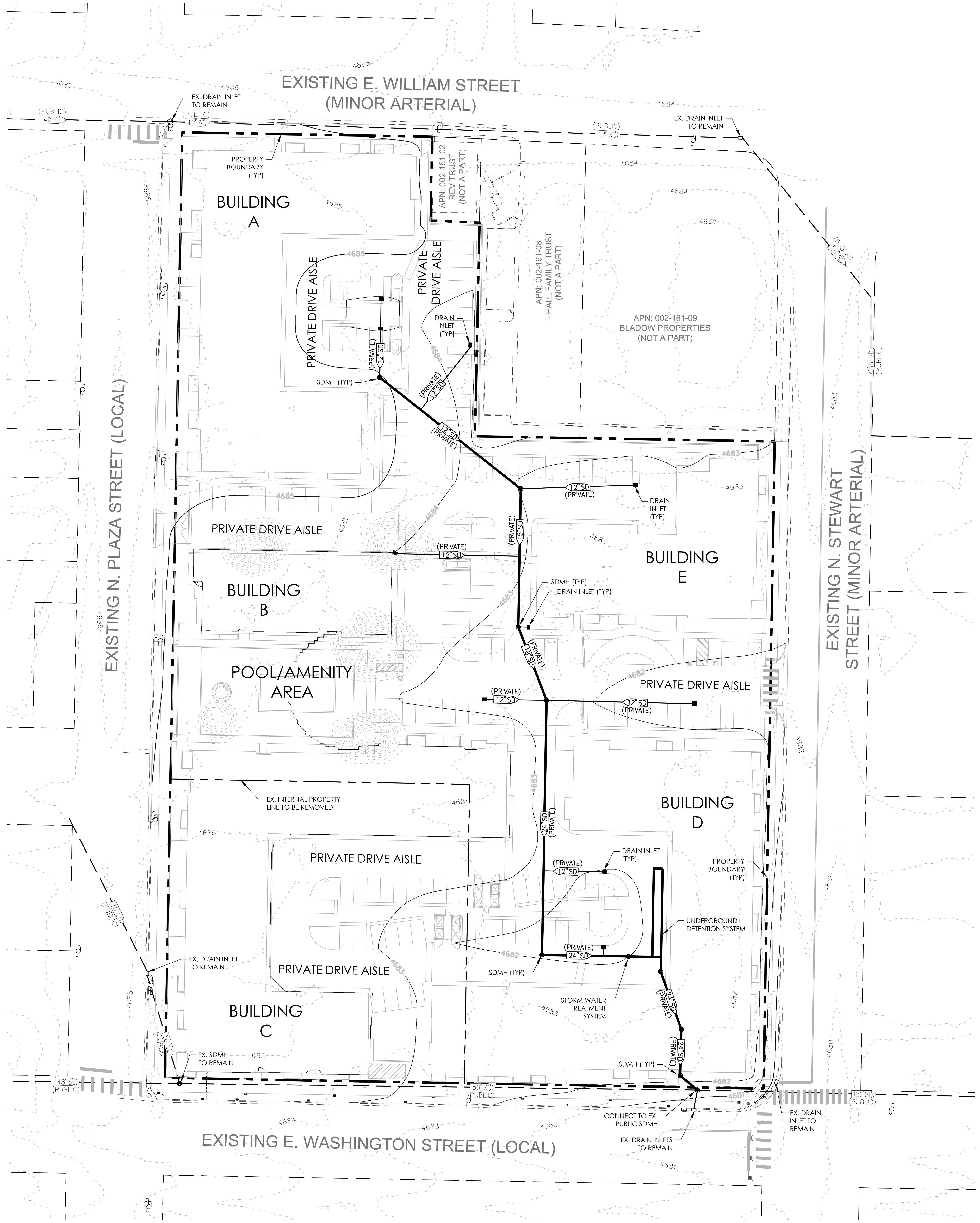
This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory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

PRELIMINARY STORM DRAIN LAYOUT

THE ALTAIR

CARSON CITY, NEVADA

DECEMBER, 2021



NOTE: THE ENTIRE SUBJECT PROPERTY IS LOCATED WITHIN FEMA FLOOD ZONE SHADED X.

NORTH

0 40 80 160

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard Reno, NV 89502
Tel 775.823.4068 Fax 775.823.4066

Appendix B – Hydrologic Design and Analysis

NOAA Atlas 14, Volume 1, Version 5
Location name: Carson City, Nevada, USA*
Latitude: 39.1694°, Longitude: -119.7653°
Elevation: 4685.83 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**1.15** (0.996-1.37)	**1.44** (1.25-1.70)	**1.92** (1.66-2.28)	**2.39** (2.03-2.83)	**3.14** (2.59-3.73)	**3.84** (3.07-4.58)	**4.67** (3.60-5.63)	**5.66** (4.19-6.95)	**7.24** (5.05-9.06)	**8.66** (5.76-11.0)
10-min	**0.882** (0.756-1.04)	**1.10** (0.948-1.30)	**1.46** (1.26-1.73)	**1.82** (1.54-2.15)	**2.39** (1.97-2.84)	**2.92** (2.33-3.49)	**3.55** (2.74-4.28)	**4.31** (3.19-5.29)	**5.50** (3.85-6.90)	**6.59** (4.39-8.41)
15-min	**0.728** (0.628-0.860)	**0.908** (0.784-1.08)	**1.21** (1.04-1.44)	**1.50** (1.28-1.78)	**1.98** (1.63-2.35)	**2.42** (1.93-2.88)	**2.94** (2.27-3.54)	**3.56** (2.64-4.37)	**4.55** (3.18-5.70)	**5.44** (3.62-6.95)
30-min	**0.490** (0.422-0.578)	**0.610** (0.528-0.724)	**0.814** (0.698-0.966)	**1.01** (0.858-1.20)	**1.33** (1.10-1.58)	**1.63** (1.30-1.94)	**1.98** (1.53-2.39)	**2.40** (1.78-2.94)	**3.06** (2.14-3.84)	**3.67** (2.44-4.68)
60-min	**0.303** (0.261-0.358)	**0.377** (0.327-0.448)	**0.504** (0.433-0.598)	**0.626** (0.532-0.742)	**0.824** (0.680-0.979)	**1.01** (0.804-1.20)	**1.22** (0.944-1.48)	**1.48** (1.10-1.82)	**1.90** (1.33-2.38)	**2.27** (1.51-2.90)
2-hr	**0.206** (0.183-0.236)	**0.255** (0.226-0.292)	**0.325** (0.287-0.372)	**0.387** (0.338-0.442)	**0.481** (0.408-0.552)	**0.564** (0.469-0.654)	**0.658** (0.533-0.773)	**0.774** (0.605-0.920)	**0.970** (0.726-1.20)	**1.15** (0.833-1.46)
3-hr	**0.164** (0.147-0.184)	**0.204** (0.184-0.230)	**0.256** (0.228-0.288)	**0.298** (0.264-0.336)	**0.359** (0.312-0.406)	**0.410** (0.351-0.469)	**0.468** (0.392-0.540)	**0.542** (0.445-0.635)	**0.663** (0.527-0.807)	**0.779** (0.603-0.983)
6-hr	**0.114** (0.103-0.128)	**0.143** (0.128-0.160)	**0.177** (0.158-0.198)	**0.204** (0.182-0.229)	**0.241** (0.212-0.271)	**0.270** (0.234-0.306)	**0.300** (0.255-0.343)	**0.334** (0.278-0.386)	**0.384** (0.311-0.451)	**0.428** (0.340-0.512)
12-hr	**0.075** (0.067-0.084)	**0.094** (0.084-0.106)	**0.119** (0.106-0.134)	**0.138** (0.122-0.155)	**0.164** (0.143-0.185)	**0.183** (0.158-0.209)	**0.204** (0.173-0.235)	**0.224** (0.187-0.261)	**0.252** (0.204-0.300)	**0.274** (0.218-0.331)
24-hr	**0.050** (0.045-0.055)	**0.062** (0.057-0.069)	**0.079** (0.072-0.087)	**0.092** (0.084-0.101)	**0.111** (0.100-0.122)	**0.125** (0.112-0.138)	**0.141** (0.125-0.155)	**0.156** (0.138-0.174)	**0.178** (0.154-0.199)	**0.195** (0.167-0.220)
2-day	**0.030** (0.027-0.033)	**0.038** (0.034-0.042)	**0.048** (0.043-0.054)	**0.056** (0.050-0.063)	**0.068** (0.060-0.076)	**0.077** (0.068-0.087)	**0.087** (0.076-0.099)	**0.097** (0.084-0.111)	**0.112** (0.095-0.129)	**0.123** (0.103-0.143)
3-day	**0.022** (0.020-0.025)	**0.028** (0.025-0.031)	**0.035** (0.032-0.040)	**0.042** (0.037-0.047)	**0.051** (0.045-0.057)	**0.058** (0.051-0.066)	**0.066** (0.057-0.075)	**0.074** (0.063-0.084)	**0.085** (0.072-0.098)	**0.094** (0.078-0.109)
4-day	**0.018** (0.016-0.020)	**0.023** (0.020-0.026)	**0.029** (0.026-0.033)	**0.035** (0.031-0.039)	**0.042** (0.037-0.048)	**0.048** (0.042-0.055)	**0.055** (0.047-0.063)	**0.062** (0.053-0.071)	**0.071** (0.060-0.083)	**0.079** (0.065-0.093)
7-day	**0.012** (0.011-0.013)	**0.015** (0.013-0.017)	**0.020** (0.017-0.022)	**0.023** (0.021-0.026)	**0.028** (0.025-0.032)	**0.032** (0.028-0.037)	**0.036** (0.032-0.041)	**0.041** (0.035-0.047)	**0.047** (0.040-0.054)	**0.052** (0.043-0.060)
10-day	**0.009** (0.008-0.010)	**0.012** (0.010-0.013)	**0.015** (0.013-0.017)	**0.018** (0.016-0.020)	**0.022** (0.019-0.024)	**0.025** (0.022-0.028)	**0.028** (0.024-0.031)	**0.031** (0.026-0.035)	**0.035** (0.030-0.040)	**0.038** (0.032-0.045)
20-day	**0.006** (0.005-0.006)	**0.007** (0.006-0.008)	**0.009** (0.008-0.010)	**0.011** (0.010-0.012)	**0.013** (0.012-0.015)	**0.015** (0.013-0.016)	**0.016** (0.014-0.018)	**0.018** (0.016-0.020)	**0.020** (0.017-0.023)	**0.022** (0.019-0.025)
30-day	**0.004** (0.004-0.005)	**0.005** (0.005-0.006)	**0.007** (0.006-0.008)	**0.008** (0.007-0.009)	**0.010** (0.009-0.011)	**0.011** (0.010-0.012)	**0.012** (0.011-0.014)	**0.013** (0.012-0.015)	**0.015** (0.013-0.017)	**0.016** (0.014-0.019)
45-day	**0.003** (0.003-0.004)	**0.004** (0.004-0.005)	**0.005** (0.005-0.006)	**0.006** (0.006-0.007)	**0.008** (0.007-0.008)	**0.008** (0.008-0.009)	**0.009** (0.008-0.010)	**0.010** (0.009-0.011)	**0.011** (0.010-0.013)	**0.012** (0.010-0.014)
60-day	**0.003** (0.003-0.003)	**0.004** (0.003-0.004)	**0.005** (0.004-0.005)	**0.005** (0.005-0.006)	**0.006** (0.006-0.007)	**0.007** (0.006-0.008)	**0.008** (0.007-0.009)	**0.008** (0.007-0.009)	**0.009** (0.008-0.010)	**0.010** (0.008-0.011)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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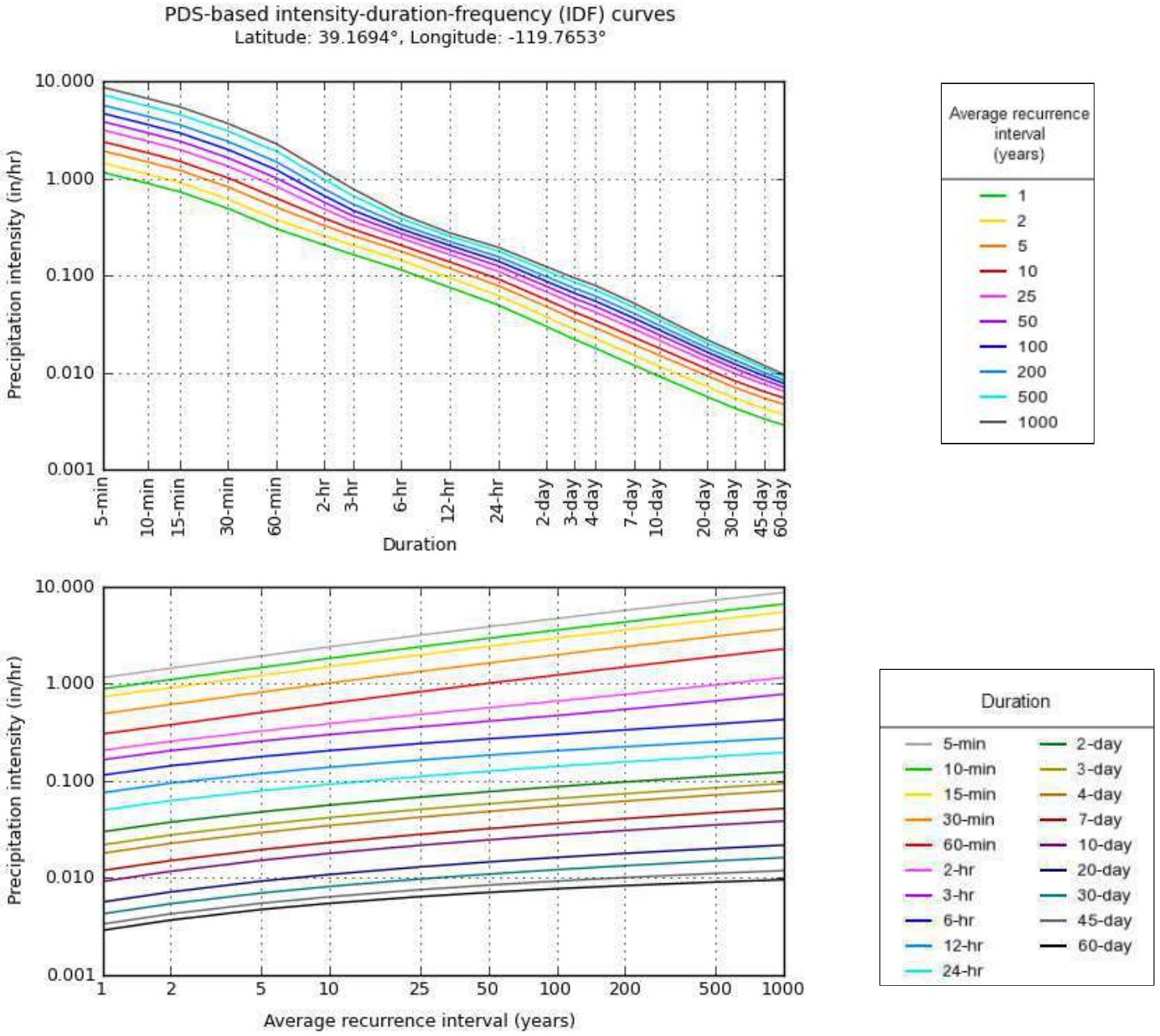
PF graphical



NOAA Atlas 14, Volume 1, Version 5

Created (GMT): Tue Nov 9 15:47:14 2021

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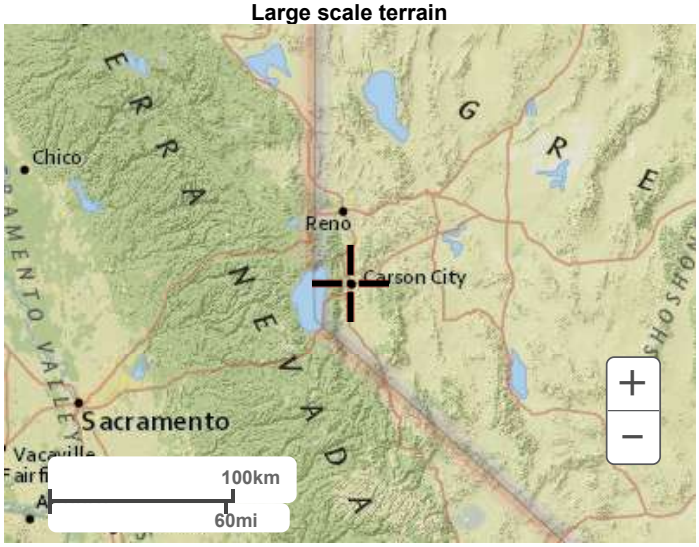
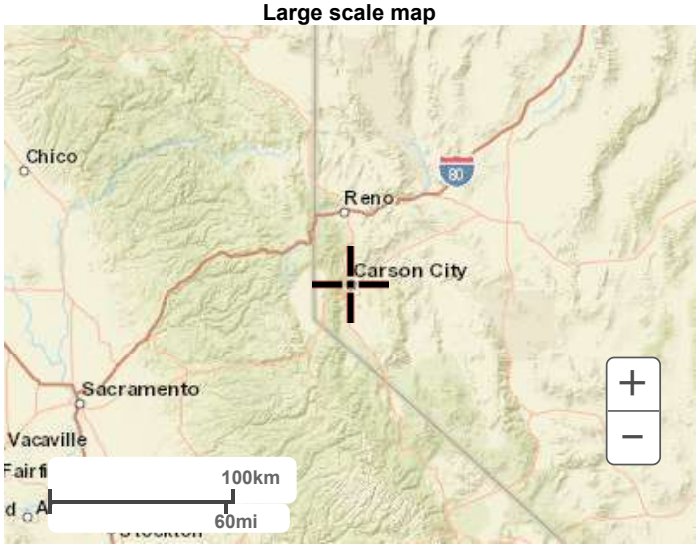
Maps & aerials

Small scale terrain

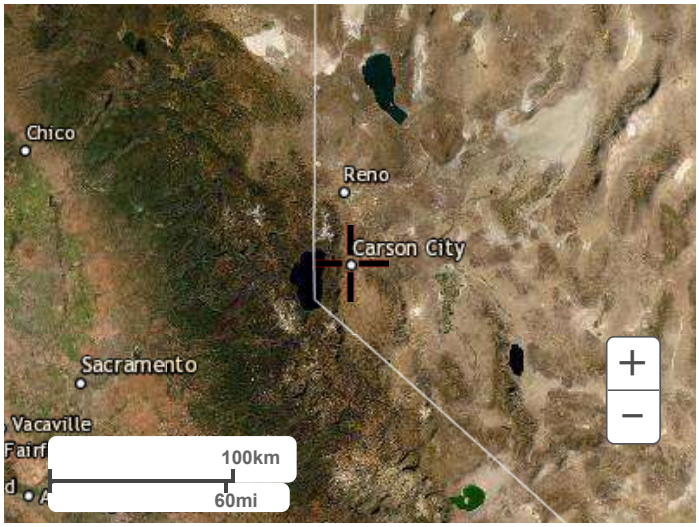
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

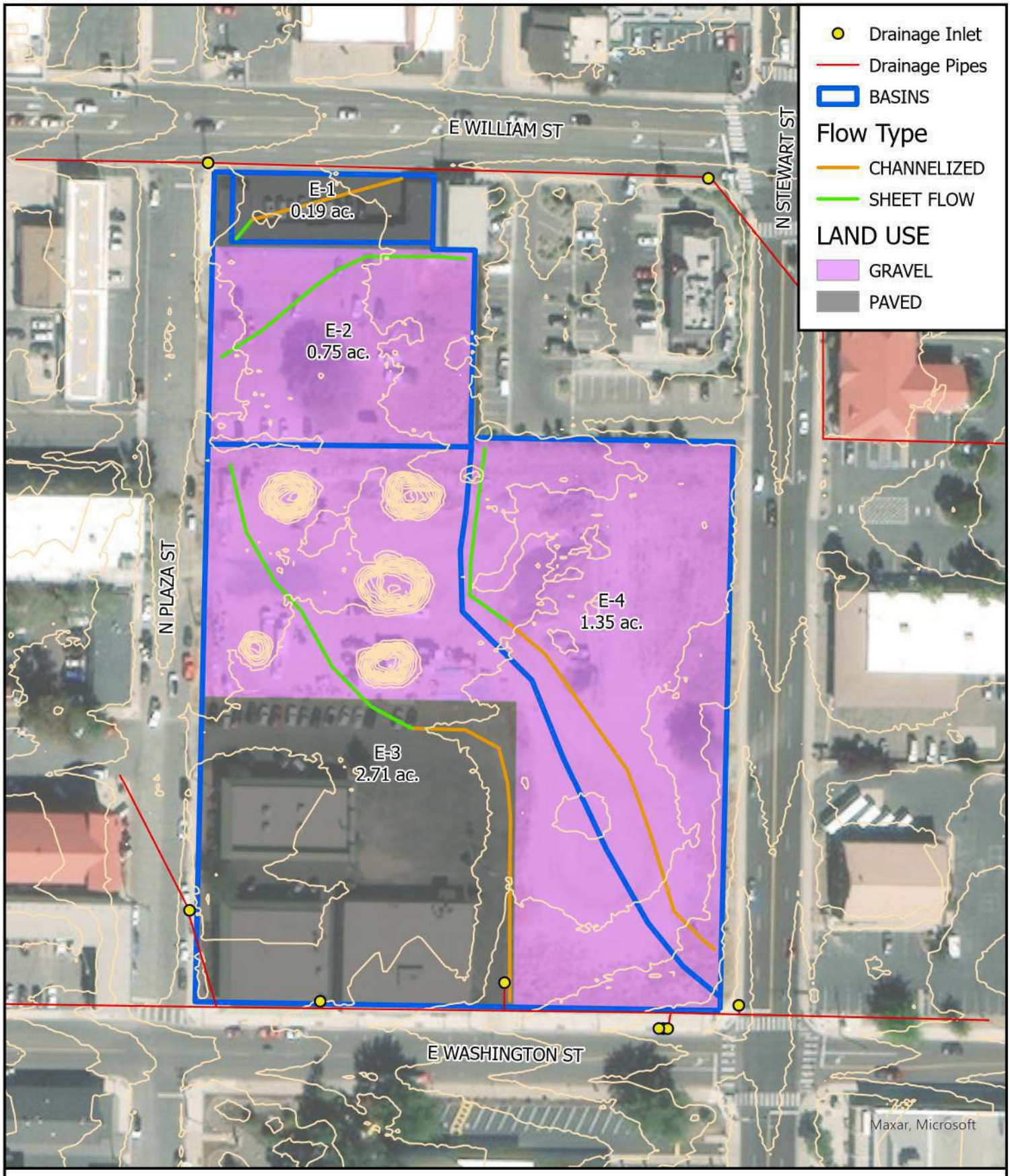
RATIONAL FORMULA METHOD
RUNOFF COEFFICIENTS

Land Use or Surface Characteristics	Aver. % Impervious Area	Runoff Coefficients 5-Year (C_5)	Runoff Coefficients 100-Year (C_{100})
Business/Commercial:			
Downtown Areas	85	.82	.85
Neighborhood Areas	70	.65	.80
Residential:			
(Average Lot Size)			
⅛ Acre or Less (Multi-Unit)	65	.60	.78
¼ Acre	38	.50	.65
⅛ Acre	30	.45	.60
½ Acre	25	.40	.55
1 Acre	20	.35	.50
Industrial:	72	.68	.82
Open Space:			
(Lawns, Parks, Golf Courses)	5	.05	.30
Undeveloped Areas:			
Range	0	.20	.50
Forest	0	.05	.30
Streets/Roads:			
Paved	100	.88	.93
Gravel	20	.25	.50
Drives/Walks:	95	.87	.90
Roof:	90	.85	.87

Notes:

1. Composite runoff coefficients shown for Residential, Industrial, and Business/Commercial Areas assume irrigated grass landscaping for all pervious areas. For development with landscaping other than irrigated grass, the designer must develop project specific composite runoff coefficients from the surface characteristics presented in this table.

VERSION: April 30, 2009	REFERENCE:	TABLE
WRC ENGINEERING, INC.	USDCM, DROCOG, 1969 (with modifications)	701



EXISTING HYDROLOGY EXHIBIT

THE ALTAIR

CARSON CITY, NV

DECEMBER 2021

0 50 100 200

Feet

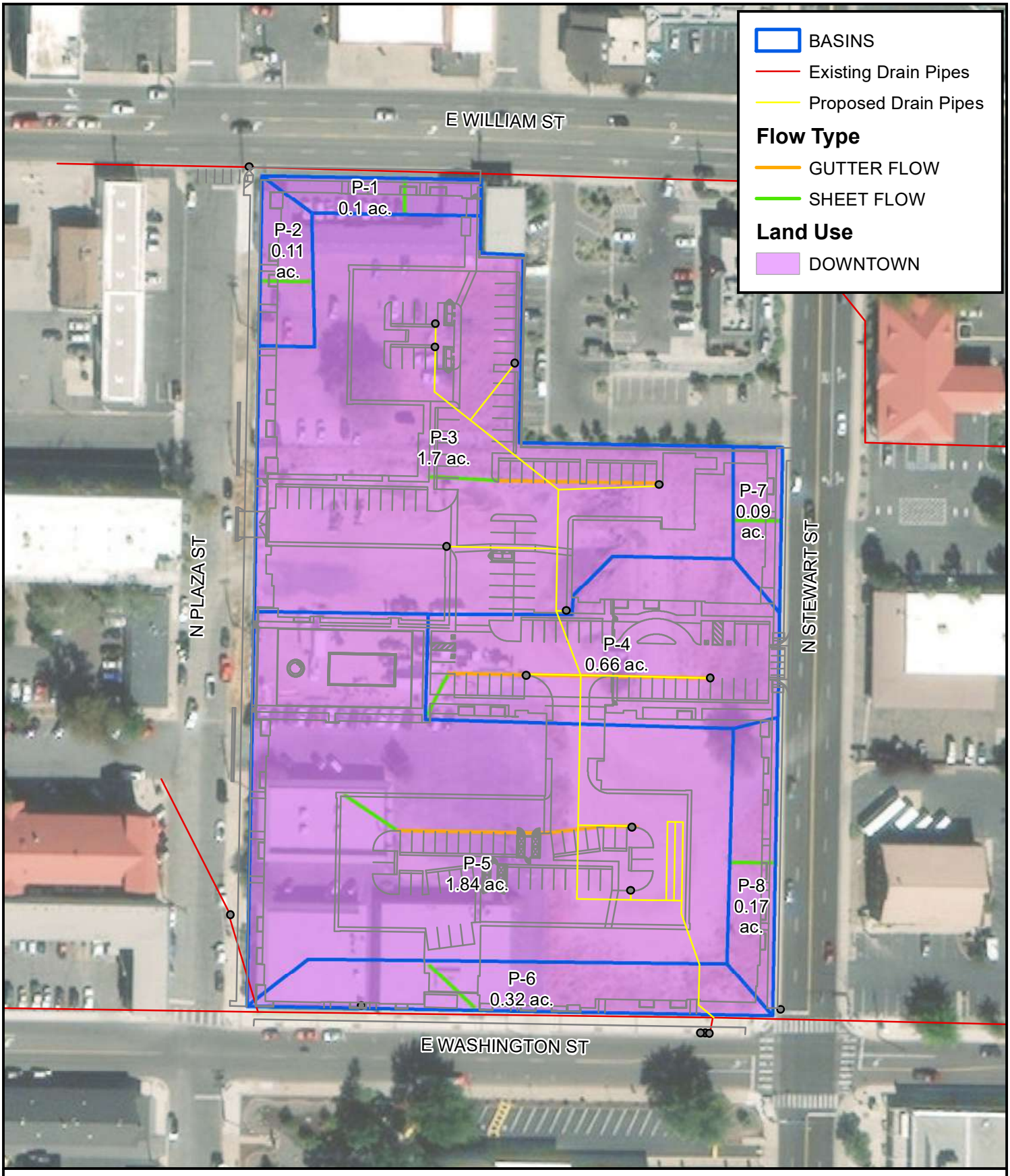
NORTH

WOOD RODGERS

J:\Jobs\4104_Williams_ST\Williams_ST_OA\GIS\ArcGIS_Pro\Sewer_Study_20211102_V1\Sewer_Study_20211102_V1.aprx 12/13/2021 10:47 AM sbarrow

TIME OF CONCENTRATION													10-YEAR STORM EVENT	
Drainage Basin	Drainage Area (AC)	Weighted Average C-Factor $_{10\text{-Year}}$	Initial Flow Time, T_i			Travel Time, T_t				Total (T_i+T_t)	Urbanized Basins Check	Final	NOAA ATLAS 14 Rainfall Intensity	Rational Flow
			Overland Flow			Channelized Flow								
			L_i (ft)	S (ft/ft)	T_i (min)	L_s(ft)	S (ft/ft)	V(ft/s)	T_{t1} (min)	T_c (min)	T_c*(min)	T_c (min)	$I10_{\text{-year}}$ (in/hour)	$Q_{10\text{-year}}$ (cfs)
E-1	0.19	0.88	19	0.0100	1.7	120	0.0100	1.6	1.2	5.0	10.8	**5.0**	**2.39**	**0.4**
E-2	0.75	0.28	213	0.0100	21.6					21.6	11.2	**11.2**	**1.74**	**0.4**
E-3	2.71	0.56	256	0.0100	15.6	268	0.0100	1.6	2.8	18.4	12.9	**12.9**	**1.63**	**2.5**
E-4	1.35	0.25	151	0.0100	18.8	306	0.0100	1.6	3.2	21.9	12.5	**12.5**	**1.66**	**0.6**

TIME OF CONCENTRATION													100-YEAR STORM EVENT	
Drainage Basin	Drainage Area (AC)	Weighted Average C-Factor $_{100\text{-Year}}$	Initial Flow Time, T_i			Travel Time, T_t				Total (T_i+T_t)	Urbanized Basins Check	Final	NOAA ATLAS 14 Rainfall Intensity	Rational Flow
			Overland Flow			Channelized Flow								
			L_i (ft)	S (ft/ft)	T_i (min)	L_s(ft)	S (ft/ft)	V(ft/s)	T_{t1} (min)	T_c (min)	T_c*(min)	T_c (min)	$I_{100\text{-year}}$ (in/hour)	$Q_{100\text{-year}}$ (cfs)
E-1	0.19	0.93	19	0.0100	1.3	120	0.0100	1.6	1.2	5.0	10.8	**5.0**	**4.67**	**0.8**
E-2	0.75	0.52	213	0.0100	15.2					15.2	11.2	**11.2**	**3.41**	**1.3**
E-3	2.71	0.71	256	0.0100	11.2	268	0.0100	1.6	2.8	14.0	12.9	**12.9**	**3.19**	**6.2**
E-4	1.35	0.50	151	0.0100	13.3	306	0.0100	1.6	3.2	16.4	12.5	**12.5**	**3.24**	**2.2**



PROPOSED HYDROLOGY EXHIBIT
THE ALTAIR
CARSON CITY, NV
DECEMBER 2021

NORTH

0 50 100
FEET

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Boulevard
Reno, NV 89502
Tel: 775.823.4068
Fax: 775.823.4066

TIME OF CONCENTRATION													2-YEAR STORM EVENT	
Drainage Basin	Drainage Area (AC)	Weighted Average C-Factor $_{2\text{-Year}}$	Initial Flow Time, T_i			Travel Time, T_t				Total (T_i+T_t)	Urbanized Basins Check	Final	NOAA ATLAS 14 Rainfall Intensity	Rational Flow
			Overland Flow			Gutter Flow								
			L_i (ft)	S (ft/ft)	T_i (min)	L_t (ft)	S (ft/ft)	V (ft/s)	T_{t2} (min)	T_c (min)	T_c*(min)	T_c (min)	$I2_{\text{-year}}$ (in/hour)	$Q2_{\text{-year}}$ (cfs)
P-1	0.10	0.82	25	0.0200	2.0					5.0	10.1	**5.0**	**1.44**	**0.1**
P-2	0.11	0.82	38	0.0200	2.5					5.0	10.2	**5.0**	**1.44**	**0.1**
P-3	1.70	0.82	54	0.0400	2.3	123	0.0100	2.0	1.0	5.0	11.0	**5.0**	**1.44**	**2.0**
P-4	0.66	0.82	36	0.0200	2.4	252	0.0080	1.8	2.3	5.0	11.6	**5.0**	**1.44**	**0.8**
P-5	1.84	0.82	49	0.0200	2.8	185	0.0100	2.0	1.5	5.0	11.3	**5.0**	**1.44**	**2.2**
P-6	0.32	0.82	47	0.0300	2.4					5.0	10.3	**5.0**	**1.44**	**0.4**
P-7	0.09	0.82	35	0.0200	2.4					5.0	10.2	**5.0**	**1.44**	**0.1**
P-8	0.17	0.82	32	0.0200	2.3					5.0	10.2	**5.0**	**1.44**	**0.2**

WOOD RODGERS

TIME OF CONCENTRATION													10-YEAR STORM EVENT	
Drainage Basin	Drainage Area (AC)	Weighted Average C-Factor $_{10\text{-Year}}$	Initial Flow Time, T_i			Travel Time, T_t				Total (T_i+T_t)	Urbanized Basins Check	Final	NOAA ATLAS 14 Rainfall Intensity	Rational Flow
			Overland Flow			Gutter Flow								
			L_i (ft)	S (ft/ft)	T_i (min)	L_t (ft)	S (ft/ft)	V (ft/s)	T_{t2} (min)	T_c (min)	T_c*(min)	T_c (min)	$I10_{\text{-year}}$ (in/hour)	$Q10_{\text{-year}}$ (cfs)
P-1	0.10	0.82	25	0.0200	2.0					5.0	10.1	**5.0**	**2.39**	**0.2**
P-2	0.11	0.82	38	0.0200	2.5					5.0	10.2	**5.0**	**2.39**	**0.2**
P-3	1.70	0.82	54	0.0400	2.3	123	0.0100	2.0	1.0	5.0	11.0	**5.0**	**2.39**	**3.3**
P-4	0.66	0.82	36	0.0200	2.4	252	0.0080	1.8	2.3	5.0	11.6	**5.0**	**2.39**	**1.3**
P-5	1.84	0.82	49	0.0200	2.8	185	0.0100	2.0	1.5	5.0	11.3	**5.0**	**2.39**	**3.6**
P-6	0.32	0.82	47	0.0300	2.4					5.0	10.3	**5.0**	**2.39**	**0.6**
P-7	0.09	0.82	35	0.0200	2.4					5.0	10.2	**5.0**	**2.39**	**0.2**
P-8	0.17	0.82	32	0.0200	2.3					5.0	10.2	**5.0**	**2.39**	**0.3**

TIME OF CONCENTRATION													100-YEAR STORM EVENT	
Drainage Basin	Drainage Area (AC)	Weighted Average C-Factor $_{100\text{-Year}}$	Initial Flow Time, T_i			Travel Time, T_t				Total (T_i+T_t)	Urbanized Basins Check	Final	NOAA ATLAS 14 Rainfall Intensity	Rational Flow
			Overland Flow			Gutter Flow								
			L_i (ft)	S (ft/ft)	T_i (min)	L_t (ft)	S (ft/ft)	V (ft/s)	T_{t2} (min)	T_c (min)	T_c*(min)	T_c (min)	$I_{100\text{-year}}$ (in/hour)	$Q_{100\text{-year}}$ (cfs)
P-1	0.10	0.85	25	0.0200	1.8					5.0	10.1	**5.0**	**4.67**	**0.4**
P-2	0.11	0.85	38	0.0200	2.2					5.0	10.2	**5.0**	**4.67**	**0.4**
P-3	1.70	0.85	54	0.0400	2.1	123	0.0100	2.0	1.0	5.0	11.0	**5.0**	**4.67**	**6.8**
P-4	0.66	0.85	36	0.0200	2.2	252	0.0080	1.8	2.3	5.0	11.6	**5.0**	**4.67**	**2.6**
P-5	1.84	0.85	49	0.0200	2.5	185	0.0100	2.0	1.5	5.0	11.3	**5.0**	**4.67**	**7.3**
P-6	0.32	0.85	47	0.0300	2.2					5.0	10.3	**5.0**	**4.67**	**1.3**
P-7	0.09	0.85	35	0.0200	2.1					5.0	10.2	**5.0**	**4.67**	**0.4**
P-8	0.17	0.85	32	0.0200	2.0					5.0	10.2	**5.0**	**4.67**	**0.7**