

**Appendix D**  
**10 Year Horizon Background Plus**  
**Project Conditions LOS Calculations**

**Intersection Level Of Service Report**  
**Intersection 1: Longley Ln / Airway Dr**

Control Type:	Signalized	Delay (sec / veh):	33.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.689

**Intersection Setup**

Name	Longley Ln			Longley Ln			Double R Blvd			Airway Dr		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1		1	2		1	1		1	1		1
Pocket Length [ft]	180.00		140.00	300.00		140.00	250.00		250.00	250.00		250.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Longley Ln			Longley Ln			Double R Blvd			Airway Dr		
Base Volume Input [veh/h]	110	426	24	801	512	89	51	324	546	102	411	101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	40	40	26	55	66	0	5	0	0	0	48	73
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]			0			0			0			0
Total Hourly Volume [veh/h]	161	509	52	936	629	98	61	356	601	112	500	184
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	151	15	279	187	0	18	106	0	33	149	55
Total Analysis Volume [veh/h]	192	606	62	1114	749	0	73	424	0	133	595	219
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]												
Local Bus Stopping Rate [/h]			0			0			0			0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	
Cycle Length [s]	145
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	11	1	6	11	3	8	11	7	4	11
Auxiliary Signal Groups												
Lead / Lag	Lead			Lead			Lead			Lead		
Minimum Green [s]	6	8	11	6	8	11	6	6	11	6	6	11
Maximum Green [s]	36	35	11	35	35	11	25	30	11	25	30	11
Amber [s]	3.5	4.7	11	3.5	4.7	11	3.5	4.0	11	3.5	4.0	11
All red [s]	0.5	1.0	11	1.5	1.0	11	0.5	1.0	11	0.5	1.0	11
Split [s]	40	41	11	40	41	11	29	35	11	29	35	11
Vehicle Extension [s]	2.5	2.0	11	3.0	2.0	11	2.5	2.5	11	2.5	2.5	11
Walk [s]	7	7	11	7	7	11	7	7	11	7	7	11
Pedestrian Clearance [s]	23	23	11	21	21	11	28	28	11	28	28	11
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	11	2.0	2.0	11	2.0	2.0	11	2.0	2.0	11
I2, Clearance Lost Time [s]	2.0	3.7	11	3.0	3.7	11	2.0	3.0	11	2.0	3.0	11
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	11	11	11	11	11	11	11	11	11	11	11	11
Detector Length [ft]	11	11	11	11	11	11	11	11	11	11	11	11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	91	91	91	91	91	91	91	91	91	91	91	91
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	5.00	5.70	5.70	4.00	5.00	5.00	4.00	5.00	5.00
I1_p, Permitted Start-Up Lost Time [s]												
I2, Clearance Lost Time [s]	2.00	3.70	3.70	3.00	3.70	3.70	2.00	3.00	3.00	2.00	3.00	3.00
g_i, Effective Green Time [s]	13	14	14	34	37	37	5	13	13	9	17	17
g / C, Green / Cycle	0.14	0.16	0.16	0.38	0.41	0.41	0.06	0.14	0.14	0.10	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.12	0.13	0.04	0.36	0.23	0.00	0.05	0.09	0.00	0.08	0.13	0.15
s, saturation flow rate [veh/h]	1603	4584	1431	3113	3204	1431	1603	4584	1431	1603	4584	1431
c, Capacity [veh/h]	227	734	229	1178	1306	583	92	653	204	164	857	267
d1, Uniform Delay [s]	37.99	36.91	33.48	27.33	20.79	0.00	42.25	36.80	0.00	39.92	34.49	35.44
k, delay calibration	0.08	0.04	0.04	0.11	0.04	0.04	0.08	0.08	0.08	0.08	0.08	0.08
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.32	0.92	0.23	4.82	0.15	0.00	10.57	0.81	0.00	7.04	0.76	4.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.84	0.83	0.27	0.95	0.57	0.00	0.79	0.65	0.00	0.81	0.69	0.82
d, Delay for Lane Group [s/veh]	44.32	37.83	33.71	32.15	20.94	0.00	52.82	37.61	0.00	46.96	35.25	40.06
Lane Group LOS	D	D	C	C	C	A	D	D	A	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh]	4.48	4.31	1.20	11.86	5.90	0.00	1.87	2.96	0.00	3.18	4.07	4.89
50th-Percentile Queue Length [ft]	112.06	107.81	29.95	296.45	147.57	0.00	46.63	74.05	0.00	79.50	101.69	122.24
95th-Percentile Queue Length [veh]	7.95	7.72	2.16	17.51	9.89	0.00	3.36	5.33	0.00	5.72	7.32	8.52
95th-Percentile Queue Length [ft]	198.87	192.95	53.92	437.64	247.18	0.00	83.93	133.28	0.00	143.10	183.05	212.91

**Movement, Approach, & Intersection Results**

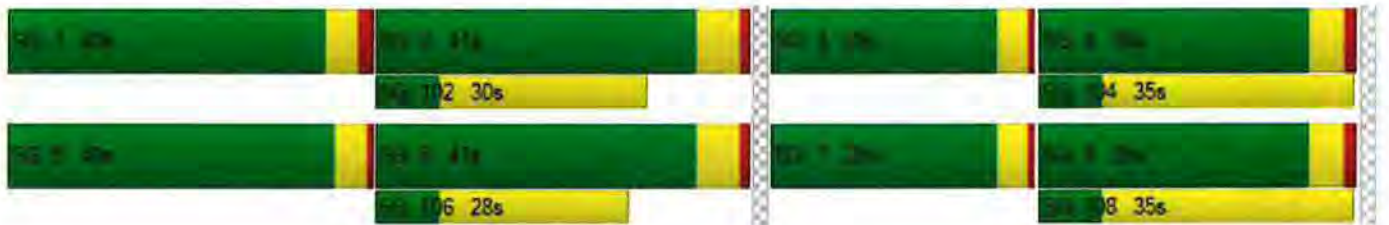
d_M, Delay for Movement [s/veh]	44.32	37.83	33.71	32.15	20.94	0.00	52.82	37.61	0.00	46.96	35.25	40.06
Movement LOS	D	D	C	C	C	A	D	D	A	D	D	D
d_A, Approach Delay [s/veh]	38.98			27.64			39.84			38.01		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	33.79											
Intersection LOS	C											
Intersection V/C	0.689											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	61.92			61.92			61.92			61.92		
I_p,int, Pedestrian LOS Score for Intersection	2.881			3.065			3.025			2.939		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	487			487			414			414		
d_b, Bicycle Delay [s]	41.50			41.50			45.60			45.60		
I_b,int, Bicycle LOS Score for Intersection	2.033			3.097			1.833			2.080		
Bicycle LOS	B			C			A			B		

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 2: Double R Blvd/Reno Corporate Drive/Project Access**

Control Type:	Two-way stop	Delay (sec / veh):	2,273.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Double R Blvd											
Approach	Northbound			Southbound			Eastbound			Southwestbound		
Lane Configuration	↵↵↵			↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00			12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1		1	1		1			0	0		0
Pocket Length [ft]	220.00		70.00	170.00		110.00						
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Double R Blvd											
Base Volume Input [veh/h]	0	907	44	73	1163	0			0	36	0	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000			1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00			2.00	2.00	2.00	2.00
Growth Rate	1.10	1.10	1.10	1.10	1.10	1.10			1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0			0	0	0	0
Site-Generated Trips [veh/h]	91	5	0	0	32	98			27	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0			0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0			0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0			0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0			0	0	0	0
Total Hourly Volume [veh/h]	91	1003	48	80	1311	98			27	36	0	14
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400			0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000			1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	299	14	24	390	29			8	11	0	4
Total Analysis Volume [veh/h]	108	1194	57	95	1561	117			32	43	0	17
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]				
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median				

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.29	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.09	3.87	0.00	0.04
d_M, Delay for Movement [s/veh]	18.29	0.00	0.00	12.87	0.00	0.00	0.00	0.00	16.77	1899.48	2273.52	1583.64
Movement LOS	C	A	A	B	A	A			C	F	F	F
95th-Percentile Queue Length [veh]	1.16	0.00	0.00	0.62	0.00	0.00	0.00	0.00	0.31	8.29	8.29	8.29
95th-Percentile Queue Length [ft]	29.01	0.00	0.00	15.42	0.00	0.00	0.00	0.00	7.78	207.33	207.33	207.33
d_A, Approach Delay [s/veh]	1.45			0.69			16.77			1809.99		
Approach LOS	A			A			C			F		
d_I, Intersection Delay [s/veh]	34.84											
Intersection LOS	F											

**Intersection Level Of Service Report**  
**Intersection 3: Longley Lane/Innovation Dr**

Control Type:	Two-way stop	Delay (sec / veh):	340.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Innovation Dr			Innovation Dr			Longley Ln			Longley Ln		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	1	0	0	1	0	0
Pocket Length [ft]	200.00	200.00	200.00	200.00	200.00	200.00	200.00	200.00	200.00	200.00	200.00	200.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

**Volumes**

Name	Innovation Dr			Innovation Dr			Longley Ln			Longley Ln		
Base Volume Input [veh/h]	1	0	6	3	0	6	36	553	7	45	611	8
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.10	1.10	1.10	1.10	1.10	1.10
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	47	0	41	0	75	70	58	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	6	50	0	47	40	683	78	108	672	9
Peak Hour Factor	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100	0.8100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	2	15	0	15	12	211	24	33	207	3
Total Analysis Volume [veh/h]	1	0	7	62	0	58	49	843	96	133	830	11
Pedestrian Volume [ped/h]	0			0								

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.02	0.00	0.01	1.22	0.00	0.11	0.06	0.03	0.03	0.18	0.11	0.01
d_M, Delay for Movement [s/veh]	77.43	102.60	11.67	319.82	340.33	255.71	9.86	6.30	11.97	11.07	11.74	10.80
Movement LOS	F	F	B	F	F	F	A	A	A	B	A	A
95th-Percentile Queue Length [veh]	0.10	0.10	0.10	8.80	8.80	8.80	0.20	0.00	0.00	0.67	0.00	0.00
95th-Percentile Queue Length [ft]	2.47	2.47	2.47	220.04	220.04	220.04	4.95	0.00	0.00	16.68	0.00	0.00
d_A, Approach Delay [s/veh]	19.89			288.63			0.49			1.51		
Approach LOS	C			F			A			A		
d_I, Intersection Delay [s/veh]	17.60											
Intersection LOS	F											

**Intersection Level Of Service Report**  
**Intersection 4: Innovation Drive/Double R Blvd**

Control Type:	Two-way stop	Delay (sec / veh):	18.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.135

**Intersection Setup**

Name	Northbound		Southbound		Innovation Dr Eastbound	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration			T		T	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]						
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Northbound		Southbound		Innovation Dr Eastbound	
Base Volume Input [veh/h]	951	1201	3		22	
Base Volume Adjustment Factor	1.0000	1.0000	1.0000		1.0000	
Heavy Vehicles Percentage [%]	2.00	2.00	2.00		2.00	
Growth Rate	1.10	1.10	1.10		1.00	
In-Process Volume [veh/h]	0	0	0		0	
Site-Generated Trips [veh/h]	96	19	40		13	
Diverted Trips [veh/h]	0	0	0		0	
Pass-by Trips [veh/h]	0	0	0		0	
Existing Site Adjustment Volume [veh/h]	0	0	0		0	
Other Volume [veh/h]	0	0	0		0	
Total Hourly Volume [veh/h]	1142	1340	43		35	
Peak Hour Factor	0.8300	0.8300	0.8300		0.8300	
Other Adjustment Factor	1.0000	1.0000	1.0000		1.0000	
Total 15-Minute Volume [veh/h]	344	404	13		11	
Total Analysis Volume [veh/h]	1376	1614	52		42	
Pedestrian Volume [ped/h]	0	0	0		0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]			
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median			

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.13	0.13	0.13	0.13	0.13	0.13
d_M, Delay for Movement [s/veh]	18.33	18.33	18.33	18.33	18.33	18.33
Movement LOS	A	A	A	A	A	C
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.46
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	11.52
d_A, Approach Delay [s/veh]	0.00		0.00		18.33	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]				0.25		
Intersection LOS				C		

**Intersection Level Of Service Report**  
**Intersection 5: Innovation Dr/Project Dwy #1**

Control Type:	Two-way stop	Delay (sec / veh):	11.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Northbound			Southbound			Innovation Dr Eastbound			Innovation Dr Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]												
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Innovation Dr Eastbound			Innovation Dr Westbound		
Base Volume Input [veh/h]	6	0	15	0	0	0	0	21	31	0	3	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	2	0	35	14	113	0	0	53	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	6	0	15	2	0	35	14	134	31	0	56	0
Peak Hour Factor	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400	0.8400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	2	0	4	1	0	10	4	40	9	0	17	0
Total Analysis Volume [veh/h]	7	0	18	2	0	42	17	160	37	0	67	0
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]				
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median				

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.02	0.00	0.00	0.04	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	10.98	10.95	9.32	10.77	11.11	8.79	7.37	7.62	7.62	7.62	0.00	0.00
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.10	0.10	0.10	0.14	0.14	0.14	0.48	0.48	0.48	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	2.49	2.49	2.49	3.55	3.55	3.55	12.12	12.12	12.12	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.78			8.88			0.59			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	2.17											
Intersection LOS	B											

**Intersection Level Of Service Report**  
**Intersection 6: Innovation Dr/Project Dwy #2**

Control Type:	Two-way stop	Delay (sec / veh):	12.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Northbound			Southbound			Innovation Dr Eastbound			Innovation Dr Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0		0	0		0	0		0	0		0
Pocket Length [ft]												
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Innovation Dr Eastbound			Innovation Dr Westbound		
Base Volume Input [veh/h]	2	0	5	0	0	0	0	24	12	1	1	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	8	0	32	99	17	0	0	21	29
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	0	5	8	0	32	99	41	12	1	22	29
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	2	2	0	10	30	13	4	0	7	9
Total Analysis Volume [veh/h]	2	0	6	10	0	39	121	50	15	1	27	35
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]				
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median				

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.02	0.00	0.04	0.08	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	11.80	11.99	8.61	11.62	12.10	8.75	7.54	7.34	7.34	7.34	7.34	7.34
Movement LOS	B	B	A	B	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.03	0.03	0.03	0.18	0.18	0.18	0.41	0.41	0.41	0.13	0.13	0.13
95th-Percentile Queue Length [ft]	0.73	0.73	0.73	4.42	4.42	4.42	10.27	10.27	10.27	3.20	3.20	3.20
d_A, Approach Delay [s/veh]	9.41			9.34			4.90			0.12		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	4.74											
Intersection LOS	B											

**Intersection Level Of Service Report**  
**Intersection 7: Innovation Dr/Project Dwy #3**

Control Type:	Two-way stop	Delay (sec / veh):	9.9
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Northbound			Southbound			Innovation Dr Eastbound			Innovation Dr Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Innovation Dr Eastbound			Innovation Dr Westbound		
Base Volume Input [veh/h]	1	0	2	0	0	0	0	20	9	2	1	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	3	0	9	15	10	0	0	40	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	0	2	3	0	9	15	30	9	2	41	0
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200	0.8200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	1	0	3	5	9	3	1	13	0
Total Analysis Volume [veh/h]	1	0	2	4	0	11	18	37	11	2	50	0
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]				
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median				

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	9.43	9.82	8.51	9.41	9.90	8.59	7.34	7.31	7.31	7.31	7.31	7.31
Movement LOS	A	A	A	A	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.01	0.01	0.01	0.05	0.05	0.05	0.13	0.13	0.13	0.10	0.10	0.10
95th-Percentile Queue Length [ft]	0.24	0.24	0.24	1.19	1.19	1.19	3.32	3.32	3.32	2.59	2.59	2.59
d_A, Approach Delay [s/veh]	8.82			8.81			2.00			0.28		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	2.25											
Intersection LOS	A											

**Intersection Level Of Service Report**  
**Intersection 8: Longley Ln/Project Dwy #4**

Control Type:	Two-way stop	Delay (sec / veh):	11.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

**Intersection Setup**

Name	Longley Ln			Longley Ln								
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket			1	1		0			0			0
Pocket Length [ft]			125.00	200.00								
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Longley Ln			Longley Ln								
Base Volume Input [veh/h]	560	0	0	664	8			0			3	
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	
Growth Rate	1.10	1.00	1.00	1.10	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	
Site-Generated Trips [veh/h]	64	52	86	58	0			42			0	
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	
Total Hourly Volume [veh/h]	680	52	86	788	8			42			3	
Peak Hour Factor	0.8200	0.8200	0.8200	0.8200	1.0000	1.0000	1.0000	0.8200	1.0000	1.0000	0.8200	
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	
Total 15-Minute Volume [veh/h]	207	16	26	240	2			13			1	
Total Analysis Volume [veh/h]	829	63	105	961	8			51			4	
Pedestrian Volume [ped/h]								0			0	

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]				
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median				

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.13	0.00	0.00	0.00	0.09	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	10.19	0.00	0.00	0.00	11.72	11.87
Movement LOS		A	B	A	A		B	B
95th-Percentile Queue Length [veh]	0.00	0.00	0.45	0.00	0.00	0.00	0.28	0.02
95th-Percentile Queue Length [ft]	0.00	0.00	11.30	0.00	0.00	0.00	7.11	0.57
d_A, Approach Delay [s/veh]	0.00		1.00		11.72		11.87	
Approach LOS	A		A		B		B	
d_I, Intersection Delay [s/veh]	0.85							
Intersection LOS	B							

Option 1: Copy of Longley Ln / Airway Dr

Number	1											
Intersection	Longley Ln / Airway Dr											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name	Longley Ln			Longley Ln			Double R Blvd			Airway Dr		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration	[Diagram]			[Diagram]			[Diagram]			[Diagram]		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	110	426	24	801	512	89	51	324	546	102	411	101
Total Analysis Volume [veh/h]	192	606	62	1114	749	0	73	424	0	133	595	219

Intersection Settings

Cycle Length [s]	145											
Coordination Type	Time of Day Pattern Isolated											
Actuation Type	Fully actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	1	1	6	3	3	8	7	7	4	1
Auxiliary Signal Groups												
Lead / Lag	Lead			Lead			Lead			Lead		
Minimum Green [s]	6	8	6	6	8	6	6	6	6	6	6	6
Maximum Green [s]	36	35	35	35	35	25	25	30	25	25	30	30
Amber [s]	3.5	4.7	3.5	3.5	4.7	3.5	3.5	4.0	3.5	3.5	4.0	3.5
All red [s]	0.5	1.0	1.5	1.5	1.0	0.5	0.5	1.0	0.5	0.5	1.0	0.5
Split [s]	40	41	40	40	41	29	29	35	29	29	35	35
Walk [s]		7	7		7	7		7	7		7	7
Pedestrian Clearance [s]		23	21		21	28		28	28		28	28
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Minimum Recall	No	Yes	No	No	Yes	No	No	No	No	No	No	No
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	No
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.09	0.16	0.16	0.38	0.46	0.46	0.06	0.14	0.14	0.10	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.06	0.13	0.04	0.36	0.23	0.00	0.05	0.09	0.00	0.08	0.13	0.15
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3113	4584	1431	3113	3204	1431	1603	4584	1431	1603	4584	1431
c, Capacity [veh/h]	268	733	229	1178	1485	663	92	652	204	163	856	267
X, volume / capacity	0.72	0.83	0.27	0.95	0.50	0.00	0.79	0.65	0.00	0.81	0.69	0.82
d, Delay for Lane Group [s/veh]	43.00	37.76	33.65	32.08	17.13	0.00	52.87	37.54	0.00	46.95	35.19	40.02
Lane Group LOS	D	D	C	C	B	A	D	D	A	D	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes

50th-Percentile Queue Length [veh]	2.15	4.30	1.20	11.83	5.20	0.00	1.86	2.96	0.00	3.18	4.06	4.88
50th-Percentile Queue Length [ft]	53.84	107.62	29.90	295.86	130.03	0.00	46.62	73.91	0.00	79.43	101.51	122.08
95th-Percentile Queue Length [veh]	3.88	7.71	2.15	17.48	8.94	0.00	3.36	5.32	0.00	5.72	7.31	8.51
95th-Percentile Queue Length [ft]	96.92	192.69	53.82	436.91	223.54	0.00	83.91	133.05	0.00	142.97	182.72	212.67

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	43.00	37.76	33.85	32.08	17.13	0.00	52.87	37.54	0.00	46.95	35.19	40.02
Movement LOS	D	D	C	C	B	A	D	D	A	D	D	D
Critical Movement	No	No	No	No	No	No	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	38.64			26.07			39.79			37.96		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	33.00											
Intersection LOS	C											
Intersection V/C	0.689											

Option 1: Mitigation\_Longley Lane/Innovation Dr

Number	3											
Intersection	Longley Lane/Innovation Dr											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name	Innovation Dr			Innovation Dr			Longley Ln			Longley Ln		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration	T			T			T T			T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	1	0	6	3	0	6	36	553	7	45	611	8
Total Analysis Volume [veh/h]	1	0	7	62	0	58	49	843	96	133	830	11

Intersection Settings

Cycle Length [s]	60											
Coordination Type	Time of Day Pattern Isolated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group		8			4		5	2		1	6	
Auxiliary Signal Groups												
Lead / Lag							Lead			Lead		
Minimum Green [s]		5			5		5	5		5	5	
Maximum Green [s]		30			30		30	30		30	30	
Amber [s]		3.0			3.0		3.0	3.0		3.0	3.0	
All red [s]		1.0			1.0		1.0	1.0		1.0	1.0	
Split [s]		30			30		9	21		9	21	
Walk [s]		7			7			7			7	
Pedestrian Clearance [s]		19			19			10			10	
l1, Start-Up Lost Time [s]		2.0			2.0		2.0	2.0		2.0	2.0	
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.08	0.08	0.08	0.05	0.64	0.64	0.08	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.01	0.05	0.04	0.03	0.28	0.28	0.08	0.25	0.25
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3	3			3			3	
s, saturation flow rate [veh/h]	928	1267	1431	1603	1683	1623	1603	1683	1675
c, Capacity [veh/h]	139	134	111	75	1076	1038	134	1137	1132
X, volume / capacity	0.06	0.46	0.52	0.65	0.44	0.44	1.00	0.37	0.37
d, Delay for Lane Group [s/veh]	25.86	29.47	30.38	37.34	6.79	6.84	62.66	5.14	5.14
Lane Group LOS	C	C	C	D	A	A	E	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No

50th-Percentile Queue Length [veh]	0.11	0.91	0.87	0.85	2.49	2.42	3.10	1.71	1.71
50th-Percentile Queue Length [ft]	2.68	22.77	21.78	21.24	62.26	60.40	77.56	42.81	42.64
95th-Percentile Queue Length [veh]	0.19	1.64	1.57	1.53	4.48	4.35	5.58	3.08	3.07
95th-Percentile Queue Length [ft]	4.82	40.98	39.20	38.23	112.06	108.72	139.61	77.05	76.76

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	25.86	25.86	25.86	29.47	30.38	30.38	37.34	6.81	6.84	62.66	5.14	5.14
Movement LOS	C	C	C	C	C	C	D	A	A	E	A	A
Critical Movement	No	No	No	No	No	No	No	No	No	Yes	No	No
d_A, Approach Delay [s/veh]	25.86			29.91			8.33			13.00		
Approach LOS	C			C			A			B		
d_I, Intersection Delay [s/veh]	11.81											
Intersection LOS	B											
Intersection V/C	0.416											

**Intersection Level Of Service Report**  
**Intersection 1: Longley Ln / Airway Dr**

Control Type:	Signalized	Delay (sec / veh):	52.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.788

**Intersection Setup**

Name	Longley Ln			Longley Ln			Double R Blvd			Airway Dr		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1		1	2		1	1		1	1		1
Pocket Length [ft]	180.00		140.00	300.00		140.00	250.00		250.00	250.00		250.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Longley Ln			Longley Ln			Double R Blvd			Airway Dr		
Base Volume Input [veh/h]	149	483	15	659	573	52	58	711	958	205	390	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	141	141	19	28	34	0	3	0	0	0	25	37
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]			0			0			0			0
Total Hourly Volume [veh/h]	305	672	36	753	664	57	67	782	1054	226	454	146
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	85	187	10	209	184	0	19	217	0	63	126	41
Total Analysis Volume [veh/h]	339	747	40	837	738	0	74	869	0	251	504	162
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]												
Local Bus Stopping Rate [/h]			0			0			0			0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

**Intersection Settings**

Located in CBD	Yes
Signal Coordination Group	
Cycle Length [s]	145
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

**Phasing & Timing**

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	11	1	6	10	3	8	11	7	4	10
Auxiliary Signal Groups												
Lead / Lag	Lead			Lead			Lead			Lead		
Minimum Green [s]	6	8	10	6	8	10	6	6	10	6	6	10
Maximum Green [s]	36	35	10	35	35	10	25	30	10	25	30	10
Amber [s]	3.5	4.7	100	3.5	4.7	100	3.5	4.0	100	3.5	4.0	100
All red [s]	0.5	1.0	100	1.5	1.0	100	0.5	1.0	100	0.5	1.0	100
Split [s]	40	41	10	40	41	10	29	35	10	29	35	10
Vehicle Extension [s]	2.5	2.0	100	3.0	2.0	100	2.5	2.5	100	2.5	2.5	100
Walk [s]		7	10		7	10		7	10		7	10
Pedestrian Clearance [s]		23	10		21	10		28	10		28	10
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	100	2.0	2.0	100	2.0	2.0	100	2.0	2.0	100
I2, Clearance Lost Time [s]	2.0	3.7	100	3.0	3.7	100	2.0	3.0	100	2.0	3.0	100
Minimum Recall	No	Yes		No	Yes		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	100	100	100	100	100	100	100	100	100	100	100	100
Detector Length [ft]	100	100	100	100	100	100	100	100	100	100	100	100
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Exclusive Pedestrian Phase**

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

**Lane Group Calculations**

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	127	127	127	127	127	127	127	127	127	127	127	127
L, Total Lost Time per Cycle [s]	4.00	5.70	5.70	5.00	5.70	5.70	4.00	5.00	5.00	4.00	5.00	5.00
l1_p, Permitted Start-Up Lost Time [s]	1.00	3.00	3.00	0.50	3.00	3.00	1.00	2.00	2.00	0.50	3.00	3.00
l2, Clearance Lost Time [s]	2.00	3.70	3.70	3.00	3.70	3.70	2.00	3.00	3.00	2.00	3.00	3.00
g_i, Effective Green Time [s]	29	24	24	35	31	31	7	27	27	22	41	41
g / C, Green / Cycle	0.23	0.19	0.19	0.28	0.25	0.25	0.06	0.21	0.21	0.17	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.21	0.16	0.03	0.27	0.23	0.00	0.05	0.19	0.00	0.16	0.11	0.11
s, saturation flow rate [veh/h]	1603	4584	1431	3113	3204	1431	1603	4584	1431	1603	4584	1431
c, Capacity [veh/h]	363	867	270	857	787	351	92	960	299	274	1481	462
d1, Uniform Delay [s]	48.19	49.93	42.99	45.65	47.00	0.00	59.18	49.02	0.00	51.76	32.73	32.85
k, delay calibration	0.25	0.04	0.04	0.11	0.04	0.04	0.08	0.08	0.08	0.28	0.08	0.08
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	20.72	1.02	0.09	9.80	2.54	0.00	11.23	2.71	0.00	24.11	0.10	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

**Lane Group Results**

X, volume / capacity	0.93	0.86	0.15	0.98	0.94	0.00	0.80	0.91	0.00	0.91	0.34	0.35
d, Delay for Lane Group [s/veh]	68.91	50.95	43.09	55.45	49.55	0.00	70.41	51.73	0.00	75.86	32.83	33.19
Lane Group LOS	E	D	D	E	D	A	E	D	A	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	12.58	7.74	1.07	14.14	11.65	0.00	2.64	9.18	0.00	9.68	3.98	3.88
50th-Percentile Queue Length [ft]	314.41	193.39	26.64	353.43	291.30	0.00	66.07	229.40	0.00	241.95	99.40	96.96
95th-Percentile Queue Length [veh]	18.39	12.30	1.92	20.30	17.25	0.00	4.76	14.14	0.00	14.78	7.16	6.98
95th-Percentile Queue Length [ft]	459.81	307.43	47.96	507.59	431.25	0.00	118.92	353.59	0.00	369.50	178.93	174.52

**Movement, Approach, & Intersection Results**

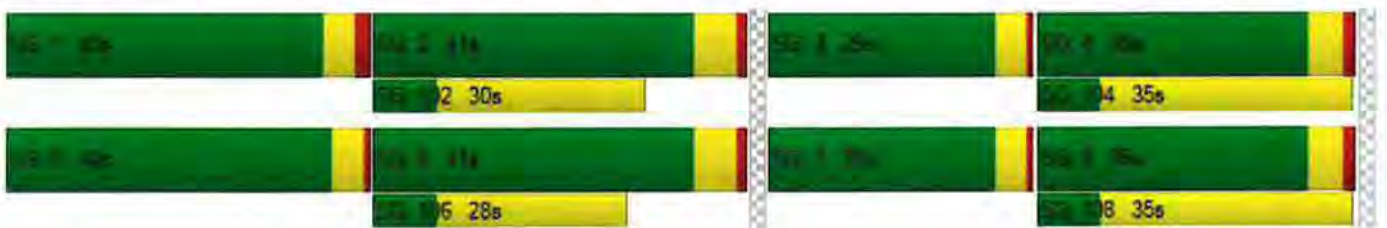
d_M, Delay for Movement [s/veh]	68.91	50.95	43.09	55.45	49.55	0.00	70.41	51.73	0.00	75.86	32.83	33.19
Movement LOS	E	D	D	E	D	A	E	D	A	E	C	C
d_A, Approach Delay [s/veh]	56.08			52.68			53.20			44.67		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	52.02											
Intersection LOS	D											
Intersection V/C	0.788											

**Other Modes**

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		11.0		11.0	
M_corner, Corner Circulation Area [ft <sup>2</sup> /ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft <sup>2</sup> /ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	61.92		61.92		61.92		61.92	
I_p,int, Pedestrian LOS Score for Intersection	2.909		3.062		3.031		3.007	
Crosswalk LOS	C		C		C		C	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	487		487		414		414	
d_b, Bicycle Delay [s]	41.50		41.50		45.60		45.60	
I_b,int, Bicycle LOS Score for Intersection	2.179		2.859		2.078		2.064	
Bicycle LOS	B		C		B		B	

**Sequence**

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



**Intersection Level Of Service Report**

**Intersection 2: Double R Blvd/Reno Corporate Drive/Project Access**

Control Type:	Two-way stop	Delay (sec / veh):	3,479.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Northbound			Double R Blvd Southbound			Eastbound			Southwestbound		
Approach	Northbound			Southbound			Eastbound			Southwestbound		
Lane Configuration	↵ ↵ ↵			↵ ↵ ↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00		12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1		1	1		1			0	0		0
Pocket Length [ft]	220.00		70.00	170.00		110.00						
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Double R Blvd Southbound			Eastbound			Southwestbound		
Base Volume Input [veh/h]	0	1649	24	13	1051	0			0	42	0	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Growth Rate	1.10	1.10	1.10	1.10	1.10	1.10	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0			0	0	0	0
Site-Generated Trips [veh/h]	47	3	0	0	23	49			79	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0			0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0			0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0			0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0			0	0	0	0
Total Hourly Volume [veh/h]	47	1817	26	14	1179	49			79	42	0	77
Peak Hour Factor	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300	0.9300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	488	7	4	317	13			21	11	0	21
Total Analysis Volume [veh/h]	51	1954	28	15	1268	53			85	45	0	83
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				No
Storage Area [veh]				
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median				

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.10	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.20	6.58	0.00	0.33
d_M, Delay for Movement [s/veh]	12.78	0.00	0.00	18.39	0.00	0.00	0.00	0.00	15.75	3404.65	3479.93	2892.57
Movement LOS	B	A	A	C	A	A			C	F	F	F
95th-Percentile Queue Length [veh]	0.33	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.75	16.58	16.58	16.58
95th-Percentile Queue Length [ft]	8.22	0.00	0.00	4.16	0.00	0.00	0.00	0.00	18.73	414.54	414.54	414.54
d_A, Approach Delay [s/veh]	0.32			0.21			15.75			3072.60		
Approach LOS	A			A			C			F		
d_I, Intersection Delay [s/veh]	110.43											
Intersection LOS	F											

**Intersection Level Of Service Report**  
**Intersection 3: Longley Lane/Innovation Dr**

Control Type:	Two-way stop	Delay (sec / veh):	686.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Innovation Dr			Innovation Dr			Longley Ln			Longley Ln		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration	T			T			↑↑			↑↑		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0		0	0		0	1		0	1		0
Pocket Length [ft]							200.00			200.00		
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

**Volumes**

Name	Innovation Dr			Innovation Dr			Longley Ln			Longley Ln		
Base Volume Input [veh/h]	5	5	24	2	0	18	9	624	4	13	715	2
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.10	1.10	1.10	1.10	1.10	1.10
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	167	0	159	0	38	36	30	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	5	24	169	0	177	10	724	40	44	787	2
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	7	46	0	48	3	197	11	12	214	1
Total Analysis Volume [veh/h]	5	5	26	184	0	192	11	787	43	48	855	2
Pedestrian Volume [ped/h]	0			0								

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]				
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median				

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.07	0.07	0.05	2.00	0.00	0.33	0.01	0.06	0.06			
d_M, Delay for Movement [s/veh]	62.94	58.79	15.59	677.47	686.40	644.51	9.69	9.80				
Movement LOS	F	F	C	F	F	F	A	A	A	A	A	
95th-Percentile Queue Length [veh]	0.67	0.67	0.67	31.30	31.30	31.30	0.04	0.00	0.00	0.19	0.00	0.00
95th-Percentile Queue Length [ft]	16.83	16.83	16.83	782.41	782.41	782.41	1.07	0.00	0.00	4.79	0.00	0.00
d_A, Approach Delay [s/veh]	28.17			660.64			0.13			0.52		
Approach LOS	D			F			A			A		
d_I, Intersection Delay [s/veh]	115.84											
Intersection LOS	F											

**Intersection Level Of Service Report**  
**Intersection 4: Innovation Drive/Double R Blvd**

Control Type:	Two-way stop	Delay (sec / veh):	17.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.213

**Intersection Setup**

Name	Northbound		Southbound		Innovation Dr Eastbound	
Approach						
Lane Configuration			T		T	
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]		12.00	12.00	12.00		12.00
No. of Lanes in Pocket		0	0	0		0
Pocket Length [ft]						
Speed [mph]	30.00		30.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

**Volumes**

Name	Northbound		Southbound		Innovation Dr Eastbound	
Base Volume Input [veh/h]		1673	1100	1		20
Base Volume Adjustment Factor		1.0000	1.0000	1.0000		1.0000
Heavy Vehicles Percentage [%]		3.00	3.00	3.00		3.00
Growth Rate		1.10	1.10	1.10		1.00
In-Process Volume [veh/h]		0	0	0		0
Site-Generated Trips [veh/h]		49	57	45		56
Diverted Trips [veh/h]		0	0	0		0
Pass-by Trips [veh/h]		0	0	0		0
Existing Site Adjustment Volume [veh/h]		0	0	0		0
Other Volume [veh/h]		0	0	0		0
Total Hourly Volume [veh/h]		1889	1267	46		76
Peak Hour Factor		0.9400	0.9400	0.9400		0.9400
Other Adjustment Factor		1.0000	1.0000	1.0000		1.0000
Total 15-Minute Volume [veh/h]		502	337	12		20
Total Analysis Volume [veh/h]		2010	1348	49		81
Pedestrian Volume [ped/h]		0	0	0		0

**Intersection Settings**

Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]			
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median			

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio						0.21
d_M, Delay for Movement [s/veh]						17.01
Movement LOS		A	A	A		C
95th-Percentile Queue Length [veh]		0.00	0.00	0.00		0.79
95th-Percentile Queue Length [ft]		0.00	0.00	0.00		19.87
d_A, Approach Delay [s/veh]	0.00		0.00		17.01	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]						0.39
Intersection LOS						C

**Intersection Level Of Service Report**  
**Intersection 5: Innovation Dr/Project Dwy #1**

Control Type:	Two-way stop	Delay (sec / veh):	12.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.029

**Intersection Setup**

Name	Northbound			Southbound			Innovation Dr Eastbound			Innovation Dr Westbound		
Approach	+			+			+			+		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0		0	0		0	0		0	0		0
Pocket Length [ft]												
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Innovation Dr Eastbound			Innovation Dr Westbound		
Base Volume Input [veh/h]	13	0	13	0	0	0	0	7	10	0	7	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	5	0	100	7	60	0	0	226	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	0	13	5	0	100	7	67	10	0	233	0
Peak Hour Factor	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	0	4	1	0	27	2	18	3	0	63	0
Total Analysis Volume [veh/h]	14	0	14	5	0	109	8	73	11	0	253	0
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]				
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median				

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.03	0.00	0.01	0.01	0.00	0.14	0.01	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.77	11.54	8.92	11.91	12.14	10.38	7.76	0.00	0.00	7.38	0.00	0.00
Movement LOS	B	B	A	B	B	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.14	0.14	0.14	0.51	0.51	0.51	0.23	0.23	0.23	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	3.40	3.40	3.40	12.87	12.87	12.87	5.65	5.65	5.65	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	10.85			10.45			0.67			0.00		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	3.20											
Intersection LOS	B											

**Intersection Level Of Service Report**  
**Intersection 6: Innovation Dr/Project Dwy #2**

Control Type:	Two-way stop	Delay (sec / veh):	12.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.012

**Intersection Setup**

Name	Northbound			Southbound			Innovation Dr Eastbound			Innovation Dr Westbound		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0		0	0		0	0		0	0		0
Pocket Length [ft]												
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Innovation Dr Eastbound			Innovation Dr Westbound		
Base Volume Input [veh/h]	5	0	5	0	0	0	0	16	4	1	2	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	43	0	163	52	13	0	0	63	15
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	0	5	43	0	163	52	29	4	1	65	15
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	1	12	0	45	14	8	1	0	18	4
Total Analysis Volume [veh/h]	6	0	6	48	0	181	58	32	4	1	72	17
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]				
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median				

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.07	0.00	0.18	0.04	0.00	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	12.33	10.77	8.56	11.55	11.99	10.03	7.49	7.29	7.29	7.29	7.29	7.29
Movement LOS	B	B	A	B	B	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.05	0.05	0.05	1.01	1.01	1.01	0.20	0.20	0.20	0.18	0.18	0.18
95th-Percentile Queue Length [ft]	1.36	1.36	1.36	25.24	25.24	25.24	4.99	4.99	4.99	4.54	4.54	4.54
d_A, Approach Delay [s/veh]	10.44			10.35			4.62			0.08		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	6.91											
Intersection LOS	B											

**Intersection Level Of Service Report**  
**Intersection 7: Innovation Dr/Project Dwy #3**

Control Type:	Two-way stop	Delay (sec / veh):	10.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

**Intersection Setup**

Name	Northbound			Southbound			Innovation Dr Eastbound			Innovation Dr Westbound		
Approach	+			+			+			+		
Lane Configuration	+			+			+			+		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0		0	0		0	0		0	0		0
Pocket Length [ft]												
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

**Volumes**

Name	Northbound			Southbound			Innovation Dr Eastbound			Innovation Dr Westbound		
Base Volume Input [veh/h]	2	0	2	0	0	0	0	18	3	0	1	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	8	0	33	7	49	0	0	45	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	0	2	8	0	33	7	67	3	0	46	0
Peak Hour Factor	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	1	2	0	9	2	19	1	0	13	0
Total Analysis Volume [veh/h]	2	0	2	9	0	37	8	74	3	0	51	0
Pedestrian Volume [ped/h]	0			0			0			0		

**Intersection Settings**

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]				
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median				

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.01	0.00	0.04	0.01			0.00		
d_M, Delay for Movement [s/veh]	9.68	9.85	8.67	9.57	10.03	8.72	7.33			7.37		
Movement LOS	A	A	A	A	B	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.01	0.01	0.01	0.15	0.15	0.15	0.17	0.17	0.17	0.00	0.00	0.00
95th-Percentile Queue Length [ft]	0.35	0.35	0.35	3.72	3.72	3.72	4.33	4.33	4.33	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.18			8.89			0.69			0.00		
Approach LOS	A			A			A			A		
d_I, Intersection Delay [s/veh]	2.71											
Intersection LOS	B											

**Intersection Level Of Service Report**  
**Intersection 8: Longley Ln/Project Dwy #4**

Control Type: Two-way stop  
Analysis Method: HCM 6th Edition  
Analysis Period: 15 minutes

Delay (sec / veh): 14.3  
Level Of Service: B  
Volume to Capacity (v/c): 0.273

**Intersection Setup**

Name	Longley Ln			Longley Ln								
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00		12.00			12.00
No. of Lanes in Pocket			1	1		0			0			0
Pocket Length [ft]		125.00		200.00								
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			Yes			Yes		

**Volumes**

Name	Longley Ln			Longley Ln								
Base Volume Input [veh/h]	647	0	0	0	730	3			0			11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00			2.00			2.00
Growth Rate	1.10	1.00	1.00	1.10	1.00	1.00			1.00			1.00
In-Process Volume [veh/h]	0	0	0	0	0	0			0			0
Site-Generated Trips [veh/h]	170	26	44	30	0	0			131			0
Diverted Trips [veh/h]	0	0	0	0	0	0			0			0
Pass-by Trips [veh/h]	0	0	0	0	0	0			0			0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0			0			0
Other Volume [veh/h]	0	0	0	0	0	0			0			0
Total Hourly Volume [veh/h]	882	26	44	833	3				131			11
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	242	7	12	229	1				36			3
Total Analysis Volume [veh/h]	969	29	48	915	3				144			12
Pedestrian Volume [ped/h]									0			0

**Intersection Settings**

Priority Scheme	Free	Free	Stop	Stop
Flared Lane				
Storage Area [veh]				
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median				

**Movement, Approach, & Intersection Results**

V/C, Movement V/C Ratio	0.08	0.00	0.08	0.07	0.09	0.00	0.00	0.00	0.27	0.04	0.00	0.02
d_M, Delay for Movement [s/veh]	1.00	0.00	1.00	10.46	0.00	0.00	0.00	0.00	14.35	0.00	0.00	11.70
Movement LOS		A	A	B	A	A			B			B
95th-Percentile Queue Length [veh]		0.00	0.00	0.22	0.00	0.00	0.00	0.00	1.10	0.00	0.00	0.07
95th-Percentile Queue Length [ft]		0.00	0.00	5.45	0.00	0.00	0.00	0.00	27.47	0.00	0.00	1.67
d_A, Approach Delay [s/veh]	0.00			0.52			14.35			11.70		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	1.28											
Intersection LOS	B											

Option 1: Copy of Longley Ln / Airway Dr

Number	1											
Intersection	Longley Ln / Airway Dr											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name	Longley Ln			Longley Ln			Double R Blvd			Airway Dr		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	149	483	15	659	573	52	58	711	958	205	390	99
Total Analysis Volume [veh/h]	339	747	40	837	738	0	74	869	0	251	504	162

Intersection Settings

Cycle Length [s]	145											
Coordination Type	Time of Day Pattern Isolated											
Actuation Type	Fully actuated											
Lost time [s]	0.00											
Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	1	1	6	3	3	8	7	7	4	
Auxiliary Signal Groups												
Lead / Lag	Lead			Lead			Lead			Lead		
Minimum Green [s]	6	8	6	6	8	6	6	6	6	6	6	
Maximum Green [s]	36	35	35	35	35	25	25	30	25	25	30	
Amber [s]	3.5	4.7	3.5	3.5	4.7	3.5	3.5	4.0	3.5	3.5	4.0	
All red [s]	0.5	1.0	1.5	1.5	1.0	0.5	0.5	1.0	0.5	0.5	1.0	
Split [s]	40	41	40	40	41	29	29	35	29	29	35	
Walk [s]		7	7		7	7		7	7		7	
Pedestrian Clearance [s]		23	21		21	28		28	28		28	
l1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Minimum Recall	No	Yes	No	No	Yes	No	No	No	No	No	No	
Maximum Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No	No	No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

Lane Group Calculations

g / C, Green / Cycle	0.13	0.18	0.18	0.28	0.34	0.34	0.06	0.21	0.21	0.17	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.11	0.16	0.03	0.27	0.23	0.00	0.05	0.19	0.00	0.16	0.11	0.11
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3			3			3			3		
s, saturation flow rate [veh/h]	3113	4584	1431	3113	3204	1431	1603	4584	1431	1603	4584	1431
c, Capacity [veh/h]	400	840	262	866	1093	488	93	963	300	275	1485	463
X, volume / capacity	0.85	0.89	0.15	0.97	0.67	0.00	0.80	0.90	0.00	0.91	0.34	0.35
d, Delay for Lane Group [s/veh]	57.43	51.44	43.24	53.05	35.72	0.00	69.52	51.03	0.00	74.48	32.39	32.74
Lane Group LOS	E	D	D	D	D	A	E	D	A	E	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No

50th-Percentile Queue Length [veh]	5.45	7.72	1.06	13.75	9.67	0.00	2.61	9.05	0.00	9.53	3.92	3.83
50th-Percentile Queue Length [ft]	136.22	193.09	26.53	343.71	241.78	0.00	65.25	226.35	0.00	238.17	98.07	95.66
95th-Percentile Queue Length [veh]	9.28	12.28	1.91	19.83	14.77	0.00	4.70	13.99	0.00	14.59	7.06	6.89
95th-Percentile Queue Length [ft]	231.92	307.03	47.76	495.73	369.28	0.00	117.45	349.72	0.00	364.71	176.52	172.19

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	57.43	51.44	43.24	53.05	35.72	0.00	69.52	51.03	0.00	74.48	32.39	32.74
Movement LOS	E	D	D	D	D	A	E	D	A	E	C	C
Critical Movement	No	No	No	No	No	No	No	No	No	Yes	No	No
d_A, Approach Delay [s/veh]	52.95			44.93			52.48			43.97		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	48.28											
Intersection LOS	D											
Intersection V/C	0.778											

**Option 1: Mitigation\_Longley Lane/Innovation Dr**

Number	3											
Intersection	Longley Lane/Innovation Dr											
Control Type	Signalized											
Analysis Method	HCM 6th Edition											
Name	Innovation Dr			Innovation Dr			Longley Ln			Longley Ln		
Approach	Eastbound			Westbound			Northeastbound			Southwestbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Base Volume Input [veh/h]	5	5	24	2	0	18	9	624	4	13	715	2
Total Analysis Volume [veh/h]	5	5	26	184	0	192	11	787	43	48	855	2

**Intersection Settings**

Cycle Length [s]	60											
Coordination Type	Time of Day Pattern Isolated											
Actuation Type	Semi-actuated											
Lost time [s]	0.00											
Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group		8			4		5	2		1	6	
Auxiliary Signal Groups												
Lead / Lag							Lead			Lead		
Minimum Green [s]		5			5		5	5		5	5	
Maximum Green [s]		30			30		30	30		30	30	
Amber [s]		3.0			3.0		3.0	3.0		3.0	3.0	
All red [s]		1.0			1.0		1.0	1.0		1.0	1.0	
Split [s]		30			30		9	21		9	21	
Walk [s]		7			7			7			7	
Pedestrian Clearance [s]		19			19			10			10	
fl, Start-Up Lost Time [s]		2.0			2.0		2.0	2.0		2.0	2.0	
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Pedestrian Signal Group	0											
Pedestrian Walk [s]	0											
Pedestrian Clearance [s]	0											

**Lane Group Calculations**

g / C, Green / Cycle	0.33	0.33	0.33	0.01	0.42	0.42	0.05	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.03	0.15	0.13	0.01	0.25	0.25	0.03	0.25	0.25
so, Base Saturation Flow per Lane [veh/h/lr]	1900	1900	1900	1900	1900	1900	1900	1900	1900
Arrival type	3	3	3	3	3	3	3	3	3
s, saturation flow rate [veh/h]	1405	1240	1431	1603	1683	1652	1603	1683	1682
c, Capacity [veh/h]	531	259	471	22	715	702	74	769	768
X, volume / capacity	0.07	0.71	0.41	0.49	0.59	0.59	0.65	0.56	0.56
d, Delay for Lane Group [s/veh]	13.89	24.92	16.16	45.10	16.70	16.77	37.52	14.79	14.79
Lane Group LOS	B	C	B	D	B	B	D	B	B
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No

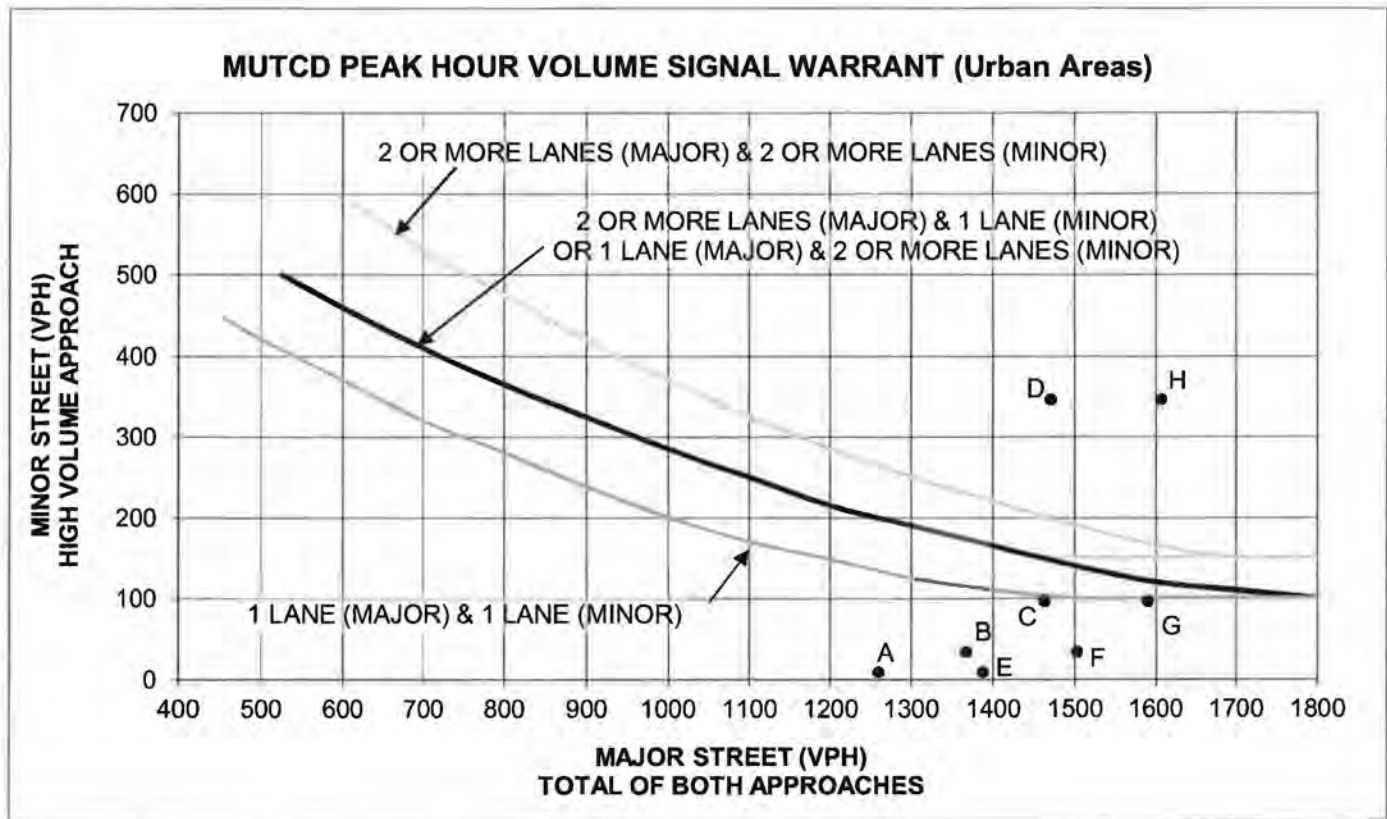
50th-Percentile Queue Length [veh]	0.31	2.57	1.91	0.25	4.43	4.37	0.84	4.18	4.17
50th-Percentile Queue Length [ft]	7.84	64.27	47.79	6.20	110.87	109.22	20.89	104.39	104.32
95th-Percentile Queue Length [veh]	0.56	4.63	3.44	0.45	7.89	7.80	1.50	7.52	7.51
95th-Percentile Queue Length [ft]	14.11	115.68	86.02	11.15	197.21	194.92	37.60	187.90	187.77

**Movement, Approach, & Intersection Results**

d_M, Delay for Movement [s/veh]	13.89	13.89	13.89	24.92	16.16	16.16	45.10	16.74	16.77	37.52	14.79	14.79
Movement LOS	B	B	B	C	B	B	D	B	B	D	B	B
Critical Movement	No	No	No	No	No	No	Yes	No	No	No	No	No
d_A, Approach Delay [s/veh]	13.89			20.44			17.11			15.99		
Approach LOS	B			C			B			B		
d_I, Intersection Delay [s/veh]	17.17											
Intersection LOS	B											
Intersection V/C	0.427											

**Appendix E**  
**Peak Hour Signal Warrant Analysis**  
**Sheet**

## Intersection #3 - Longley Lane/ Innovation Drive



Scenario	Longley Lane North/South	Innovation Drive East/West	Warrant Met?
A. Background AM	1260	9	No
B. Background PM	1367	34	No
C. Bkgnd+Proj AM	1463	97	No
D. Bkgnd+Proj PM	1471	346	Yes
E. Horizon AM	1387	9	No
F. Horizon PM	1503	34	No
G. Horizon+Proj AM	1590	97	No
H. Horizon +Pro PM	1607	346	Yes

**Notes:**

1. 150 VPH applies as the lower threshold volume for a minor street approach with two or more lanes and 100 VPH applies as the lower threshold volume for a minor street approach with one lane.
2. Bold line applies to intersection geometry.

Source: *Manual on Uniform Traffic Control Devices*, May 2012 Revision 2009 Edition.

# Appendix B

**NORTHERN NEVADA SIERRA MEDICAL CENTER  
CITY OF RENO, NEVADA**

## **DRAINAGE PRELIMINARY REPORT**

Prepared by:  
Reno Engineering Corporation  
Silas Callahan, PE  
One East First Street, Ste 1400 • Reno, Nevada 89501

April 9, 2018

**PREFACE**

This report determines necessary storm drainage improvements for potential development of a hospital facility, consisting of approximately 262 rooms, 4 stories high, two 60,000 s.f. medical office buildings, and a parking structure. The site is identified as APN 164-354-01, located at the Southeast intersection corner of Longley Land and Double R Blvd.



The entire site is located within FEMA Flood Zone X and shaded X per FEMA FIRM Panel 32031C3234G dated March 16, 2009.

This report has been prepared per regional drainage design standard, including the City of Reno Public Works Design Manual, the Truckee Meadows structural Controls Design and Low Impact Development Manual, and the Truckee Meadows Regional Drainage Manual.

The following narrative details the drainage design concepts and the assumptions made to complete the design, including pre-and post-development hydrologic peak flow, detention requirements and LID requirements.

### **PROJECT DESCRIPTION**

The potential development, during phase 1, consists of a hospital facility with 176 rooms, 4 stories high and a 60,000 s.f. medical office building, with parking proposed as surface only (no parking garages.) Phase 2 & 3 will construct an additional 60,000 s.f. medical office building, add a 90 bed tower to the hospital footprint, and install a parking structure at the south side of the property. The total parcel area is 22.2 acres, all of which will be used for the potential development. Development surrounding the parcel is primarily Industrial Commercial (IC), with some residential along the Longley frontage, which is zoned as IC for future development. The site currently consists of open space native vegetation at a typical density. The parcel generally slopes South to North at approximately 1% or less. Potential development will have similar drainage patterns to existing, with peak flow increases. Proposed runoff will be conveyed through a network of onsite low impact development features and storm drainage piping, ultimately discharging to existing stubs located the intersection of Double R and Reno Corporate Drive, eventually discharging to the detention facility North of Barron Way.

The existing drainage pattern is overland flow from the South to North, with runoff discharging to existing storm drainage infrastructure located at the intersection of Double R and Longley or at the Intersection of Double R and Reno Corporate Drive. Offsite runoff currently exists from an irrigation culvert located in Longley Lane, which must be properly addressed and routed with the potential development design.

### **ONSITE RUNOFF AND DRAINAGE SYSTEM IMPROVEMENTS**

Existing, proposed and point of connection existing design 5 and 100-year event flows are summarized below. Existing and proposed flow has been determined using the Rational Method, City of Reno typical C coefficients and NOAA Atlas 14 intensity data and point of connection flows are published values per the Double R Master Drainage Plan and Double R Roadway Improvement Plans. The report and plans state the design capacity of the two points of connection as the 100 year event runoff for the entire master planned infrastructure, converging at the existing detention basin North of Barron Blvd. This detention basin has been designed to detain peak flow increase for the subject development, so long as proposed runoff is less than the point of connection design runoff assumptions.

Basin	5 Year	100 Year	5 Year POC	100 Year POC	Stub Size
<b>Total Existing</b>	2.3	5.1	N/A	N/A	N/A
<b>Basin 1</b>	9.0	22	9.2	19.7	30"
<b>Basin 2</b>	9.1	22	8.5	18.3	30"

Based on calculation assumptions, a minor increase in peak flow is expected. This will be mitigated by providing minor onsite detention. The project is proposing to use the surface detention capabilities of the several LID basins to be installed throughout the site to achieve this additional peak flow mitigation.

Underground conveyance piping will be designed for the 5-year event peak flows at a minimum, with 100-year overland flow overflow routed to the 2 existing stubs at Reno Corporate Drive.

All inlets will be designed per HEC-22 methodology, assuming a 50% clogging ratio, and curved vane inlet type. If major sag locations are required for functional site grading, then the inlet and downstream piping will be sized for the 100-year event per City of Reno requirements.

Offsite flow from the Longley irrigation crossing will continue to be routed to the existing culvert inlet at the Northwest project corner, crossing under Double R Boulevard. Existing 100-year design flow of 40.1 cfs has been reported per the Longley Road Improvement Plans. However, City staff are weary of the reported value and will require additional research on current condition flows through the culvert. While such studies are out of scope for a preliminary report, the final report will address offsite flows from this culvert and proposed flow mitigation design as required.

Refer to the attached calculations for additional hydrologic design information and assumptions.

**DETENTION REQUIREMENTS**

Depending on final site layout design and landscaping, minor detention maybe required to ensure downstream infrastructure is not adversely affected. The hydrologic calculations indicate a minor increase in the 5 and 100-year event. Given the minor increase, analyzing the surface volume capacity of the proposed lid facilities and designing the inlets to release at slightly lower rates will likely be all that is needed to properly mitigate peak flow increases.

**OFFSITE RUNOFF**

Major drainage concerns are known to occur in the subdivision South of the project and adjacent to the existing commercial/industrial area. Major event runoff collects in an abandoned irrigation ditch aligned parallel with Autumn Hills Drive and situated between the existing housing subdivision and existing storage and industrial development. An existing 54" drainage pipe with an inlet located in the aforementioned ditch was designed for the 10-year storm event when initially installed, however, significant development has occurred since the pipe installation and peak flows are likely greater than those initially assumed. Additionally, the drainage pipe condition is unknown and may have flow constraints from siltation and/or debris blockage.

The subdivision is known to flood during major drainage events and downstream area, which the proposed site is a part of, is known to experience major overland flow. Hydrologic and hydraulic analysis of the current overland flow conditions is limited, and actual 100-year flood area is largely unknown. While such studies are outside the scope of analysis for this project, it is recommended that all finished floor grades are at least one to two feet greater than the intersection of Innovation Drive and Double R Parkway. Current overland flow conditions are believed to be primarily in street right of way and depths of less than one foot, thus the provided recommendation is believed to mitigate building flooding.

### **LOW IMPACT DEVELOPMENT**

Low impact development will be incorporated through the site and distribute water quality basins as much as possible. More distributed basins reduce individual basin area, thus increasing LID effectiveness and promoting smaller scale treatment methods such as vegetated swales, bio retention basins and sand filter basins. As stated above, the lid strategy will also achieve peak flow detention mitigation.

The total water quality volume requirement is estimated as 35,500 cubic feet, or total water quality flow requirement of 16.7 cfs. It is anticipated that a mixture of volume and flow treatment controls will be utilized on the site.

### **CONCLUSIONS AND RECOMMENDATIONS.**

- The proposed development has negligible increase from previously designed assumptions for existing drainage connection points. The 5 and 100-year runoff will be routed to the two existing 30" storm drainage stubs located at the intersection of Double R boulevard and Reno Corporate Drive, conforming to the original master planned drainage design.
- Minor detention will be included as required per final site layout and drainage calculations. Given the minor change in peak runoff from point of connection design, incorporating detention calculations into the lid basin strategy is anticipated to mitigate peak flow.
- All onsite pipe conveyance systems will be designed per City of Reno drainage standards and sized accordingly for either the 5 years or 100-year event, depending on the inlet location and type. Major sag inlets (greater than 0.5' of water storage) will be sized for the 100-year event, as will all downstream piping.
- Low impact design for water quality treatment will be designed in accordance to the Standard Design Guidance Worksheets, available online through the City of Reno website.

### **Exhibits and Supports Information**

- **Drainage Exhibits.** Hydrological maps and other exhibits used as document support.
- **NOAA Atlas 14 Data.**
- **Drainage summary calculations, Onsite.** Preliminary hydrology calculations for onsite runoff of the 5 and 100 year events.

- **Low Impact Worksheets**. City of Reno guided design worksheets for low impact design (total site assumptions), complimenting the Truckee Meadows Regional Storm Water Quality Program Structural Controls and Low Impact Development Handbook, 2015 Update.



***NOAA 14 DATA***



**NOAA Atlas 14, Volume 1, Version 5**  
**Location name: Reno, Nevada, USA\***  
**Latitude: 39.4659°, Longitude: -119.768°**  
**Elevation: 4442.83 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 & aeriels](#)

**PF tabular**

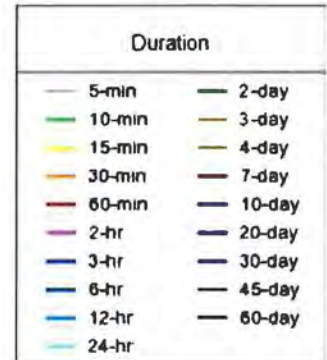
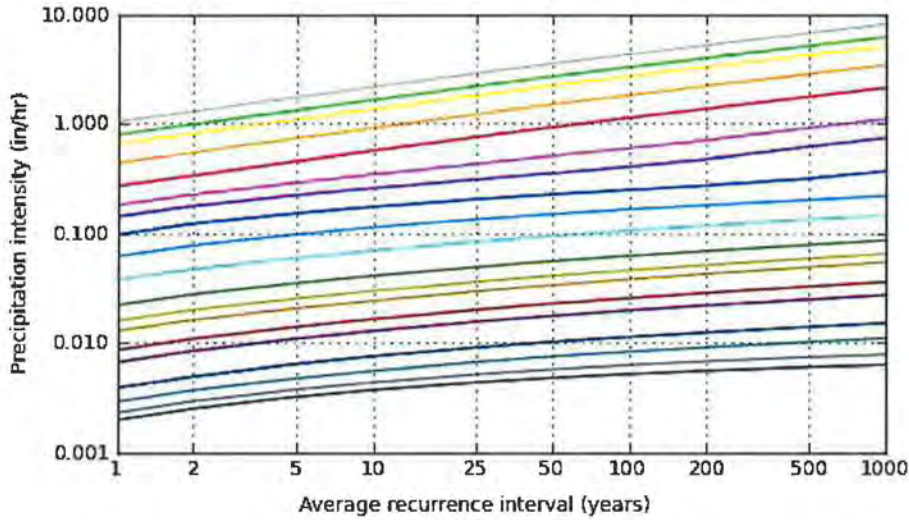
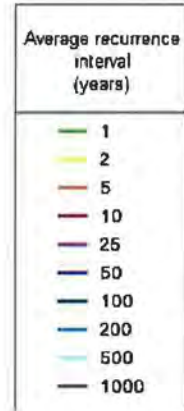
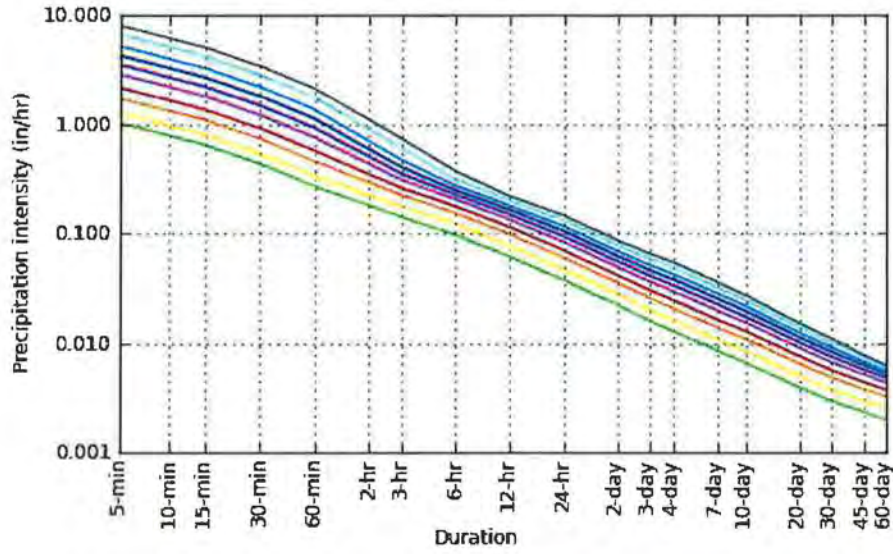
<b>PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)<sup>1</sup></b>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.03 (0.888-1.20)	1.28 (1.09-1.52)	1.73 (1.46-2.05)	2.15 (1.81-2.56)	2.86 (2.34-3.43)	3.50 (2.77-4.27)	4.27 (3.28-5.28)	5.20 (3.82-6.59)	6.70 (4.62-8.81)	8.04 (5.32-10.8)
10-min	0.786 (0.678-0.912)	0.978 (0.828-1.16)	1.31 (1.12-1.56)	1.64 (1.38-1.94)	2.17 (1.78-2.62)	2.66 (2.11-3.25)	3.25 (2.49-4.02)	3.96 (2.90-5.01)	5.09 (3.51-6.70)	6.13 (4.04-8.26)
15-min	0.652 (0.560-0.756)	0.808 (0.684-0.956)	1.09 (0.920-1.29)	1.35 (1.14-1.61)	1.80 (1.48-2.16)	2.20 (1.74-2.69)	2.69 (2.06-3.32)	3.27 (2.40-4.14)	4.21 (2.90-5.54)	5.06 (3.34-6.82)
30-min	0.438 (0.376-0.510)	0.542 (0.462-0.642)	0.732 (0.620-0.868)	0.910 (0.768-1.08)	1.21 (0.992-1.45)	1.48 (1.17-1.81)	1.81 (1.39-2.24)	2.20 (1.62-2.79)	2.84 (1.95-3.73)	3.41 (2.25-4.59)
60-min	0.271 (0.233-0.315)	0.336 (0.286-0.397)	0.453 (0.384-0.537)	0.563 (0.475-0.669)	0.748 (0.614-0.900)	0.918 (0.725-1.12)	1.12 (0.858-1.39)	1.36 (1.00-1.73)	1.76 (1.21-2.31)	2.11 (1.39-2.84)
2-hr	0.182 (0.160-0.208)	0.224 (0.200-0.260)	0.289 (0.252-0.333)	0.343 (0.296-0.396)	0.428 (0.357-0.499)	0.502 (0.408-0.596)	0.587 (0.464-0.708)	0.698 (0.526-0.871)	0.906 (0.648-1.17)	1.09 (0.750-1.44)
3-hr	0.142 (0.128-0.162)	0.177 (0.160-0.202)	0.223 (0.199-0.253)	0.258 (0.229-0.295)	0.309 (0.268-0.355)	0.351 (0.299-0.410)	0.404 (0.337-0.479)	0.473 (0.384-0.586)	0.609 (0.472-0.784)	0.734 (0.548-0.966)
6-hr	0.098 (0.088-0.109)	0.123 (0.110-0.138)	0.153 (0.137-0.171)	0.175 (0.156-0.197)	0.205 (0.179-0.232)	0.227 (0.195-0.259)	0.249 (0.211-0.288)	0.275 (0.228-0.322)	0.317 (0.255-0.397)	0.370 (0.291-0.489)
12-hr	0.062 (0.056-0.069)	0.078 (0.070-0.087)	0.098 (0.088-0.109)	0.114 (0.102-0.127)	0.134 (0.118-0.152)	0.150 (0.130-0.171)	0.166 (0.141-0.192)	0.181 (0.151-0.213)	0.202 (0.163-0.243)	0.220 (0.173-0.269)
24-hr	0.038 (0.034-0.042)	0.047 (0.043-0.053)	0.060 (0.054-0.066)	0.070 (0.063-0.077)	0.084 (0.075-0.093)	0.095 (0.084-0.105)	0.106 (0.094-0.119)	0.118 (0.103-0.133)	0.134 (0.115-0.152)	0.146 (0.125-0.168)
2-day	0.022 (0.020-0.025)	0.028 (0.025-0.031)	0.035 (0.032-0.039)	0.041 (0.037-0.046)	0.049 (0.044-0.055)	0.056 (0.049-0.063)	0.062 (0.055-0.071)	0.069 (0.060-0.079)	0.079 (0.067-0.091)	0.086 (0.072-0.101)
3-day	0.016 (0.015-0.018)	0.020 (0.018-0.022)	0.026 (0.023-0.028)	0.030 (0.027-0.033)	0.036 (0.032-0.040)	0.041 (0.036-0.046)	0.046 (0.041-0.052)	0.052 (0.045-0.059)	0.059 (0.050-0.068)	0.065 (0.054-0.076)
4-day	0.013 (0.012-0.014)	0.016 (0.015-0.018)	0.021 (0.019-0.023)	0.024 (0.022-0.027)	0.030 (0.027-0.033)	0.034 (0.030-0.038)	0.038 (0.033-0.043)	0.043 (0.037-0.048)	0.049 (0.042-0.057)	0.055 (0.046-0.064)
7-day	0.009 (0.008-0.010)	0.011 (0.010-0.012)	0.014 (0.013-0.018)	0.016 (0.015-0.019)	0.020 (0.018-0.022)	0.023 (0.020-0.026)	0.026 (0.022-0.029)	0.029 (0.025-0.033)	0.033 (0.028-0.038)	0.036 (0.030-0.042)
10-day	0.007 (0.006-0.007)	0.008 (0.008-0.009)	0.011 (0.010-0.012)	0.013 (0.012-0.014)	0.016 (0.014-0.017)	0.018 (0.016-0.020)	0.020 (0.017-0.022)	0.022 (0.019-0.025)	0.025 (0.021-0.029)	0.027 (0.023-0.032)
20-day	0.004 (0.004-0.004)	0.005 (0.005-0.006)	0.006 (0.006-0.007)	0.008 (0.007-0.008)	0.009 (0.008-0.010)	0.010 (0.009-0.011)	0.011 (0.010-0.013)	0.013 (0.011-0.014)	0.014 (0.012-0.016)	0.015 (0.013-0.018)
30-day	0.003 (0.003-0.003)	0.004 (0.004-0.004)	0.005 (0.004-0.005)	0.006 (0.005-0.006)	0.007 (0.006-0.007)	0.008 (0.007-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.009-0.012)	0.011 (0.009-0.013)
45-day	0.002 (0.002-0.003)	0.003 (0.003-0.003)	0.004 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.006)	0.006 (0.006-0.007)	0.007 (0.006-0.008)	0.007 (0.007-0.008)	0.008 (0.007-0.009)
60-day	0.002 (0.002-0.002)	0.003 (0.002-0.003)	0.003 (0.003-0.004)	0.004 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.006)	0.006 (0.005-0.007)	0.006 (0.006-0.007)

<sup>1</sup> 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.

[Back to Top](#)

**PF graphical**

PDS-based intensity-duration-frequency (IDF) curves  
 Latitude: 39.4659°, Longitude: -119.7680°



[Back to Top](#)

**Maps & aerials**

Small scale terrain



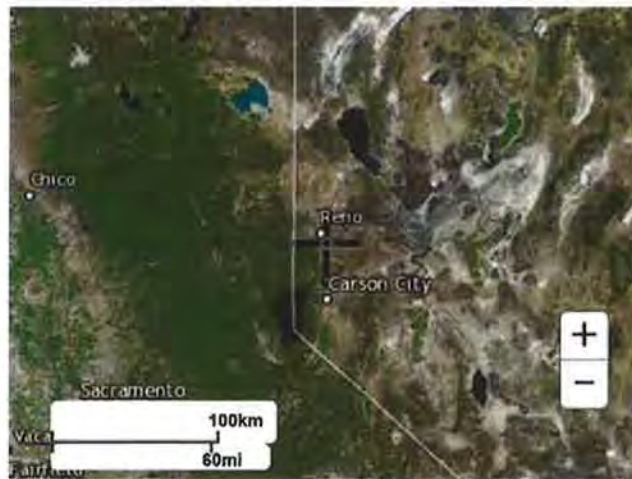
Large scale terrain



Large scale map



Large scale aerial



[Back to Top](#)

---

[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](mailto:HDSC.Questions@noaa.gov)

[Disclaimer](#)

***PRELIMINARY DRAINAGE  
CALCUALTIONS***

Date : 4/2/2018

Client : **Excel Eng.**  
 Project : **Denovo**

Calced By : **SRC**  
 Checked By : **SRC**

IDF Storm Event: **100 yr, 3 Hr Event**

IDF Parameters: **b : 0.9789**    **m : -0.6653**     $i = b*(x^m)$

Storm Factor : **1**

Basin ID	A (ac.)	C	ToC (hr)	i (in/hr)	A*C	Q (cfs)
<b>Total Existing</b>	<b>22.20</b>	<b>0.20</b>	<b>0.78</b>	<b>1.15</b>	<b>4.44</b>	<b>5.1</b>
Basin 1	10.50	0.85	0.25	2.46	8.925	22.0
Basin 2	10.60	0.85	0.25	2.46	9.01	22.2
<b>Total</b>	<b>21.10</b>					<b>44.2</b>
<b>EX POCS (100 year)</b>						
Basin 1						19.7
Basin 2						18.3
<b>Total</b>						<b>38.0</b>
<b>Total w/ 20% SF</b>						<b>30.4</b>

# Channel Report

## Denovo Half project 5 year

### Trapezoidal

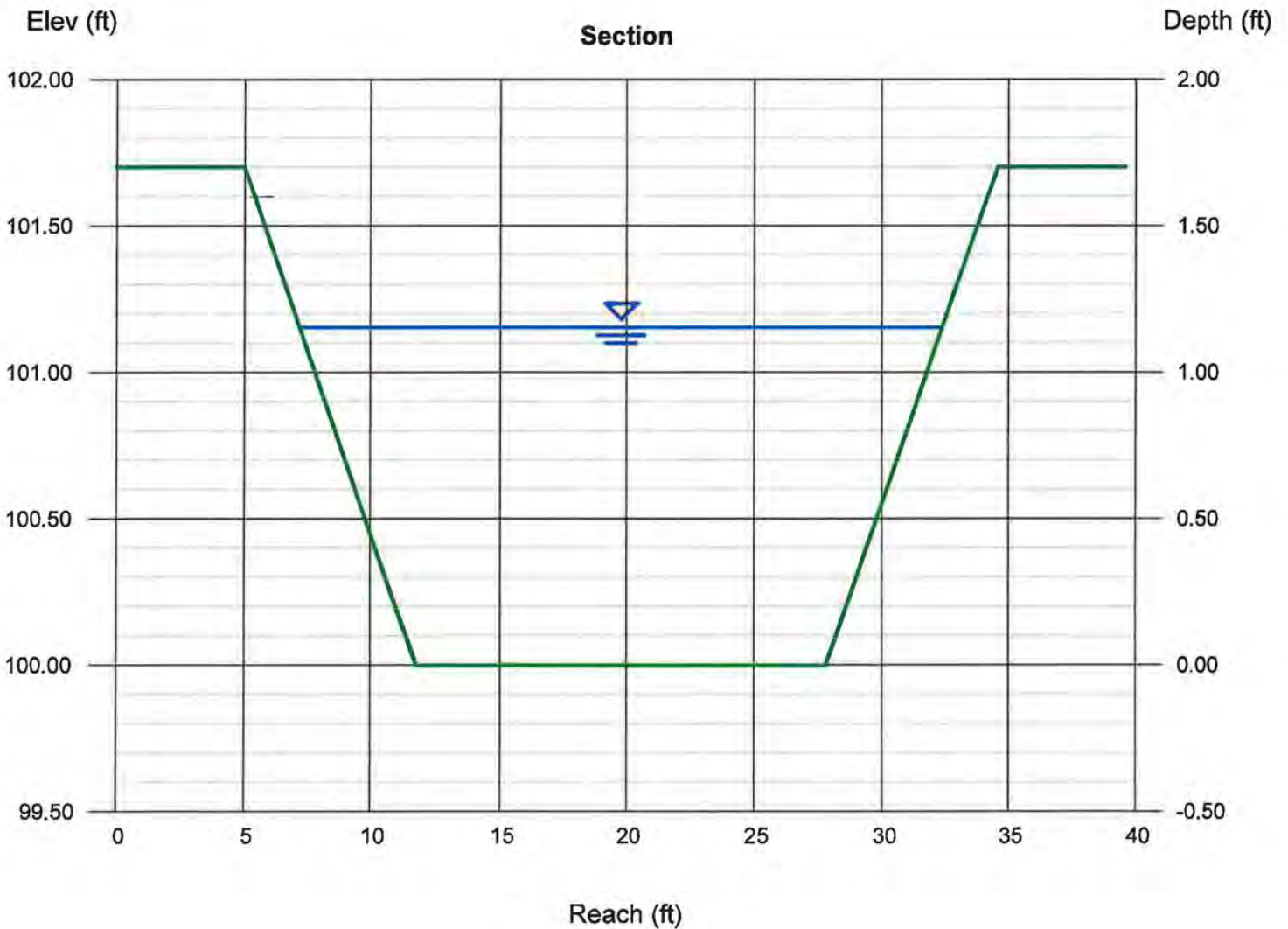
Bottom Width (ft) = 16.00  
 Side Slopes (z:1) = 4.00, 4.00  
 Total Depth (ft) = 1.70  
 Invert Elev (ft) = 100.00  
 Slope (%) = 0.70  
 N-Value = 0.250

### Highlighted

Depth (ft) = 1.15  
 Q (cfs) = 11.14  
 Area (sqft) = 23.69  
 Velocity (ft/s) = 0.47  
 Wetted Perim (ft) = 25.48  
 Crit Depth, Yc (ft) = 0.25  
 Top Width (ft) = 25.20  
 EGL (ft) = 1.15

### Calculations

Compute by: Known Q  
 Known Q (cfs) = 11.14



# Channel Report

## Denovo Half project WQF

### Trapezoidal

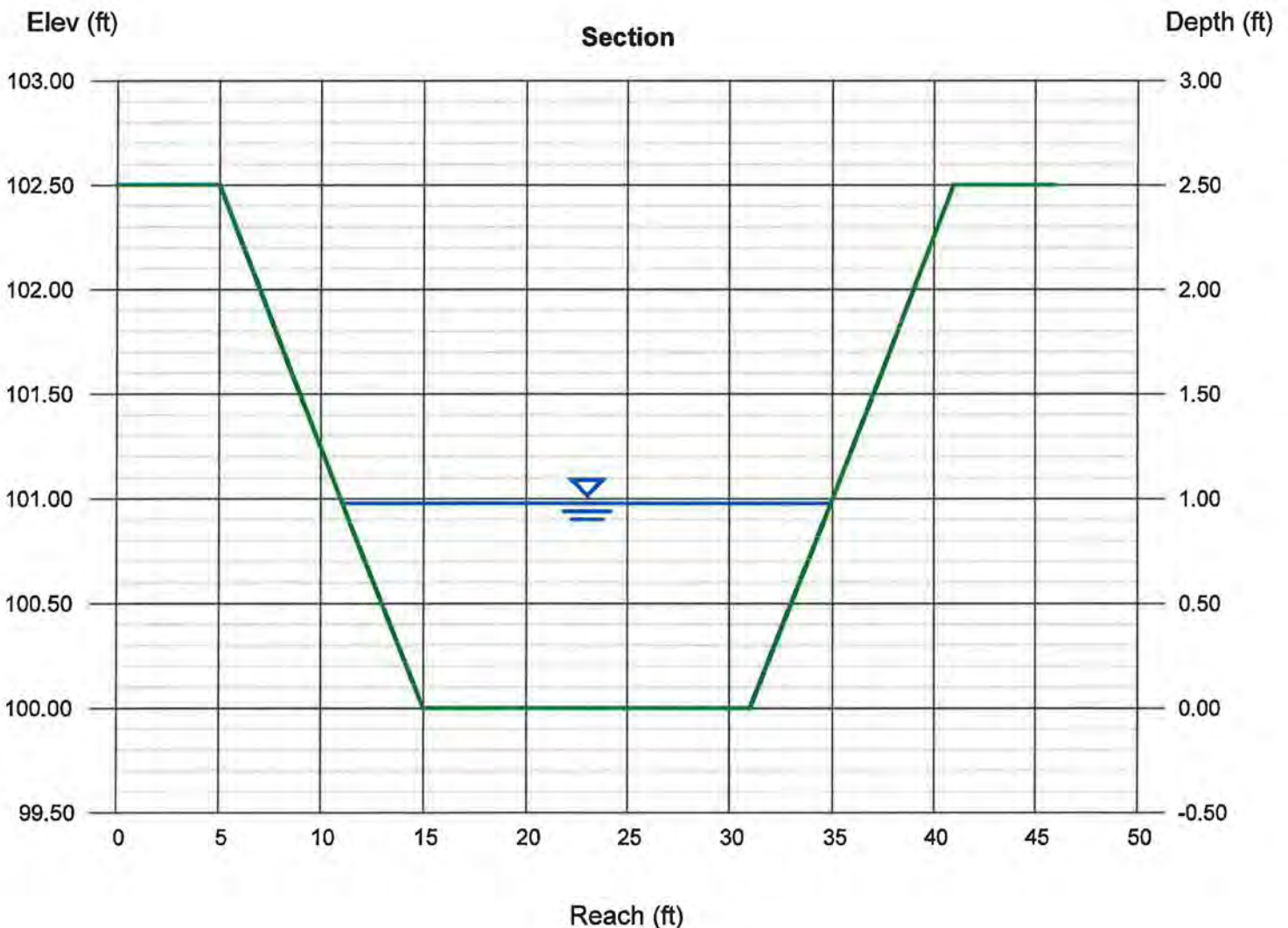
Bottom Width (ft) = 16.00  
 Side Slopes (z:1) = 4.00, 4.00  
 Total Depth (ft) = 2.50  
 Invert Elev (ft) = 100.00  
 Slope (%) = 0.70  
 N-Value = 0.250

### Highlighted

Depth (ft) = 0.98  
 Q (cfs) = 8.330  
 Area (sqft) = 19.52  
 Velocity (ft/s) = 0.43  
 Wetted Perim (ft) = 24.08  
 Crit Depth, Yc (ft) = 0.21  
 Top Width (ft) = 23.84  
 EGL (ft) = 0.98

### Calculations

Compute by: Known Q  
 Known Q (cfs) = 8.33



***LOW IMPACT DEVELOPMENT  
WORKSHEET CALCULATIONS***



**Truckee Meadows Storm Water Quality Management Program  
Project Pass/Fail Checklist**

\* Fill out worksheet from top to bottom

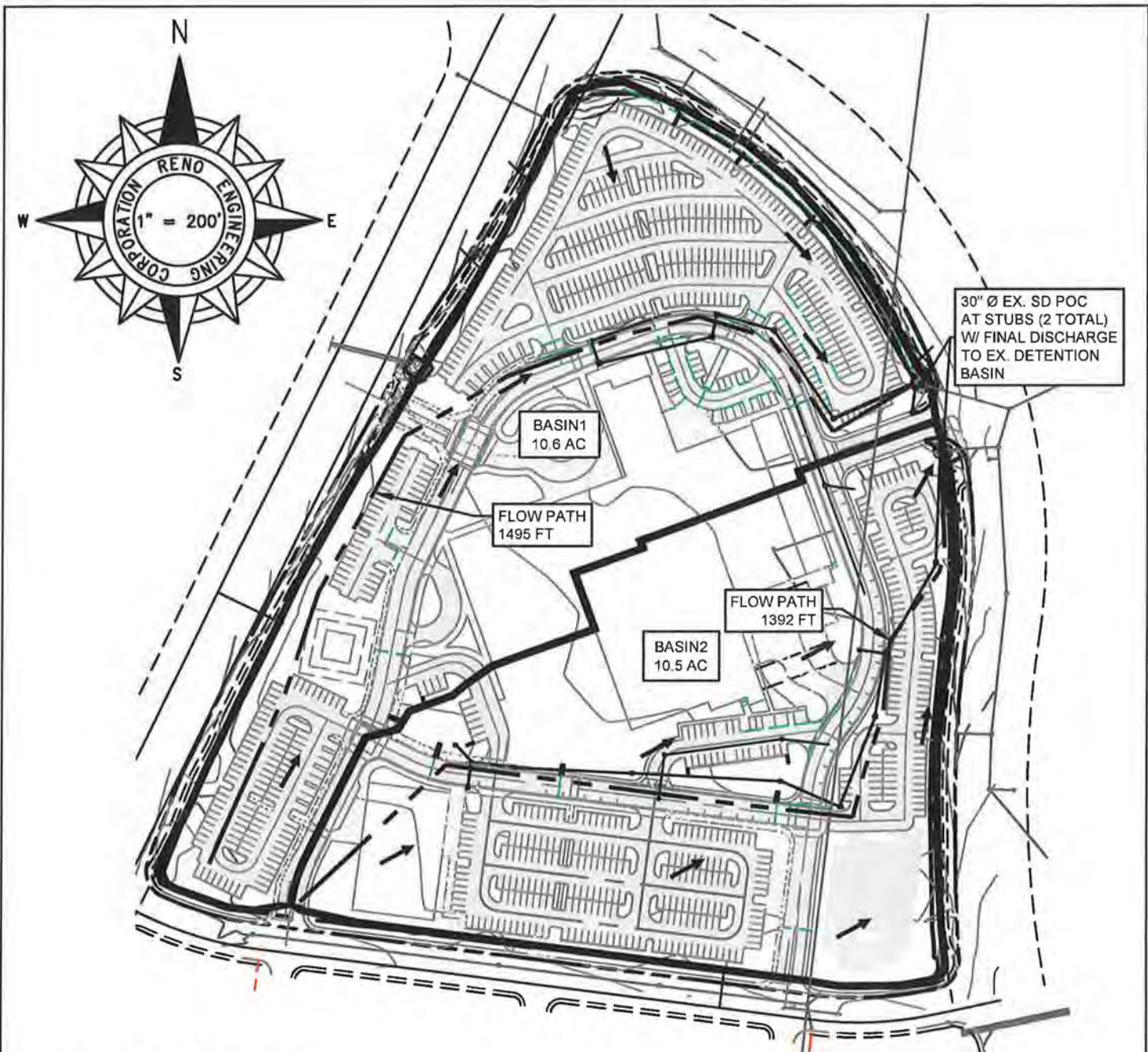
Truckee Meadows Version 2.0 Released 2015

Designer: Silas Callahan  
 Company: Reno Engineering  
 Date: \_\_\_\_\_  
 Project: denovo  
 Location: Longly & Double R

Key: User Input Calculated Result *Italicized Font Indicates Value Is Outside Recommended Range*

Project Characteristics from Summary Sheet		Drainage Subbasin Characteristics	
Total Project Area (acres):	22.20		
Type of Development (new or redevelopment):	New		
New or Additional Impervious Surfaces (acres):	18.87		
Applicable Calculations		Subbasin #	Total
Water Quality Flow	$WQ_f = CIA$		Subbasin Area (sq.ft.): 967032.00
Water Quality Volume	$WQ_v = (P \cdot R_v \cdot A) / 12$		Subbasin Area (acres): 22.20
Rv	$R_v = 0.05 + 0.009 \cdot I$		2-yr Rainfall intensity from IDF curve: 0.98
P = 90 Percentile for the Truckee Meadows = 0.60 inches			Pre-Development Impervious area (sq ft): 0
Total Number of Drainage Subbasins:			Post Development Impervious area (sq ft): 821977.2
Sub-basin acreage must equal total Project Acreage	22.20		Pre-Development Runoff Coefficient: 0.30
	All acreage is addressed		Post Development Runoff Coefficient: 0.85
Total Post Subbasin $WQ_f$ (ft <sup>3</sup> /sec)	18.49		Pre-Development Percent Impervious: 0
Total Post Subbasin $WQ_v$ (ft <sup>3</sup> )	39406.55		Post-Development Percent Impervious: 85
Total Post-Pre Subbasin $WQ_f$ (ft <sup>3</sup> /sec)	11.97		Pre-dev. Subbasin $WQ_f$ (ft <sup>3</sup> /sec): 6.53
Total Post - Pre Subbasin $WQ_v$ (ft <sup>3</sup> )	36988.97		Pre-dev. Subbasin $WQ_v$ (ft <sup>3</sup> ): 2417.58
Total Actual Subbasin $WQ_f$ (ft <sup>3</sup> /sec)	0.00		Post-dev. Subbasin $WQ_f$ (ft <sup>3</sup> /sec): 18.49
Total Actual Subbasin $WQ_v$ (ft <sup>3</sup> )	0.00		Post-dev. Subbasin $WQ_v$ (ft <sup>3</sup> ): 39406.55
Project %WQf			Post-Pre $WQ_f$ (ft <sup>3</sup> /sec) Min. Requiring treatment: 11.97
Project %WQv			Post - Pre $WQ_v$ (ft <sup>3</sup> ) Min. Requiring Treatment: 36988.97
Project			Enter Treatment Control or indicate if "self treating":
			Actual $WQ_f$ (ft <sup>3</sup> /sec), if 'self treating' enter min WQf:
			Actual Subbasin $WQ_v$ (ft <sup>3</sup> ):
			Sub-basin %WQf:
			Sub-basin %WQv:
			Sub-basin
Notes & Additional Information:		Subbasin #	Total
Notes & Additional Information:			Subbasin Area (sq.ft.):
			Subbasin Area (acres):
			2-yr Rainfall intensity from IDF curve:
			Pre-Development Impervious area (sq ft):
			Post Development Impervious area (sq ft):
			Pre-Development Runoff Coefficient:
			Post Development Runoff Coefficient:
			Pre-Development Percent Impervious:
			Post-Development Percent Impervious:
			Pre-dev. Subbasin $WQ_f$ (ft <sup>3</sup> /sec):
			Pre-dev. Subbasin $WQ_v$ (ft <sup>3</sup> ):
			Post-dev. Subbasin $WQ_f$ (ft <sup>3</sup> /sec):
			Post-dev. Subbasin $WQ_v$ (ft <sup>3</sup> ):
			Post-Pre $WQ_f$ (ft <sup>3</sup> /sec) Min. Requiring treatment:
			Post - Pre $WQ_v$ (ft <sup>3</sup> ) Min. Requiring Treatment:
	Enter Treatment Control or indicate if "self treating":		
	Actual $WQ_f$ (ft <sup>3</sup> /sec), if 'self treating' enter min WQf:		
	Actual Subbasin $WQ_v$ (ft <sup>3</sup> ):		
	Sub-basin %WQf:		
	Sub-basin %WQv:		
	Sub-basin		

Continue to next page if there are more than 2 subbasins



**100 YEAR EVENT PEAK FLOWS**

Basin ID	A (ac.)	C	ToC (hr)	I (in/hr)	A*C	Q (cfs)
Total Existing	22.20	0.20	0.78	1.15	4.44	5.1
Basin 1	10.50	0.85	0.25	2.46	8.925	22.0
Basin 2	10.60	0.85	0.25	2.46	9.01	22.2
Total	21.10					44.2
<b>EX POCS (100 year)</b>						
Basin 1						19.7
Basin 2						18.3
Total						38.0
Total w/ 20% SF						30.4

**5 YEAR EVENT PEAK FLOWS**

Basin ID	A (ac.)	C	ToC (hr)	I (in/hr)	A*C	Q (cfs)
Total Existing	22.20	0.20	0.78	0.52	4.44	2.3
Basin 1	10.50	0.85	0.25	1.01	8.925	9.0
Basin 2	10.60	0.85	0.25	1.01	9.01	9.1
Total	21.10					18.1



CONTACT INFO:  
 1 EAST FIRST STREET #1400, 89501  
 PHONE: (775) 852-6700 FAX: (775) 852-5707  
 VISIT US AT WWW.RECNV.COM

NNSMC  
 DRAINAGE FIGURE

# Appendix C

**NORTHERN NEVADA SIERRA MEDICAL CENTER  
CITY OF RENO, NEVADA**

## **SEWAGE DESIGN PRELIMINARY REPORT**

Prepared by:  
Reno Engineering Corporation  
Silas Callahan, PE  
One East First Street, Ste 1400 • Reno, Nevada 89501

April 9, 2018

**PREFACE**

This report determines necessary on-site private sewer improvements for potential development of a hospital facility, consisting of approximately 262 rooms and 300,000 sf and 120,000 sf of medical office space. The site is identified as APN 164-354-01, located at the Southeast intersection corner of Longley Land and Double R Blvd.



The following narrative details the sewage design concepts and the assumptions made to complete the design.

### **PROJECT DESCRIPTION**

The potential development consists of a hospital facility, with an anticipated buildout of three phases. Phase 1 consists of a 250,000-sf hospital with 172 beds and a 60,000-sf medical office building. Phase 2 adds an additional 60,000 sf of medical office space and parking structure. Phase 3 expands the hospital by 50,000 sf with an additional 90 beds. The total parcel area is 22.2 acres, all of which will be used for the potential development. Development surrounding the parcel is primarily Industrial Commercial (IC), with some residential along the Longley frontage, which is zoned as IC for future development. The site currently consists of open space native vegetation at a typical density. The parcel generally slopes South to North at approximately 1% or less. Potential development will have similar drainage patterns to existing conditions.

New private sewer lines will be installed onsite, conveying flow to existing sewer lateral stubs connected to public sewer main lines or will connect directly to the 33" sewer main aligned through the subject property.

This report summarizes design considerations and conclusions for the on-site private system and verifies capacity of public improvements utilized by this project.

### **SANITARY SEWER PEAK DEMAND**

The expected overall onsite sewage flow from the proposed project is calculated based on previous and very similar project drainage fixture unit counts, and assuming one dfu per two gpm (1dfu/2gpm). See attachment Figure 1 for approximate points of connection and flow estimates. Note that this method is considered conservative for the large DFU count associated with this project (over 1,000 which has a gpm to DFU ratio of 1 gpm/4dfu).

While flow estimates based on DFU counts are appropriate for onsite sizing, the values can produce overly conservative estimates on regional scales for large mains, such as the 33" main connection and downstream collection system. More appropriate estimates are estimated from Metcalf & Eddy "Wastewater Engineering Treatment and Reuse" and assuming the following:

- 300 gpd/bed (hospital)
- 14gpd/employee (MOB)
- 200sf/employee (MOB)
- Peak flow factor of 4

$$262beds * 300gpd/bed * 4 = 0.31 mgd = 0.48 cfs$$
$$120,000sf * 0.005emp/sf * 14gpd/emp * 4 = 0.03 mgd = 0.05 cfs$$

The project regional flow contribution is estimated as 0.34 mgd or 0.53 cfs for full built out. It is assumed that the 33" main point of connection and downstream sewer network pipe has adequate capacity for the anticipated peak flow.

#### **SANITARY SEWER ON SITE MAIN SIZING**

Onsite private main piping will be sized based on the DFU flow rates per attachment Figure 1 and City of Reno design standards. Design standards include a 2-fps minimum velocity, no more than half full pipe at design flow and Manning n value of 0.014. Assuming a slope of 0.7% or greater can be maintained on the site. Private main sizes of up to 15" diameter are anticipated. Service laterals of 6" diameter will connect to private mains varying in size from 8" to 15" in diameter. All laterals shall conform to Plumbing Code standards and all mains shall comply with City of Reno design standards.

#### **CONNECTIONS TO EXISTING STUBS AND PUBLIC MAINS**

Two points of connection along the existing 33" interceptor are being proposed, as well as one point of connection to the existing 8" line located in Innovation Drive. While existing 4" laterals are stubbed to the property, the estimated flow based on DFU estimate will require a 6" lateral. Thus, new lateral construction is anticipated. The existing 8" main has only one other connection to a low intensity industrial commercial user, thus the line is assumed to have capacity. This will be confirmed with final design.

#### **CONCLUSIONS**

- The proposed project is a major sewage generator, with a total peak flow estimate of 4.14 cfs. Based on DFU flow estimates and total peak flow of 0.53 cfs based on typical flowrates from Metcalf & Eddy. It is appropriate to use DFU flow rates for onsite design, but over estimates regional patterns that have greater attenuation. For regional considerations (33" interceptor point of connection capacity and downstream capacity), a peak flow of 0.53 is appropriate.
- Onsite private sewage collection laterals and mains will vary in size from 6" (laterals) to 15" (private mains from 8" to 15") and will be designed to City of Reno design standards.
- Existing sewage infrastructure has been assumed to have adequate capacity from the point of connection at the existing 33" interceptor to the ultimate discharge location of the TMWRF facility.

# Channel Report

## <Name>

### Circular

Diameter (ft) = 1.25

Invert Elev (ft) = 100.00

Slope (%) = 0.70

N-Value = 0.014

### Calculations

Compute by: Known Q

Known Q (cfs) = 2.41

### Highlighted

Depth (ft) = 0.61

Q (cfs) = 2.410

Area (sqft) = 0.60

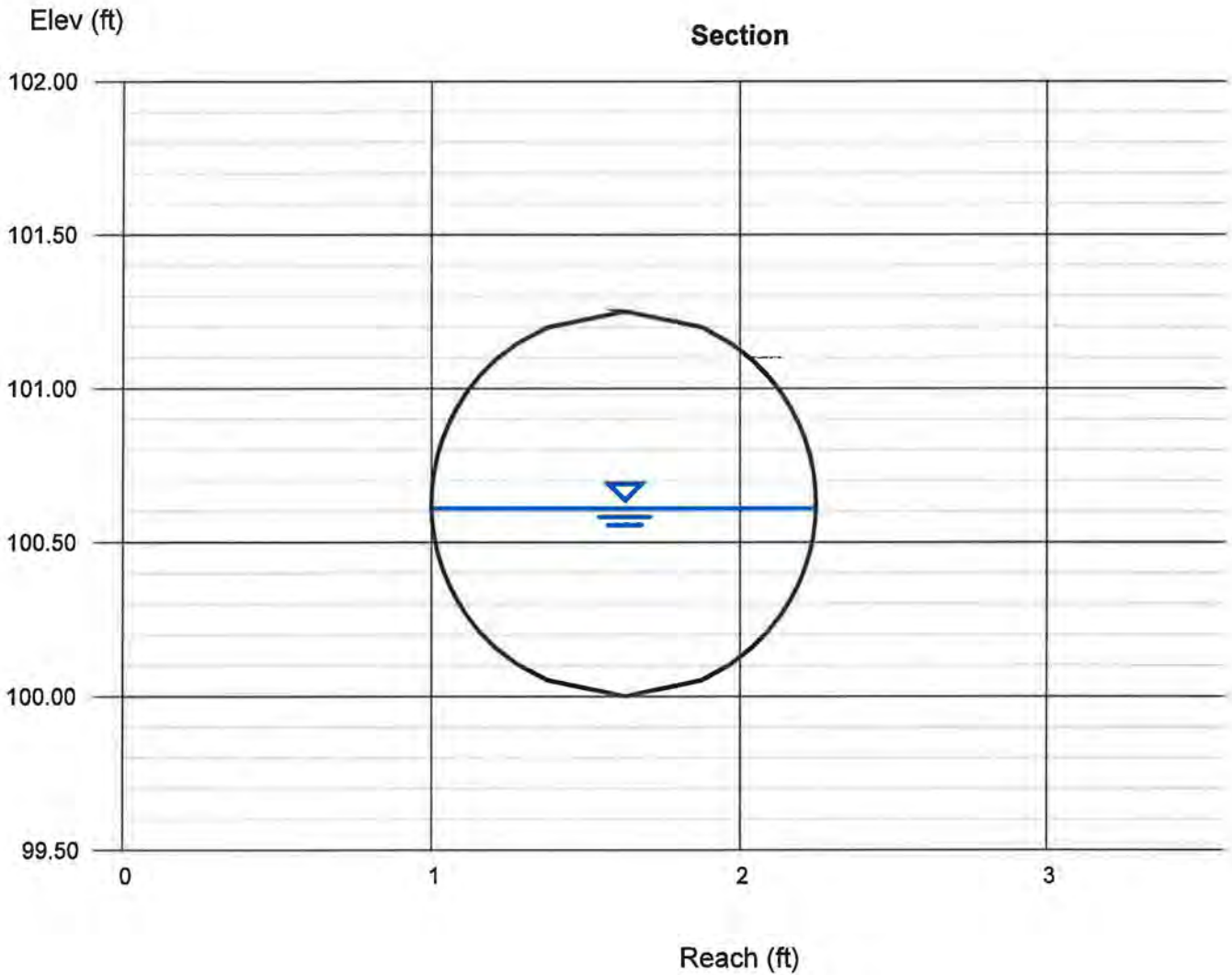
Velocity (ft/s) = 4.03

Wetted Perim (ft) = 1.94

Crit Depth,  $Y_c$  (ft) = 0.62

Top Width (ft) = 1.25

EGL (ft) = 0.86



# Channel Report

## <Name>

### Circular

Diameter (ft) = 0.50

Invert Elev (ft) = 100.00

Slope (%) = 2.00

N-Value = 0.014

### Calculations

Compute by: Known Q

Known Q (cfs) = 0.21

### Highlighted

Depth (ft) = 0.19

Q (cfs) = 0.210

Area (sqft) = 0.07

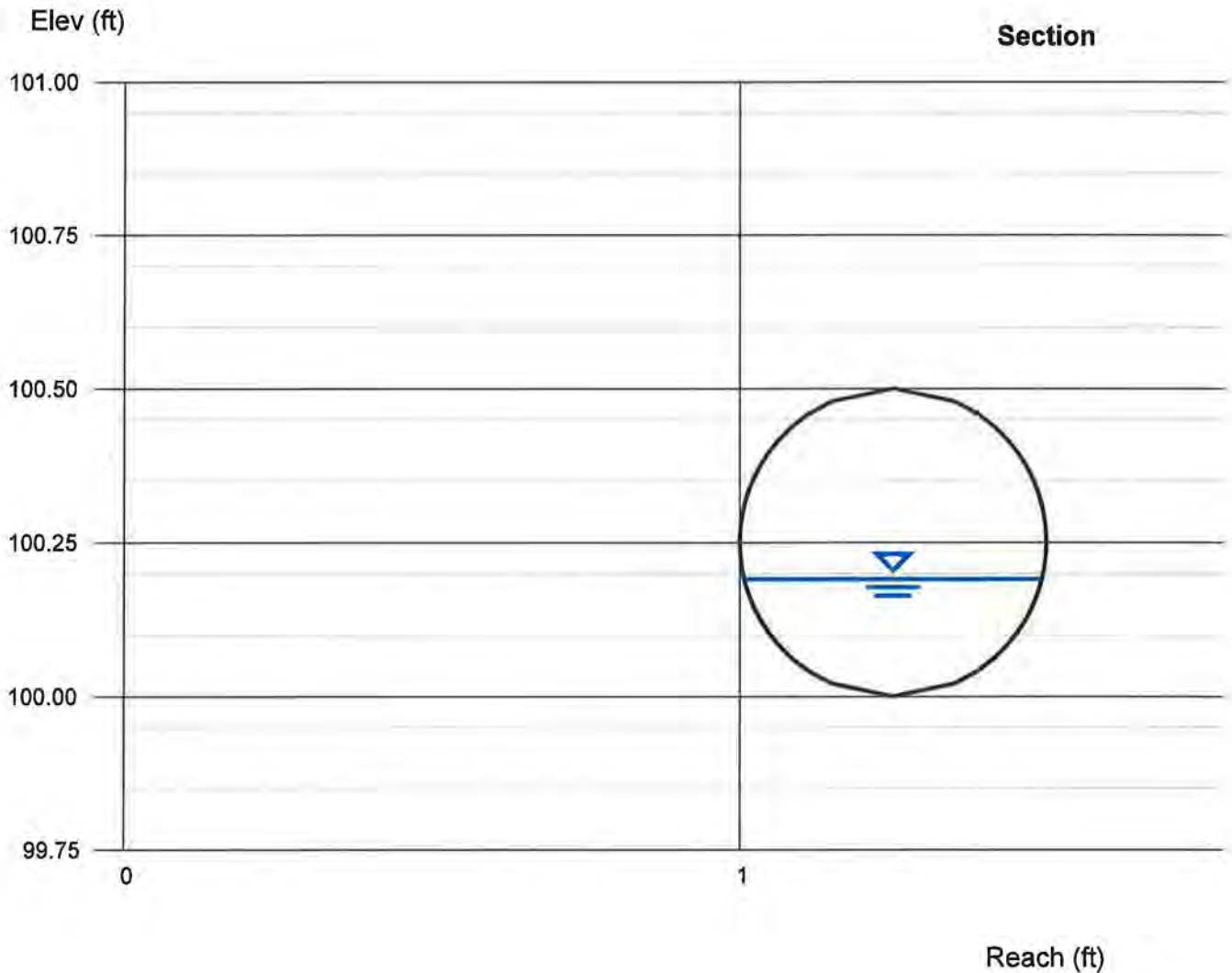
Velocity (ft/s) = 3.06

Wetted Perim (ft) = 0.66

Crit Depth, Yc (ft) = 0.23

Top Width (ft) = 0.49

EGL (ft) = 0.34





EXISTING 33"  
INTERCEPTOR  
0.34 MGD REGIONAL  
PEAK FLOW ADDITION  
FROM FULL BUILDOUT

POC TO EX 33"  
1083 GPM ONSITE  
W/ 500 GPM ALLOWANCE  
FOR FIRE RISER ROOM FLUSH

15" Ø MAX  
ONSITE REQUIREMENT

ONSITE PRIVATE MAIN

POC TO EX 33"  
585 GPM ONSITE  
W/ 500 GPM ALLOWANCE  
FOR FIRE RISER ROOM FLUSH

ONSITE PRIVATE MAIN

PHASE 2 MOB  
LATERAL

NEW LATERAL

POC TO EX 8"  
96 GPM ONSITE

PHASE 2  
PARKING DECK  
LATERAL

EX. 8" PUBLIC MAIN



CONTACT INFO:  
1 EAST FIRST STREET #1400, 89501  
PHONE: (775) 852-5700 FAX: (775) 852-5707  
VISIT US AT WWW.RECNV.COM

NNSMC  
SEWAGE FIGURE

# Appendix D

## EXHIBIT 'A'

All that certain real property situate in the City of Reno, County of Washoe, State of Nevada, described as follows:

Parcel 2 of Parcel Map No. 4051, entitled "Parcel Map No. 1 for Reno Corporate Center, LLC, a Nevada Limited Liability Company, according to the map thereof, filed in the office of the County Recorder of Washoe County, State of Nevada, on June 30, 2003, as file No. 2881781, as amended by Certificate of Amendment recorded October 27, 2003, as Document No. 2944944 of Official Records.

Containing 22.2± more or less.

LEGAL DESCRIPTION PREPARED BY:



Guillermo Enrique Carey, PLS 17758  
MAPCA SURVEYS, INC.  
580 Mount Rose Street  
Reno, NV 89509



Mail Processing Center  
 Federal Aviation Administration  
 Southwest Regional Office  
 Obstruction Evaluation Group  
 10101 Hillwood Parkway  
 Fort Worth, TX 76177

Aeronautical Study No.  
 2018-AWP-6983-OE

## Appendix E

Issued Date: 06/26/2018

Scott Ricks  
 Northern Nevada Medical Center  
 2375 E Prater Way  
 Sparks, NV 89434

### **\*\* DETERMINATION OF NO HAZARD TO AIR NAVIGATION \*\***

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Building Hospital Bed Tower Phase 1
Location:	Reno, NV
Latitude:	39-28-00.00N NAD 83
Longitude:	119-46-05.00W
Heights:	4444 feet site elevation (SE) 77 feet above ground level (AGL) 4521 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

- At least 10 days prior to start of construction (7460-2, Part 1)
- Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 1.

The structure considered under this study lies in proximity to an airport and occupants may be subjected to noise from aircraft operating to and from the airport.

This determination expires on 12/26/2019 unless:

- (a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
- (b) extended, revised, or terminated by the issuing office.
- (c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within

6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA. This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (206) 231-2989, or [dan.shoemaker@faa.gov](mailto:dan.shoemaker@faa.gov). On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2018-AWP-6983-OE.

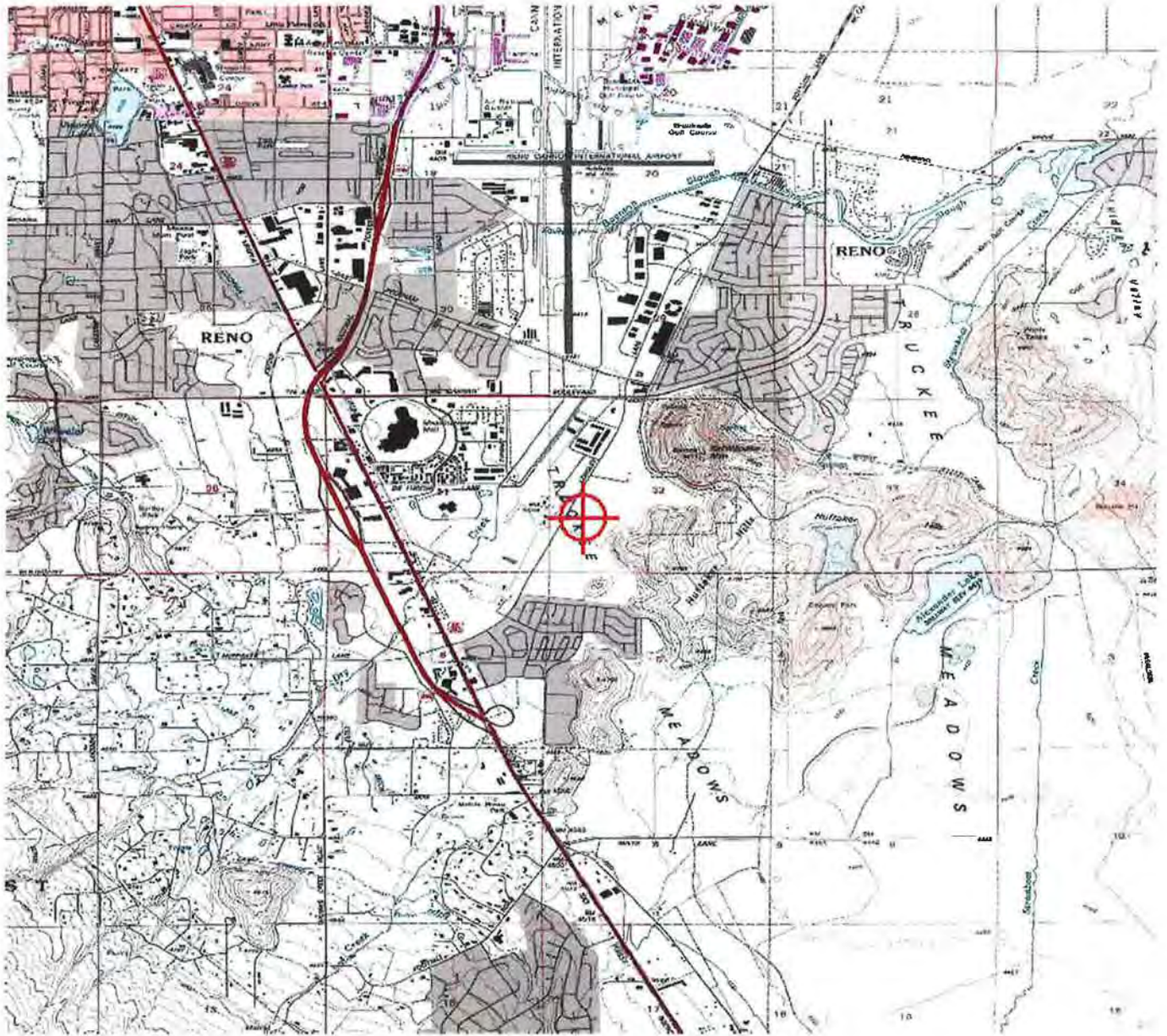
**Signature Control No: 360430313-368773769**

( DNE )

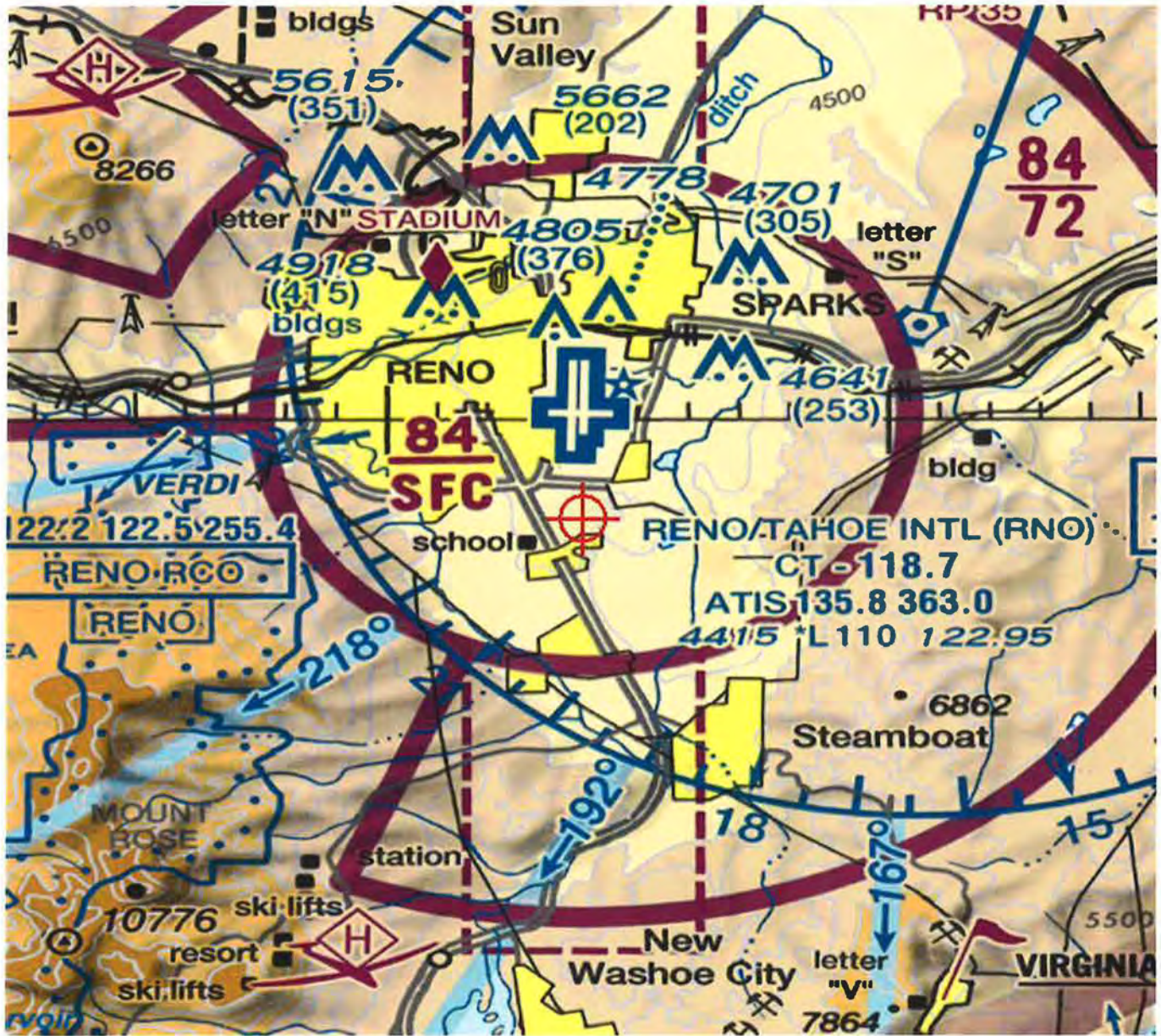
Daniel Shoemaker  
Specialist

Attachment(s)  
Map(s)

TOPO Map for ASN 2018-AWP-6983-OE



Sectional Map for ASN 2018-AWP-6983-OE





Mail Processing Center  
 Federal Aviation Administration  
 Southwest Regional Office  
 Obstruction Evaluation Group  
 10101 Hillwood Parkway  
 Fort Worth, TX 76177

Aeronautical Study No.  
 2018-AWP-6984-OE

Issued Date: 06/26/2018

Scott Ricks  
 Northern Nevada Medical Center  
 2375 E Prater Way  
 Sparks, NV 89434

**\*\* DETERMINATION OF NO HAZARD TO AIR NAVIGATION \*\***

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure: Building Medical Office Building Phase 1  
 Location: Reno, NV  
 Latitude: 39-27-55.00N NAD 83  
 Longitude: 119-46-10.00W  
 Heights: 4444 feet site elevation (SE)  
 77 feet above ground level (AGL)  
 4521 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

- At least 10 days prior to start of construction (7460-2, Part 1)
- Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 1.

The structure considered under this study lies in proximity to an airport and occupants may be subjected to noise from aircraft operating to and from the airport.

This determination expires on 12/26/2019 unless:

- (a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
- (b) extended, revised, or terminated by the issuing office.
- (c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within

6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA. This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

If we can be of further assistance, please contact our office at (206) 231-2989, or [dan.shoemaker@faa.gov](mailto:dan.shoemaker@faa.gov). On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2018-AWP-6984-OE.

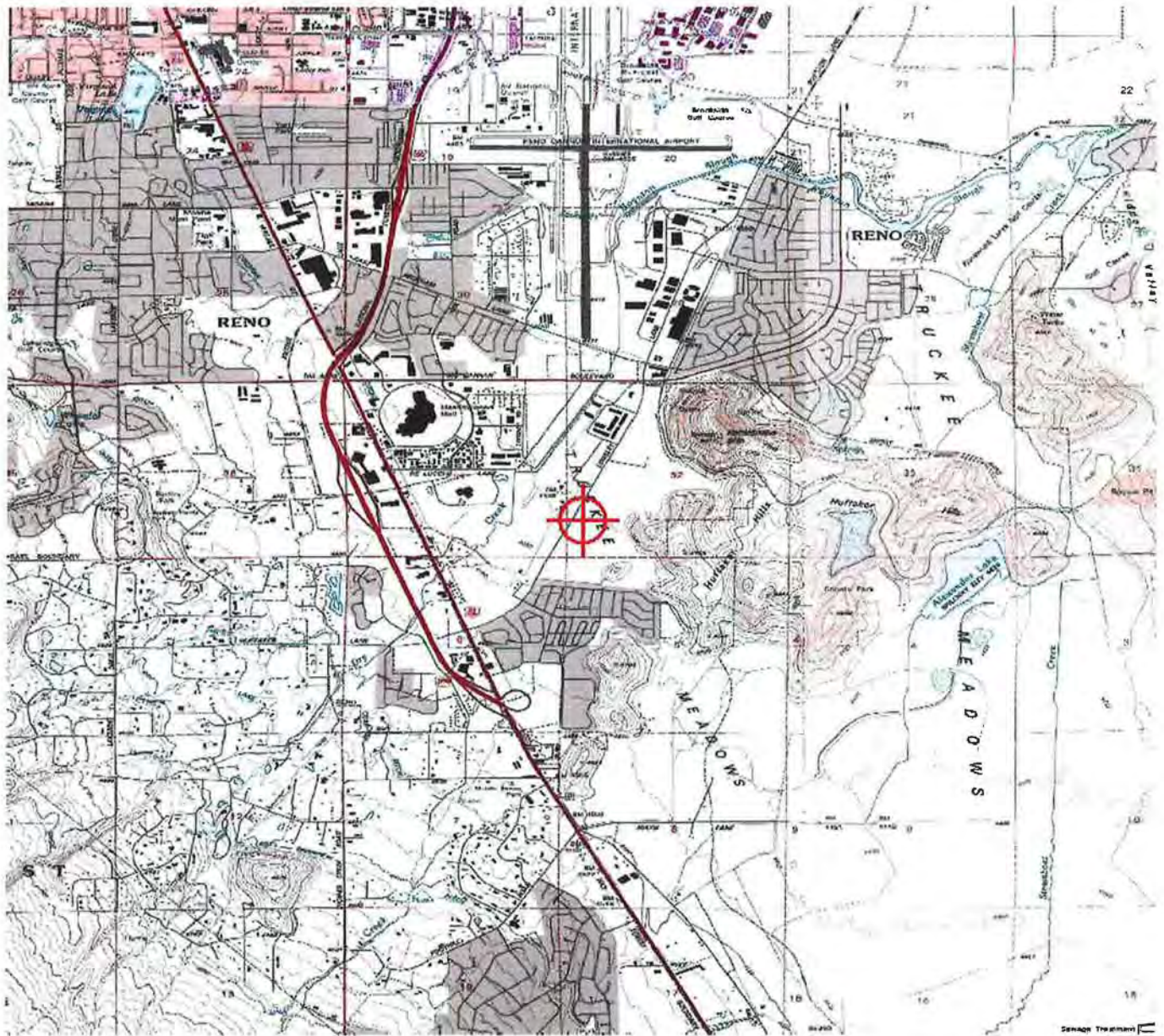
**Signature Control No: 360430314-368773770**

( DNE )

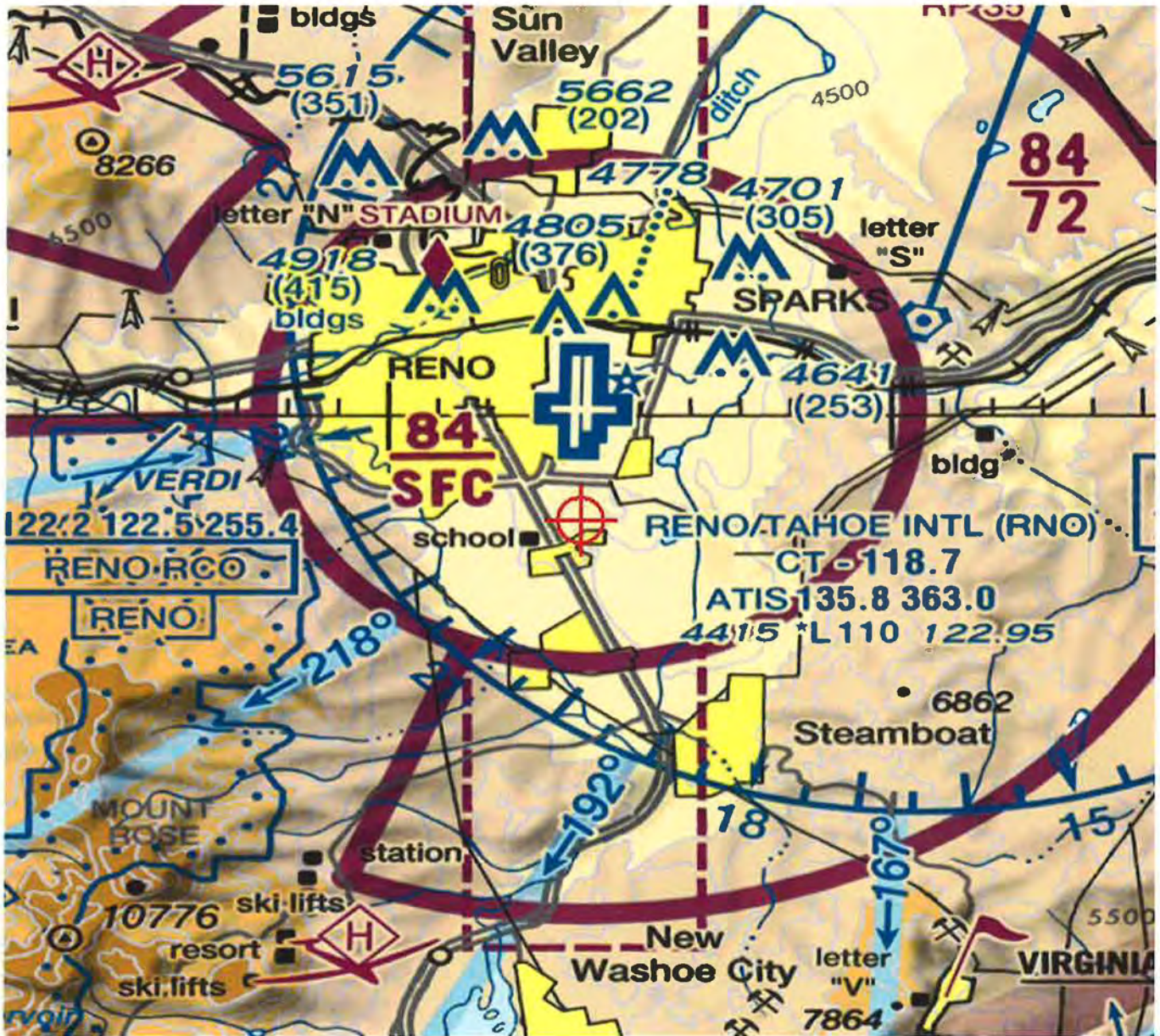
Daniel Shoemaker  
Specialist

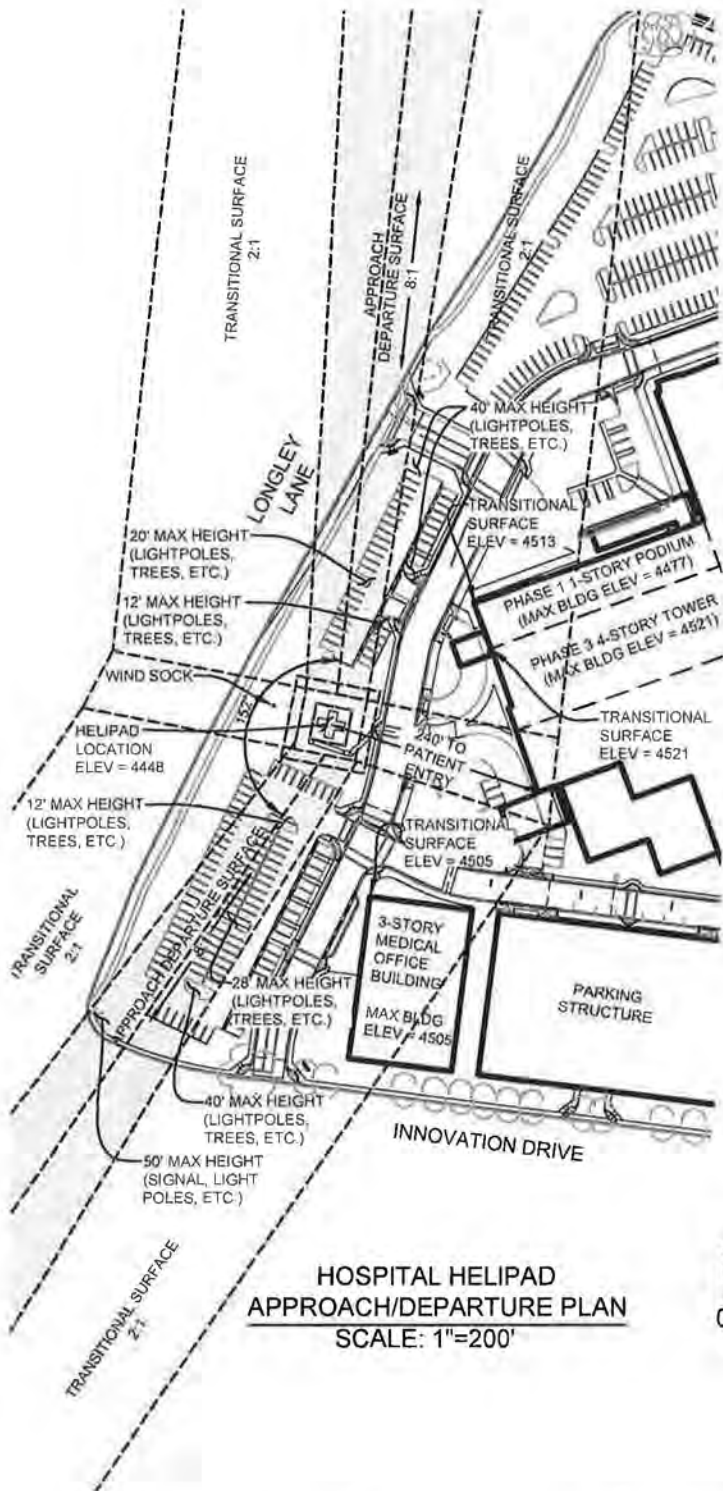
Attachment(s)  
Map(s)

TOPO Map for ASN 2018-AWP-6984-OE

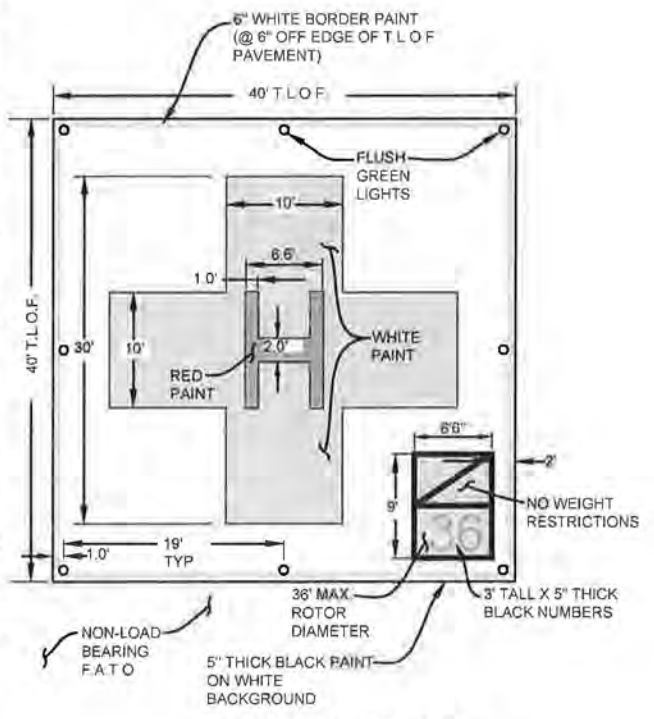


Sectional Map for ASN 2018-AWP-6984-OE

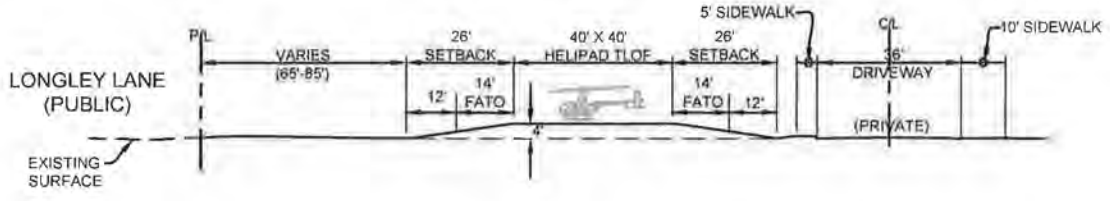
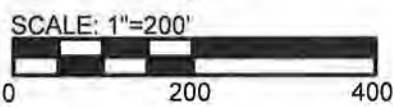




**HOSPITAL HELIPAD  
APPROACH/DEPARTURE PLAN**  
SCALE: 1"=200'



**HOSPITAL HELIPAD  
MARKING & LIGHTING DETAIL**  
NOT TO SCALE



**HOSPITAL HELIPAD SECTION**  
NOT TO SCALE

## Appendix F

# PARTNER

Engineering and Science, Inc:



## PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

### **22-Acre Undeveloped Parcel**

SEC of Longley Lane and Double R Boulevard  
Reno, Nevada 89511

August 22, 2017

Partner Project No. 17-193766.1



Prepared for:

### **UHS of Delaware, Inc.**

367 South Gulph Road, PO Box 61558  
King of Prussia, Pennsylvania 19406

August 22, 2017

Cheryl Ramagano  
UHS of Delaware, Inc.  
367 South Gulph Road, PO Box 61558  
King of Prussia, Pennsylvania 19406

Subject: Phase I Environmental Site Assessment  
22-Acre Undeveloped Parcel  
SEC of Longley Lane and Double R Boulevard  
Reno, Nevada 89511  
Partner Project No. 17-193766.1

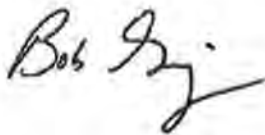
Dear Ms. Ramagano:

Partner Engineering and Science, Inc. (Partner) is pleased to provide the results of the *Phase I Environmental Site Assessment* (Phase I ESA) report of the abovementioned address (the "subject property"). This assessment was performed in general conformance with the scope and limitations as detailed in the ASTM Practice E1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

This assessment included a site reconnaissance as well as research and interviews with representatives of the public, property ownership, site manager, and regulatory agencies. An assessment was made, conclusions stated, and recommendations outlined.

We appreciate the opportunity to provide environmental services to you. If you have any questions concerning this report, or if we can assist you in any other matter, please contact me at (773) 840-5070.

Sincerely,



Bob Geiger  
Relationship Manager

## EXECUTIVE SUMMARY

---

Partner Engineering and Science, Inc. (Partner) has performed a Phase I Environmental Site Assessment (ESA) in general accordance with the scope of work and limitations of ASTM Standard Practice E1527-13, the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (AAI) (40 CFR Part 312) and set forth by UHS of Delaware, Inc. for the property located at the southeast corner of the intersection of Longley Lane to the northwest and Double R Boulevard to the northeast in the City of Reno, Washoe County, Nevada (the "subject property"). The Phase I Environmental Site Assessment is designed to provide UHS of Delaware, Inc. with an assessment concerning environmental conditions (limited to those issues identified in the report) as they exist at the subject property.

### Property Description

The subject property is located on the southeast side of Longley Lane, the southwest and west side of Double R Boulevard, and the north side of Innovation Drive in a developing commercial and residential area in the south portion of Reno, Nevada. Please refer to the table below for further description of the subject property:

<i>Subject Property Data</i>	
<b>Address:</b>	No assigned address
<b>Property Use:</b>	Undeveloped
<b>Land Acreage (Ac):</b>	22.203 acres
<b>Number of Buildings:</b>	None
<b>Assessor's Parcel Number {APN}:</b>	164-354-01
<b>Type of Construction:</b>	N/A
<b>Current Tenants:</b>	Unoccupied
<b>Site Assessment Performed By:</b>	Glenn S. Aro of Partner
<b>Site Assessment Conducted On:</b>	Wednesday, August 9, 2017

The subject property is a vacant parcel of land. Two concrete pillars providing access to the municipal sanitary sewer line are located in the central and northeast portions of the subject property. A gravel-covered area in the northeast portion, used periodically to park truck trailers and accessed by a cutout from Double R Boulevard to the east is located in the northeast portion of the site. A temporary fenced enclosure in the southwest portion of the subject property is used by the construction contractor developing an adjacent parcel south across Innovation Drive to store construction equipment and as a mobile office. The subject property is otherwise undeveloped and unoccupied land covered with native vegetation.

According to available historical sources, the subject property was undeveloped open range, periodically used to grow row crops, from the 1890s through the 1990s. The subject property has remained an undeveloped parcel to the present.

The immediately surrounding properties include a hospice care facility to the north across Double R Boulevard and a business park to the north across Airway Drive; two office parks to the northeast and east across Double R Boulevard; undeveloped land southeast across Double R Boulevard and south across

Innovation Drive (east portion); a large warehousing/offices flex building and a commercial construction site to the south across Innovation Drive (central and west portions); a small utility equipment building to the southwest across Longley Lane; and a large tract of undeveloped land and a rural residence to the northwest across Longley Lane.

Based on data obtained from subsurface investigations conducted at nearby redevelopment sites in the South Reno area, groundwater in the vicinity of the subject property is inferred to be present at a seasonally variable depth of 10 to 35 feet below ground surface and flows toward the south-southwest.

### **Findings**

A *recognized environmental condition (REC)* refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: due to release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. The following was identified during the course of this assessment:

- Partner did not identify any recognized environmental conditions during the course of this assessment.

A *controlled recognized environmental condition (CREC)* refers to a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. The following was identified during the course of this assessment:

- Partner did not identify any controlled recognized environmental conditions during the course of this assessment.

A *historical recognized environmental condition (HREC)* refers to a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls. The following was identified during the course of this assessment:

- Partner did not identify any historical recognized environmental conditions during the course of this assessment.

An *environmental issue* refers to environmental concerns identified by Partner, which do not qualify as RECs; however, warrant further discussion. The following were identified during the course of this assessment:

- According to information obtained from the U.S. Fish & Wildlife Service (USFWS) Wetlands Mapper, designated wetlands are located on the subject property in the north portion and passing through the northwest and southwest corners. However, a comprehensive wetlands survey would be required in order to formally determine actual wetlands on the subject property. A copy of an aerial photograph of the subject property indicating the designated wetlands obtained from the USFWS Wetlands Mapper website is included in Appendix B of this report.

### **Conclusions, Opinions and Recommendations**

Partner has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-13 for the property located at the southeast corner of the intersection of Longley Lane to the northwest and Double R Boulevard to the northeast in the City of Reno, Washoe County, Nevada (the "subject property"). Any exceptions to, or deletions from, this practice are described in Section 1.5 of this report.

This assessment has revealed no evidence of recognized environmental conditions in connection with the subject property; however, environmental issues were identified. Based on the conclusions of this assessment, Partner recommends the following:

- Prior to the start of site development activities, a wetlands survey should be conducted at the subject property to determine areas where wetlands protection measures and/or wetlands mitigation offsets may be required.

## TABLE OF CONTENTS

<b>1.0</b>	<b>INTRODUCTION</b>	<b>1</b>
1.1	Purpose	1
1.2	Scope of Work	1
1.3	Limitations	2
1.4	User Reliance	2
1.5	Limiting Conditions	3
<b>2.0</b>	<b>SITE DESCRIPTION</b>	<b>4</b>
2.1	Site Location and Legal Description	4
2.2	Current Property Use	4
2.3	Current Use of Adjacent Properties	4
2.4	Physical Setting Sources	5
2.4.1	Topography	5
2.4.2	Hydrology	5
2.4.3	Geology/Soils	6
2.4.4	Flood Zone Information	7
<b>3.0</b>	<b>HISTORICAL INFORMATION</b>	<b>8</b>
3.1	Aerial Photograph Review	8
3.2	Fire Insurance Maps	11
3.3	City Directories	11
3.4	Historical Topographic Maps	12
<b>4.0</b>	<b>REGULATORY RECORDS REVIEW</b>	<b>13</b>
4.1	Regulatory Agencies	13
4.1.1	State Department	13
4.1.2	Health Department	13
4.1.3	Fire Department	13
4.1.4	Air Pollution Control Agency	14
4.1.5	Regional Water Quality Agencies	14
4.1.6	Bureau of Corrective Actions	16
4.1.7	Building Department, Assessor's Office and Recorder's Office	16
4.1.8	Planning Department	17
4.1.9	Oil & Gas Exploration	18
4.2	Mapped Database Records Search	18
4.2.1	Regulatory Database Summary	19
4.2.2	Subject Property Listings	19
4.2.3	Adjacent Property Listings	19
4.2.4	Sites of Concern Listings	20
4.2.5	Orphan Listings	20
<b>5.0</b>	<b>USER PROVIDED INFORMATION AND INTERVIEWS</b>	<b>21</b>
5.1	Interviews	21
5.1.1	Interview with Owner	21
5.1.2	Interview with Report User	22
5.1.3	Interview with Key Site Manager	22

5.1.4	Interviews with Past Owners, Operators and Occupants .....	22
5.1.5	Interview with Others .....	22
5.2	User Provided Information .....	22
5.2.1	Title Records, Environmental Liens, and AULs .....	22
5.2.2	Specialized Knowledge .....	22
5.2.3	Actual Knowledge of the User .....	22
5.2.4	Valuation Reduction for Environmental Issues .....	23
5.2.5	Commonly Known or Reasonably Ascertainable Information .....	23
5.2.6	Previous Reports and Other Provided Documentation .....	23
<b>6.0</b>	<b>SITE RECONNAISSANCE .....</b>	<b>24</b>
6.1	General Site Characteristics .....	24
6.2	Potential Environmental Hazards .....	25
6.3	Non-ASTM Services .....	26
6.3.1	Asbestos-Containing Materials (ACM) .....	26
6.3.2	Lead-Based Paint (LBP) .....	26
6.3.3	Radon .....	26
6.3.4	Lead in Drinking Water .....	27
6.3.5	Mold .....	27
6.4	Adjacent Property Reconnaissance .....	27
<b>7.0</b>	<b>FINDINGS AND CONCLUSIONS .....</b>	<b>29</b>
<b>8.0</b>	<b>SIGNATURES OF ENVIRONMENTAL PROFESSIONALS .....</b>	<b>31</b>
<b>9.0</b>	<b>REFERENCES .....</b>	<b>32</b>

**Figures**

- Figure 1** Site Location Map  
**Figure 2** Site Plan  
**Figure 3** Topographic Map

**Appendices**

- Appendix A** Site Photographs  
**Appendix B** Historical/Regulatory Documentation  
**Appendix C** Regulatory Database Report  
**Appendix D** Qualifications

## 1.0 INTRODUCTION

---

Partner Engineering and Science, Inc. (Partner) has performed a Phase I Environmental Site Assessment (ESA) in general conformance with the scope and limitations of ASTM Standard Practice E1 527-13 and the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (AAI) (40 CFR Part 312) for the property located at the southeast corner of the intersection of Longley Lane to the northwest and Double R Boulevard to the northeast in the City of Reno, Washoe County, Nevada (the "subject property"). Any exceptions to, or deletions from, this scope of work are described in the report.

### 1.1 Purpose

The purpose of this ESA is to identify existing or potential Recognized Environmental Conditions (as defined by ASTM Standard E1 527-13) affecting the subject property that: 1) constitute or result in a material violation or a potential material violation of any applicable environmental law; 2) impose any material constraints on the operation of the subject property or require a material change in the use thereof; 3) require clean-up, remedial action or other response with respect to Hazardous Substances or Petroleum Products on or affecting the subject property under any applicable environmental law; 4) may affect the value of the subject property; and 5) may require specific actions to be performed with regard to such conditions and circumstances. The information contained in the ESA Report will be used by Client to: 1) evaluate its legal and financial liabilities for transactions related to foreclosure, purchase, sale, loan origination, loan workout or seller financing; 2) evaluate the subject property's overall development potential, the associated market value and the impact of applicable laws that restrict financial and other types of assistance for the future development of the subject property; and/or 3) determine whether specific actions are required to be performed prior to the foreclosure, purchase, sale, loan origination, loan workout or seller financing of the subject property.

This ESA was performed to permit the *User* to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on scope of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) liability (hereinafter, the "*landowner liability protections*," or "*LLPs*"). ASTM Standard E1 527-13 constitutes "*all appropriate inquiry* into the previous ownership and uses of the *property* consistent with good commercial or customary practice" as defined at 42 U.S.C. §9601 (35)(8).

### 1.2 Scope of Work

The scope of work for this ESA is in general accordance with the requirements of ASTM Standard E1 527-13. This assessment included: 1) a property and adjacent site reconnaissance; 2) interviews with key personnel; 3) a review of historical sources; 4) a review of regulatory agency records; and 5) a review of a regulatory database report provided by a third-party vendor. Partner contacted local agencies, such as environmental health departments, fire departments and building departments in order to determine any current and/or former hazardous substances usage, storage and/or releases of hazardous substances on the subject property. Additionally, Partner researched information on the presence of activity and use limitations (AULs) at these agencies. As defined by ASTM E1527-13, AULs are the legal or physical restrictions or limitations on the use of, or access to, a site or facility: 1) to reduce or eliminate potential

exposure to hazardous substances or petroleum products in the soil or groundwater on the subject property; or 2) to prevent activities that could interfere with the effectiveness of a response action, in order to ensure maintenance of a condition of no significant risk to public health or the environment. These legal or physical restrictions, which may include institutional and/or engineering controls (IC/ECs), are intended to prevent adverse impacts to individuals or populations that may be exposed to hazardous substances and petroleum products in the soil or groundwater on the property.

If requested by Client, this report may also include the identification, discussion of, and/or limited sampling of asbestos-containing materials (ACM), lead-based paint (LBP), mold, and/or radon.

### **1.3 Limitations**

Partner warrants that the findings and conclusions contained herein were accomplished in accordance with the methodologies set forth in the Scope of Work. These methodologies are described as representing good commercial and customary practice for conducting an ESA of a property for the purpose of identifying recognized environmental conditions. There is a possibility that even with the proper application of these methodologies there may exist on the subject property conditions that could not be identified within the scope of the assessment or which were not reasonably identifiable from the available information. Partner believes that the information obtained from the record review and the interviews concerning the subject property is reliable. However, Partner cannot and does not warrant or guarantee that the information provided by these other sources is accurate or complete. The conclusions and findings set forth in this report are strictly limited in time and scope to the date of the evaluations. The conclusions presented in the report are based solely on the services described therein, and not on scientific tasks or procedures beyond the scope of agreed-upon services or the time and budgeting restraints imposed by the Client. No other warranties are implied or expressed.

Some of the information provided in this report is based upon personal interviews, and research of available documents, records, and maps held by the appropriate government and private agencies. This report is subject to the limitations of historical documentation, availability, and accuracy of pertinent records, and the personal recollections of those persons contacted.

This practice does not address requirements of any state or local laws or of any federal laws other than the all appropriate inquiry provisions of the LLPs. Further, this report does not intend to address all of the safety concerns, if any, associated with the subject property.

Environmental concerns, which are beyond the scope of a Phase I ESA as defined by ASTM include the following: ACM, LBP, radon, and lead in drinking water. These issues may affect environmental risk at the subject property and may warrant discussion and/or assessment; however, are considered non-scope issues. If specifically requested by the Client, these non-scope issues are discussed in Section 6.3.

### **1.4 User Reliance**

UHS of Delaware, Inc. engaged Partner to perform this assessment in accordance with an agreement governing the nature, scope and purpose of the work as well as other matters critical to the engagement. All reports, both verbal and written, are for the sole use and benefit of UHS of Delaware, Inc. Either verbally or in writing, third parties may come into possession of this report or all or part of the

information generated as a result of this work. In the absence of a written agreement with Partner granting such rights, no third parties shall have rights of recourse or recovery whatsoever under any course of action against Partner, its officers, employees, vendors, successors or assigns. Any such unauthorized user shall be responsible to protect, indemnify and hold Partner, Client and their respective officers, employees, vendors, successors and assigns harmless from any and all claims, damages, losses, liabilities, expenses (including reasonable attorneys' fees) and costs attributable to such Use. Unauthorized use of this report shall constitute acceptance of and commitment to these responsibilities, which shall be irrevocable and shall apply regardless of the cause of action or legal theory pled or asserted. Additional legal penalties may apply.

This report has been completed under specific Terms and Conditions relating to scope, relying parties, limitations of liability, indemnification, dispute resolution, and other factors relevant to any reliance on this report. Any parties relying on this report do so having accepted the Terms and Conditions for which this report was completed. A copy of Partner's standard Terms and Conditions can be found at <http://www.partneresi.com/terms-and-conditions.php>

### **1.5 Limiting Conditions**

The findings and conclusions contain all of the limitations inherent in these methodologies that are referred to in ASTM E1527-13.

Specific limitations and exceptions to this ESA are more specifically set forth below:

- Interviews with past owners, operators and occupants were not reasonably ascertainable and thus constitute a data gap. Based on information obtained from other historical sources (as discussed in Section 3.0), this data gap is not expected to alter the findings of this assessment.
- Partner requested information relative to a title search and completion of a pre-survey questionnaire from the Report User. This information was not provided at the time of the assessment.
- Partner was unable to determine the property use at 5-year intervals, which constitutes a data gap. Except for property tax files and recorded land title records, which were not considered to be sufficiently useful, Partner reviewed all standard historical sources and conducted appropriate interviews. Based on the consistency of use at the beginning and end of these extended periods, this limitation is not expected to alter the overall findings of this assessment.
- Partner was provided unescorted access to all areas of the undeveloped subject property and observed the interior of the temporary construction equipment storage yard in the southwest portion of the site though the chain link fencing. Adjacent properties were observed from the perimeter of the subject property.

Due to time constraints associated with this report, the Client has requested the report despite the above-listed limitations.

## 2.0 SITE DESCRIPTION

---

### 2.1 Site Location and Legal Description

The subject property is located on the southeast side of Longley Lane, the southwest and west side of Double R Boulevard, and the north side of Innovation Drive in a developing area in the south portion of Reno, Nevada. According to the Washoe County Assessor's Office, ownership of the subject property is currently vested in Stanharrah. A legal description of the larger parcel of which the subject property is a part is provided as Exhibit "A" appended to a Sale Deed recorded October 30, 2003, a copy of which is included in Appendix B of this report. A copy of the assessor's parcel map and property summary is also included in Appendix B of this report.

Please refer to Figure 1: Site Location Map, Figure 2: Site Plan, Figure 3: Topographic Map, and Appendix A: Site Photographs for the location and site characteristics of the subject property.

### 2.2 Current Property Use

The subject property is a roughly triangular-shaped parcel of 22.203 acres. Two concrete pillars providing access to the municipal sanitary sewer line are located in the central and northeast portions of the subject property. A gravel-covered area in the northeast portion, used periodically to park truck trailers and accessed by a cutout from Double R Boulevard to the east is located in the northeast portion of the site. A temporary fenced enclosure in the southwest portion of the subject property is used by the construction contractor developing an adjacent parcel south across Innovation Drive to store construction equipment and as a portable office. The subject property is otherwise undeveloped and unoccupied land covered with native vegetation.

The subject property is designated for commercial/industrial development by the City of Reno.

The subject property is not identified in the regulatory database report of Section 4.2.

### 2.3 Current Use of Adjacent Properties

The subject property is located in a developing mixed-use light industrial, commercial and residential area of Washoe County and the south portion of the City of Reno. During the vicinity reconnaissance, Partner observed the following land use on properties in the immediate vicinity of the subject property:

#### *Immediately Surrounding Properties*

<b>North:</b>	Double R Boulevard, beyond which is Infinity Hospice Care (5538 Double R Boulevard) Airway Drive, beyond which is Longley Business Park (3595 Airway Drive)
<b>Northeast:</b>	Double R Boulevard, beyond which is Sandhill Business Campus (5485 Reno Corporate Drive)
<b>East:</b>	Double R Boulevard, beyond which is Tanamera Corporate Center (5496 Reno Corporate Drive)
<b>Southeast:</b>	Double R Boulevard, beyond which is undeveloped land and the Huffaker Hills Innovation Drive, beyond which are an undeveloped parcel, a warehouse/offices flex
<b>South:</b>	building (650 Innovation Drive) and a parcel in the initial phases of commercial development
<b>Southwest:</b>	Longley Lane, beyond which is a small utility equipment building (6965 Longley Lane)

**Northwest:** Longley Lane, beyond which is undeveloped land (the former Capurro Ranch at 6560 Old Longley Lane) and a rural residence (the Quilici Residence at 6450 Old Longley Lane)

The adjacent northwest properties (a former ranch and a residence) are identified as a closed State Hazardous Waste Site (SHWS) case and as a registered underground storage tank (UST) facility in the regulatory database report of Section 4.2. A warehousing tenant at the adjacent south property is identified as a Non-Generator of federally regulated hazardous waste (RCRA-NG) in the regulatory database report.

## **2.4 . Physical Setting Sources**

### **2.4.1 Topography**

The United States Geological Survey (USGS) *Mount Rose NE, Nevada* Quadrangle 7.5-minute series topographic map was reviewed for this ESA. Located in the Washoe Valley, according to the contour lines on the topographic map, the subject property is located at approximately 4,443 feet above mean sea level. The contour lines in the area of the subject property indicate the local area is sloping toward the southwest. The Huffaker Hills are adjacent to the southeast. Rattlesnake Mountain is nearby to the northeast. No details of subject property development are depicted on the topographic map dated 2014.

A copy of the most recent topographic map is included as Figure 3 of this report.

### **2.4.2 Hydrology**

Information specific to the subject property regarding the depth to groundwater and direction of groundwater flow was not available for the subject area. However, based on data obtained from subsurface investigations conducted at nearby redevelopment sites in the South Reno area, depth to the high water table is anticipated to vary seasonally from 10 to 35 feet below ground surface (bgs).

Based on data obtained from subsurface investigations conducted at nearby redevelopment sites in the South Reno area, groundwater in the vicinity of the subject property is inferred to flow to the southwest.

The nearest surface waters in the vicinity of the subject property are seasonal Dry Creek in approximately 0.27-mile northwest. The Truckee River is approximately 3.47 miles north-northeast. No settling ponds, lagoons, surface impoundments or natural catch basins were observed at the subject property during this assessment.

A review of the *Mount Rose NE, Nevada* 7.5-minute quadrangle topographic map and the U.S. Fish & Wildlife Service (USFWS) Wetlands Mapper indicates designated wetlands areas within the boundaries of the subject property. The northeast portion of the subject property is designated as part of a 37-acre Palustrine-Emergent-Persistent-Temporary Flooded (PEM1A) wetlands. Riverine-Intermittent-Streambed-Seasonally Flooded-Excavated (R4SBCx) wetlands are depicted through the southwest and northwest corners of the subject property. A comprehensive wetlands survey would be required in order to formally determine actual wetlands on the subject property. A copy of the aerial photograph of the designated wetlands area on the subject property obtained from the USFWS Wetlands Mapper website is included in Appendix B of this report.

According to available information, a public water system operated by the Truckee Meadows Water Authority (TMWA) serves the subject property vicinity. According to the TMWA 2076 *Water Quality Report*, shallow groundwater directly beneath the subject property is not used for domestic purposes. The source of public water for the City of Reno is primarily treated surface water from the Truckee River (85%) supplemented with treated groundwater from TMWA-owned wells. A copy of the TMWA 2076 *Water Quality Report* is included in Appendix B of this report.

### **2.4.3 Geology/Soils**

The City of Reno is located in a transition area between the Sierra Nevada geologic province to the west and the Basin and Range geologic province to the east. The Sierra Nevada Mountains were formed by large intrusions of molten granitic rock during Mesozoic time (230 to 63 million years ago). Subsequent faulting during Tertiary time (63 to 2 million years ago) raised the mountain range to its present position. The Basin and Range Province was formed by numerous north-south trending faults which formed the horst and graben morphology of most of Nevada. Most of the displacement on these faults occurred during Tertiary time, although earthquake activity continues to the present in much of the Basin and Range Province. The Earth's crust under Nevada is being thinned in an east-west direction and episodic movements along the faults are displacing the mountains upward. The basins, such as the Truckee Meadows Basin, consist of deep accumulations of Tertiary to Quaternary age (more recent than 2 million years ago) sediments. Repeated glaciations resulted in glacial outwash, debris flows and flood materials being deposited in the Truckee Meadows area. Recent unconsolidated deposits occur along present day drainage channels as the result of stream outwash carried down from the Carson Range and Truckee River Basin.

Based on information obtained from the United States Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey online database, much of the soil at the subject property (central and west 56 percent) is mapped as Vamp fine sandy loam, slightly saline-alkali. This soil profile is described as a thin layer of fine sandy loam to a depth of 3 inches bgs that is underlain by stratified fine sandy loam to silt loam to 36 inches bgs, then by cemented material to 42 inches bgs, then stratified loamy sand to silt loam to 60 inches bgs. This soil series is somewhat poorly drained and its permeability is variable.

The soil in the north portion of the subject property (24 percent) is mapped as Dithod sandy loam. This soil profile is described as sandy loam to a depth of 6 inches bgs that is underlain by silt loam to 15 inches bgs, then by stratified sandy loam to clay loam to 46 inches bgs, then loamy sand to 60 inches bgs. This soil series is somewhat poorly drained and its permeability is moderately high.

The soil in the southeast portion of the subject property (20 percent) is mapped as Truckee sandy loam, gravelly substratum. This soil profile is described as sandy loam to a depth of 12 inches bgs that is underlain by stratified sandy loam to silt clay loam to 30 inches bgs, then stratified gravelly sand to very gravelly sandy loam to 60 inches bgs. This soil series is poorly drained and its permeability is moderately high.

#### **2.4.4 Flood Zone Information**

Partner performed a review of the Flood Insurance Rate Map (FIRM), published by the Federal Emergency Management Agency (FEMA). According to Community Panel Number 32031C3234G, dated March 16, 2009, the subject property is located in Flood Zone X, defined by FEMA as an area outside of the 100-year and 500-year flood plains.

A copy of the portion of the FIRM that includes the subject property is provided in Appendix B of this report.

### 3.0 HISTORICAL INFORMATION

Partner obtained historical use information about the subject property from a variety of sources. A chronological listing of the historical data found is summarized in the table below:

<i>Historical Use Information</i>		
<b>Period/Date</b>	<b>Source</b>	<b>Description/Use</b>
1893 to 1999	Aerial Photographs; Topographic Maps; Municipal Records; Online Research	Undeveloped; periodically developed as a row crop field
2000 to Present	Aerial Photographs; Topographic Map; Municipal Records; Interviews; On-Site Observations	Undeveloped

According to available historical sources, the subject property was undeveloped open range, periodically used to grow row crops, from the 1890s through the 1990s. The subject property has remained an undeveloped parcel to the present.

The subject property parcel was historically used for agricultural purposes. There is a potential that agricultural related chemicals such as pesticides, herbicides, and fertilizers, may have been used and stored onsite. It is likely that residual agricultural chemicals (if any) would have degraded since the site was last utilized for agricultural purposes. These additional variables serve to further reduce the potential for exposure to residual agricultural chemicals (if any). Based on these reasons, Partner concludes that the possible former use of agricultural chemicals is not expected to represent a significant environmental concern at this time.

#### 3.1 Aerial Photograph Review

On August 21, 2017, Partner reviewed historical aerial photographs of the subject property and surrounding area obtained from Environmental Data Resources, Inc. (EDR) and Google Earth. The following observations were noted to be visible on the subject property and adjacent properties during the aerial photograph review:

<i>Date:</i>	1939	<i>Scale:</i>	1"=750'
<b>Subject Property:</b>	North portion appears to be undeveloped grazing land; south portion appears to be a cultivated field		
<b>North:</b>	Appears to be undeveloped grazing land		
<b>Northeast:</b>	Appears to be undeveloped grazing land		
<b>East:</b>	Appears to be undeveloped grazing land and crop fields		
<b>Southeast:</b>	Not shown on the aerial photograph		
<b>South:</b>	Not shown on the aerial photograph		
<b>Southwest:</b>	Developed as a cultivated field		
<b>Northwest:</b>	Appears to be undeveloped grazing land and cultivated fields; a residence and outbuildings are nearby to the northwest		

**Date:** 1948 **Scale:** 1" = 1000'

**Subject Property:** Appears to be undeveloped; an unpaved farm road crosses east to west through the north portion of the site

**North:** No visibly significant changes from the 1939 aerial photograph

**Northeast:** No visibly significant changes from the 1939 aerial photograph

**East:** Appears to be undeveloped grazing land

**Southeast:** Appears to be undeveloped grazing land

**South:** Appears to be undeveloped grazing land

**Southwest:** Appears to be undeveloped grazing land

**Northwest:** Appears to be undeveloped grazing land; a residence and outbuildings are nearby to the northwest

**Date:** 1966 **Scale:** 1" = 500'

**Subject Property:** North portion is a cultivated field; south portion appears to be undeveloped grazing land

**North:** Developed as a cultivated field

**Northeast:** Developed as a cultivated field

**East:** Developed as a cultivated field

**Southeast:** Not shown on the aerial photograph

**South:** Not shown on the aerial photograph

**Southwest:** Not shown on the aerial photograph

**Northwest:** Developed as cultivated fields; a residence and outbuildings are nearby to the northwest

**Date:** 1973 **Scale:** 1" = 750'

**Subject Property:** Developed as cultivated fields

**North:** No visibly significant changes from the 1966 aerial photograph

**Northeast:** No visibly significant changes from the 1966 aerial photograph

**East:** No visibly significant changes from the 1966 aerial photograph

**Southeast:** Not shown on the aerial photograph

**South:** Not shown on the aerial photograph

**Southwest:** Not shown on the aerial photograph

**Northwest:** No visibly significant changes from the 1966 aerial photograph

**Date:** 1980 **Scale:** 1" = 1000'

**Subject Property:** No visibly significant changes from the 1973 aerial photograph

**North:** No visibly significant changes from the 1973 aerial photograph

**Northeast:** No visibly significant changes from the 1973 aerial photograph significant urban development is advancing from the northeast

**East:** No visibly significant changes from the 1973 aerial photograph

**Southeast:** Developed as a cultivated field

**South:** Developed as a cultivated field

**Southwest:** Developed as a cultivated field

**Northwest:** No visibly significant changes from the 1973 aerial photograph; significant urban development is advancing from the northwest; Meadowood Mall is under construction nearby to the northwest

Date:	1986	Scale:	1" = 1000'
<b>Subject Property:</b>	No visibly significant changes from the 1980 aerial photograph; Longley Lane has been reconfigured to along the northwest boundary of the subject property		
<b>North:</b>	No visibly significant changes from the 1980 aerial photograph		
<b>Northeast:</b>	No visibly significant changes from the 1980 aerial photograph		
<b>East:</b>	No visibly significant changes from the 1980 aerial photograph		
<b>Southeast:</b>	No visibly significant changes from the 1980 aerial photograph		
<b>South:</b>	No visibly significant changes from the 1980 aerial photograph		
<b>Southwest:</b>	Appears to be cleared land across Longley Lane		
<b>Northwest:</b>	No visibly significant changes from the 1980 aerial photograph across Longley Lane; significant commercial development is nearby to the northwest and west, including Meadowood Mall		

Date:	1990	Scale:	1" = 750'
<b>Subject Property:</b>	No visibly significant changes from the 1986 aerial photograph		
<b>North:</b>	Cleared land in preparation for development across Longley Lane		
<b>Northeast:</b>	No visibly significant changes from the 1986 aerial photograph		
<b>East:</b>	No visibly significant changes from the 1986 aerial photograph		
<b>Southeast:</b>	No visibly significant changes from the 1986 aerial photograph		
<b>South:</b>	No visibly significant changes from the 1986 aerial photograph		
<b>Southwest:</b>	No visibly significant changes from the 1986 aerial photograph		
<b>Northwest:</b>	No visibly significant changes from the 1986 aerial photograph; commercial buildings are nearby to the west		

Date:	1994	Scale:	1" = 750'
<b>Subject Property:</b>	No visibly significant changes from the 1990 aerial photograph		
<b>North:</b>	Commercial development is underway on the cleared lot across Longley Lane		
<b>Northeast:</b>	No visibly significant changes from the 1990 aerial photograph		
<b>East:</b>	No visibly significant changes from the 1990 aerial photograph		
<b>Southeast:</b>	No visibly significant changes from the 1990 aerial photograph		
<b>South:</b>	No visibly significant changes from the 1990 aerial photograph		
<b>Southwest:</b>	No visibly significant changes from the 1990 aerial photograph; a large commercial building is nearby to the southwest		
<b>Northwest:</b>	No visibly significant changes from the 1990 aerial photograph		

**Date:** 1999 **Scale:** 1"=750'

**Subject Property:** No visibly significant changes from the 1994 aerial photograph  
**North:** Developed with a commercial building complex across Longley Lane  
**Northeast:** Cleared land in preparation for development  
**East:** No visibly significant changes from the 1994 aerial photograph  
**Southeast:** No visibly significant changes from the 1994 aerial photograph  
**South:** No visibly significant changes from the 1994 aerial photograph  
**Southwest:** No visibly significant changes from the 1994 aerial photograph  
**Northwest:** No visibly significant changes from the 1994 aerial photograph

**Date:** 2006 **Scale:** Not specified

**Subject Property:** Undeveloped parcel with a graveled area in the northeast portion; the subject property is bounded by the current streets  
**North:** No visibly significant changes from the 1999 aerial photograph across Airway Drive  
**Northeast:** Graded in preparation for development across Double R Boulevard  
**East:** Undergoing development as two business parks across Double R Boulevard  
**Southeast:** Undeveloped hilly land across Double R Boulevard  
**South:** Developed with the current warehouse/flex building across Innovation Drive; two smaller parcels are undeveloped  
**Southwest:** No visibly significant changes from the 1999 aerial photograph across Longley Lane  
**Northwest:** Appears to be a large tract of otherwise undeveloped land containing a residence and outbuildings across Longley Lane

**Date:** 2012 **Scale:** Not specified

**Subject Property:** No visibly significant changes from the 2006 aerial photograph  
**North:** Developed with the current improvements across Double R Boulevard and Airway Drive  
**Northeast:** Developed with the current improvements across Double R Boulevard  
**East:** Developed with the current improvements across Double R Boulevard  
**Southeast:** Developed with the current improvements across Double R Boulevard  
**South:** Developed with the current improvements across Innovation Drive  
**Southwest:** Developed with the current improvements across Longley Lane  
**Northwest:** No visibly significant changes from the 2006 aerial photograph across Longley Lane

Copies of the aerial photographs reviewed are included in Appendix B of this report.

### 3.2 Fire Insurance Maps

Sanborn map coverage was not available for the subject property.

### 3.3 City Directories

On August 9, 2017, Partner attempted to review the Washoe County Library Downtown Reno branch's collection of historical city directories, for past names and businesses that were listed for the subject property and adjacent properties in 2000, 2005, 2010 and 2015, as directories prior to 2000 do not provide coverage for the local area. Construction activities in the library's reference section precluded access to the city directory collection on that day.

### 3.4 Historical Topographic Maps

On August 22, 2017, Partner reviewed historical topographic maps obtained from EDR. The following observations were noted to be depicted on the subject property and adjacent properties during the topographic map review:

<b>Date:</b>	1893
<b>Subject Property:</b>	Located in an undeveloped area portion of the Truckee Meadows nearby northeast of the historical Town of Huffaker; a creek depicted northwest to southeast through the subject property; no other details depicted
<b>North:</b>	Undeveloped; no details depicted
<b>East:</b>	Undeveloped; no details depicted
<b>South:</b>	Undeveloped; no details depicted
<b>Northwest:</b>	Undeveloped; no details depicted; a road (i.e., Old Virginia Road) and the Virginia & Truckee Railroad (V&TRR) tracks are depicted farther to the southwest

<b>Date:</b>	1969
<b>Subject Property:</b>	Depicted as undeveloped
<b>North:</b>	Depicted as undeveloped
<b>East:</b>	Depicted as undeveloped
<b>South:</b>	Depicted as undeveloped; commercial development is depicted along U.S. Highway 395 (South Virginia Street) farther to the southwest
<b>Northwest:</b>	Depicted as undeveloped; a residence and outbuildings are depicted along the east side of the former location of Longley Lane nearby to the northwest

<b>Date:</b>	1974
<b>Subject Property:</b>	No significant changes depicted from the 1969 map
<b>North:</b>	No significant changes depicted from the 1969 map
<b>East:</b>	No significant changes depicted from the 1969 map
<b>South:</b>	No significant changes depicted from the 1969 map; a residential development is depicted nearby to the south
<b>Northwest:</b>	No significant changes depicted from the 1969 map

<b>Date:</b>	1982
<b>Subject Property:</b>	No significant changes depicted from the 1974 map
<b>North:</b>	No significant changes depicted from the 1974 map
<b>East:</b>	No significant changes depicted from the 1974 map
<b>South:</b>	No significant changes depicted from the 1974 map; the residential development nearby to the south has expanded significantly
<b>Northwest:</b>	No significant changes depicted from the 1974 map

Copies of the topographic maps reviewed are included in Appendix B of this report.

## 4.0 REGULATORY RECORDS REVIEW

### 4.1 Regulatory Agencies

#### 4.1.1 State Department

##### *Regulatory Agency Data*

**Name of Agency:** Nevada Division of Environmental Protection (NDEP)  
**Point of Contact:** See regulatory-specific NDEP bureaus, below  
**Agency Address:** 901 S Stewart Street, Suite 4100, Carson City, NV 89701  
**Agency Phone Number:** See regulatory-specific NDEP bureaus, below  
**Date of Contact:** August 17, 2017  
**Method of Communication:** See regulatory-specific NDEP bureaus, below  
**Summary of Communication:** NDEP and its various regulatory-specific bureaus is the environmental regulatory control authority for the State of Nevada (see Sections 4.1.5 and 4.1.6, below)

#### 4.1.2 Health Department

##### *Regulatory Agency Data*

**Name of Agency:** Washoe County Health Department-Environmental Health Services (WCHD-EHS)  
**Point of Contact:** Mr. Mike Ezell, Senior Environmental Health Specialist  
**Agency Address:** 1001 E Ninth Street, Building B Reno, NV 89520  
**Agency Phone Number:** (775) 328-2688  
**Date of Contact:** August 17, 2017  
**Method of Communication:** Telephone  
**Summary of Communication:** No records regarding the presence of hazardous materials storage, releases, contamination, USTs, septic systems or AULs on the subject property were reported by the WCHD-EHS.

No WCHD-EHS records for the subject property were identified to include in Appendix B of this report.

#### 4.1.3 Fire Department

##### *Regulatory Agency Data*

**Name of Agency:** Reno Fire Department (RFD)  
Nevada State Fire Marshal (NSFM)  
**Point of Contact:** Administrative Offices representative  
Administrative office assistant  
**Agency Address:** 1 East 1st Street, 4th Floor, Reno, NV 89501  
107 Jacobsen Way, Carson City, NV 89701  
**Agency Phone Number:** (775) 334-2300  
(775) 684-7524  
**Date of Contact:** August 17, 2017  
**Method of Communication:** Telephone

*Regulatory Agency Data*

**Summary of Communication:** No records regarding fuel storage or releases, environmental regulatory violations, or the presence of regulated quantities of hazardous materials or of USTs, fuel dispensing equipment or AULs on the subject property were on file with the RFD.  
No fire or hazardous materials permits were reported by the NSFM.

No RFD or NSFM records for the subject property were identified to include in Appendix B of this report.

**4.1.4 Air Pollution Control Agency**

*Regulatory Agency Data*

**Name of Agency:** Washoe County Health District-Air Quality Management Division (WCHD-AQMD)  
**Point of Contact:** Ms. Suzanne Dugger, Air Quality Specialist I  
**Agency Address:** 1001 E Ninth Street, Building B Suite 171, Reno, NV 89520  
**Agency Phone Number:** (775) 784-7217  
**Date of Contact:** August 17, 2017  
**Method of Communication:** Telephone  
**Summary of Communication:** No Permits to Operate (PTO), Notices of Violation (NOV), or Notices to Comply (NTC) or the presence of AULs, dry cleaning machines, USTs or fuel dispensing operations were on file for the subject property with the WCHD-AQMD.

No WCHD-AQMD records for the subject property were identified to include in Appendix B of this report.

**4.1.5 Regional Water Quality Agencies**

*Regulatory Agency Data*

**Name of Agency:** NDEP Bureau of Water Pollution Control (NDEP-BWPC)  
Central Truckee Meadows Remediation District (CTMRD)  
**Point of Contact:** Public counter representative  
CTMRD Website (Washoe County Community Services Department, Water Utility)  
**Agency Address:** 901 S Stewart Street, Suite 4001, Carson City, NV 89701  
4930 Energy Way, Reno, NV 89502  
**Agency Phone Number:** (775) 687-9418  
(775) 954-4647  
**Date of Contact:** August 17, 2017  
**Method of Communication:** Telephone/Accessed online

#### *Regulatory Agency Data*

**Summary of Communication:** No records regarding hazardous substance use, storage or releases, or the presence of USTs and AULs on the subject property were on file with the NDEP-BWPC.

According to the most recent perchloroethylene (PCE) groundwater contamination plume map published by the Central Truckee Meadows Remediation District (CTMRD) in December 2010, neither the subject property nor the surrounding area is located in the City of Reno PCE regional groundwater contamination extending south from the city's central business district. The CTMRD is the environmental regulatory agency coordinating and reviewing the progress of the groundwater remediation. A Truckee Meadows Water Authority (TMWA) Staff Report memorandum issued January 14, 2009 regarding PCE Management Strategies includes a February 10, 2009 CTMRD Program Update addressed to the Staff Working Group. This document indicates there are twelve total potential groundwater contamination source areas identified to date; three of which are in Reno. Although groundwater throughout downtown Reno is contaminated with PCE, the subject property is approximately 0.75-mile south (hydrologically cross-gradient) of the southern boundary of the CTMRD area of investigation. Furthermore, there have been no reported issues with solvent vapor encroachment in the area of the subject property. Based on a review of available information, PCE-impacted municipal water supply wells in the central Truckee Meadows were taken off-line while \$5.9 million in treatment systems were constructed and installed. The impacted wells were returned to use after the treatment systems became operational. The PCE contamination is continuing to be addressed through ongoing interagency efforts, including additional groundwater well installation and sampling, investigation of potential sources and active remediation. The financially responsible parties have been identified and the cleanup project is in the post-remedial action groundwater monitoring phase. Based on the subject property's location outside the regional contaminated groundwater plume (i.e., approximately three miles south of the plume's southern boundary) and the absence of solvent vapor encroachment concerns in South Reno, the regional PCE contamination is not expected to represent a significant environmental concern.

A copy of the updated CTMRD map indicating the subject property's location outside of the CTMRD area of investigation is included in Appendix B of this report.

#### 4.1.6 Bureau of Corrective Actions

##### Regulatory Agency Data

**Name of Agency:** NDEP Bureau of Corrective Actions (NDEP-BCA)  
**Point of Contact:** NDEP-BCA Project Tracking database available on line  
**Agency Address:** 901 S Stewart Street, Suite 4001, Carson City, NV 89701  
**Agency Phone Number:** (775) 687-9368  
**Date of Contact:** August 17, 2017  
**Method of Communication:** Underground storage tank (UST) and active and closed leaking UST (LUST) databases accessed online  
**Summary of Communication:** No records regarding hazardous substance use, storage or releases, or the presence of USTs, active or closed LUST cases or AULs on the subject property were identified in the NDEP-Bureau of Corrective Actions (NDEP-BCA) active and closed leaking UST (LUST) databases or on the NDEP-BCA Project Tracking database of contaminated sites.

No NDEP-BCA records for the subject property were identified to include in Appendix B of this report.

#### 4.1.7 Building Department, Assessor's Office and Recorder's Office

##### Regulatory Agency Data

**Name of Agency:** Reno Community Development Department, Building and Safety Division (RBSD)  
Washoe County Assessor's Office (WCAO)  
Washoe County Recorder's Office (WCRO)  
**Point of Contact:** Public counter representative/ online databases  
**Agency Address:** 1 East 1st Street, 2nd Floor, Reno, NV 89501  
1001 E Ninth Street, Building A, Reno, NV 89520  
1001 E Ninth Street, Building A, Suite 140, Reno, NV 89520  
**Agency Phone Number:** 775) 334-2063  
(775) 328-2277  
(775) 328-3661  
**Date of Contact:** August 8, 2017  
**Method of Communication:** Telephone/Accessed online  
**Summary of Communication:** Documents available from the WCAO online property database contain information about the subject property including from the RBSD permit records and from recorded documents maintained in the WCRO online database. The subject property is identified as APN 164-354-01. Ownership is vested in Stanharrah since October 2003. No records of development and no permits or improvements of environmental concern were identified from a review of the limited WCAO, WCRO or RBSD records available through the agency databases.

**Regulatory Agency Data**

**Name of Agency:** Reno Community Development Department, Building and Safety Division (RBSD)  
Washoe County Assessor's Office (WCAO)  
Washoe County Recorder's Office (WCRO)

**Point of Contact:** Public counter representative/ online databases

**Agency Address:** 1 East 1st Street, 2nd Floor, Reno, NV 89501  
1001 E Ninth Street, Building A, Reno, NV 89520  
1001 E Ninth Street, Building A, Suite 140, Reno, NV 89520

**Agency Phone Number:** 775) 334-2063  
(775) 328-2277  
(775) 328-3661

**Date of Contact:** August 8, 2017

**Method of Communication:** Telephone/Accessed online

**Summary of Communication:** Documents available from the WCAO online property database contain information about the subject property including from the RBSD permit records and from recorded documents maintained in the WCRO online database. The subject property is identified as APN 164-354-01. Ownership is vested in Stanharrah since October 2003. No records of development and no permits or improvements of environmental concern were identified from a review of the limited WCAO, WCRO or RBSD records available through the agency databases.

**Recorded Documents Reviewed for Washoe County APN 164-354-01 (Subject Property)**

<b>Year</b>	<b>Owner/Applicant</b>	<b>Description</b>
2003	Reno Corporate Center LLC, owner	Sale deed issued to new owner, Stanharrah

Copies of the documents obtained from the online property databases including a parcel map, property summary and description, ownership and recorded documents history, and the recorded plat map and the 2003 Sale Deed are included in Appendix B of this report.

**4.1.8 Planning Department**

**Regulatory Agency Data**

**Name of Agency:** Reno Community Development Department, Planning Division (RPD)

**Point of Contact:** Zoning map available online:  
<http://maps.cityofreno.net/>

**Agency Address:** 1 East 1st Street, 2nd Floor, Reno, NV 89501

**Agency Phone Number:** (775) 320-8309

**Date of Contact:** August 8, 2017

**Method of Communication:** Zoning map and zoning information accessed online

**Summary of Communication:** According to records reviewed, the subject property is zoned IC - Industrial Commercial by the City of Reno. The subject property is not identified in any Planned Unit Development (PUD) or Specific Plan District (SPD) currently being administered by the RPD. No AULs were identified for the subject property parcel by the RPD.

A copy of the interactive zoning map is not included in the appendix of this report.

#### **4.1.9 Oil & Gas Exploration**

##### **Regulatory Agency Data**

<b>Name of Agency:</b>	Nevada Commission on Mineral Resources, Division of Minerals (NCMRDM)
<b>Point of Contact:</b>	NCMRDM oil and gas map available online: <a href="https://gisweb.unr.edu/OilGas/">https://gisweb.unr.edu/OilGas/</a>
<b>Agency Address:</b>	400 W. King Street, Suite 106, Carson City, NV 89703
<b>Agency Phone Number:</b>	(775) 684-7040
<b>Date of Contact:</b>	August 8, 2017
<b>Method of Communication:</b>	Maps accessed online
<b>Summary of Communication:</b>	According to NCMRDM maps for the City of Reno, no oil or gas wells are located on or adjacent to the subject property.

A copy of the NCMRDM interactive map is not included in the appendix of this report.

#### **4.2 Mapped Database Records Search**

Information from standard federal, state, county, and city environmental record sources was provided by EDR. Data from governmental agency lists are updated and integrated into one database, which is updated as these data are released. The information contained in this report was compiled from publicly available sources and the locations of the sites are plotted utilizing a geographic information system, which geocodes the site addresses. The accuracy of the geocoded locations is approximately +/-300 feet.

#### 4.2.1 Regulatory Database Summary

<i>Radius Report Data</i>				
Database	Search Radius (mile)	Subject Property	Adjacent Properties	Sites of Concern
Federal National Priority List (NPL; Superfund) or Delisted NPL Sites	1.00	N	N	N
Federal Superfund Enterprise Management System (SEMS) Sites	0.50	N	N	N
Federal SEMS ARCHIVE Sites	0.50	N	N	N
Federal RCRA CORRACTS (Corrective Actions) Facilities	1.00	N	N	N
Federal RCRA Treatment, Storage and Disposal Facilities (TSDF)	0.50	N	N	N
Federal RCRA Generators Sites (LQG, SQG, CESQG); Federal RCRA Non-Generators Sites (NG)	0.25	N	V	N
Federal IC/EC Registries	0.50	N	N	N
Federal ERNS Sites	Subject Property	N	<i>N/A</i>	<i>N/A</i>
State/Tribal Equivalent NPL Sites	1.00	N	N	N
State/Tribal Equivalent CERCLIS Sites (State Hazardous Waste Sites; SHWS)	1.00	N	V	N
State/Tribal Solid Waste Disposal/Landfill Facilities (SWLF)	0.50	N	N	N
State/Tribal Leaking Underground Storage Tank Sites (LUST)	0.50	N	N	N
State/Tribal Registered Storage Tank Facilities (UST/AST); Historical UST Facilities	0.25	N	V	N
State/Tribal Voluntary Cleanup Sites (VCP)	0.50	N	N	N
State/Tribal Spills Sites	0.50	N	N	N
Federal Brownfields Sites	0.50	N	N	N
State Brownfields Sites	0.50	N	N	N
EDR Manufactured Gas Plants	1.00	N	N	N
EDR US Historical Auto Stations	0.125	N	N	N
EDR US Historical Cleaners	0.125	N	N	N

#### 4.2.2 Subject Property Listings

The subject property is not identified in the regulatory database report.

#### 4.2.3 Adjacent Property Listings

The adjacent northwest properties (a former ranch and a residence) are identified as a closed SHWS case and as a registered UST facility in the regulatory database report. A warehousing tenant at the adjacent south property is identified as a RCRA-NG in the regulatory database report. The listings are discussed below:

- The property, identified as the Quilici Residence at 6450 Old Longley Lane, is located adjacent to the northwest of the subject property across Longley Lane. During removal of a heating oil aboveground storage tank (AST) at the residence, on February 22, 1999, a release confined to soil under the tank was reported to the NDEP. The AST and impacted soil were removed and disposed off-site, and the NDEP closed the SHWS case on September 10, 1999. Based on the removal of the AST and associated petroleum-impacted soil, the limited extent of contamination confined to on-site soil and the regulatory closure, this listing is not expected to represent a significant environmental concern and it is unlikely that a further regulatory file review for this adjacent property would alter the findings of this assessment.
- The property, identified as the former Capurro Ranch at 6560 Old Longley Lane, was located adjacent to the northwest of the subject property across Longley Lane. In January 1993, an 1,100-gallon capacity underground storage tank (UST) for gasoline was removed from service by the ranch owner. During modifications to the ranch in September 1997, a localized area of contaminated soil and pooled groundwater was discovered at the location of the former gasoline UST. The release was reported to the NDEP on September 30, 1997. The impacted soil and a pooled area of groundwater were subsequently removed and disposed off-site and the SHWS case was closed by the NDEP on December 23, 1998. Based on the removal of the UST, petroleum-impacted soil and pooled groundwater, the limited extent of contamination confined on-site and the regulatory closure, this listing is not expected to represent a significant environmental concern and it is unlikely that a further regulatory file review for this adjacent property would alter the findings of this assessment.
- No releases, contamination or regulatory violations associated with the non-federally regulated wastes (e.g., solvents) generated by a tenant at the adjacent south warehouse property (Home Depot Builder Solutions Group at 650 Innovation Drive) were identified in the regulatory database report.

#### **4.2.4 Sites of Concern Listings**

No sites of concern to the subject property are identified in the regulatory database report.

Although not identified in the regulatory database report, the southern extent of the investigation area for the City of Reno perchloroethylene (PCE) regional groundwater contamination plume extending south from the city's central business district is approximately 0.75-mile north and the plume has not impacted the subject property. Details of the regional contamination are provided in Section 4.1.5 of this report.

Based on the information presented in Section 4.1.5, vapor migration is not expected to represent a significant environmental concern at this time.

#### **4.2.5 Orphan Listings**

No orphan listings at current or historical addresses associated with the subject property, adjacent or nearby hydrologically up-gradient properties, or sites of concern are identified in the regulatory database report.

A copy of the regulatory database report is included in Appendix C of this report.

## 5.0 USER PROVIDED INFORMATION AND INTERVIEWS

In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the *Brownfields Amendments*), the *User* must conduct the following inquiries required by 40 CFR 312.25, 312.28, 312.29, 312.30, and 312.31. The *User* should provide the following information to the *environmental professional*. Failure to provide this information could result in a determination that *all appropriate inquiries* is not complete. The *User* is asked to provide information or knowledge of the following:

- Review Title and Judicial Records for Environmental Liens and AULs
- Specialized Knowledge or Experience of the User
- Actual Knowledge of the User
- Reason for Significantly Lower Purchase Price
- Commonly Known or *Reasonably Ascertainable* information
- Degree of Obviousness
- Reason for Preparation of this Phase I ESA

Fulfillment of these user responsibilities is key to qualification for the identified defenses to CERCLA liability. Partner requested our Client to provide information to satisfy User Responsibilities as identified in Section 6 of the ASTM guidance.

Pursuant to ASTM E1527-13, Partner requested the following site information from UHS of Delaware, Inc. (User of this report).

<i>User Responsibilities</i>				
<b>Item</b>	<b>Provided By User</b>	<b>Not Provided By User</b>	<b>Discussed Below</b>	<b>Does Not Apply</b>
Environmental Pre-Survey Questionnaire		X	X	
Title Records, Environmental Liens, and AULs		X	X	
Specialized Knowledge		X	X	
Actual Knowledge		X	X	
Valuation Reduction for Environmental Issues		X	X	
Identification of Key Site Manager		X	X	
Reason for Performing Phase I ESA	<b>Section 11</b>			
Prior Environmental Reports		X		
Other				X

### 5.1 Interviews

#### 5.1.1 Interview with Owner

Mr. Gary Nelson, president and representative for the owner of the subject property since October 2003, identified as Stanharrah, indicated that he had no information pertaining to any pending, threatened or past litigation relevant to hazardous substances or petroleum products in, on or from the subject property; any pending, threatened or past administrative proceedings relevant to hazardous substances or

petroleum products in, on or from the subject property; or any notices from a governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

Mr. Nelson was unaware of any USTs, spills or releases, or the presence of clarifiers or active separators on the subject property. According to Mr. Nelson, the subject property has been undeveloped since the time Stanharrah acquired it.

Copies of the ASTM and AAI Questionnaires completed by Mr. Nelson are included in Appendix B of this report.

### **5.1.2 Interview with Report User**

Please refer to Section 5.2 below for information requested from the Report User. The information requested was not received prior to the issuance of this report. Because the Report User (Client) is a lender, it is understood that the Report User would not have knowledge of the property that would significantly impact our ability to satisfy the objectives of this assessment. The lack of this information is not considered to represent a significant data gap.

### **5.1.3 Interview with Key Site Manager**

As the subject property is undeveloped and unoccupied, a Key Site Manager was not identified by the Report User.

### **5.1.4 Interviews with Past Owners, Operators and Occupants**

Interviews with past owners, operators and occupants were not conducted since information regarding the potential for contamination at the subject property was obtained from other sources.

### **5.1.5 Interview with Others**

As the subject property is not an abandoned property as defined in ASTM 1527-13, interview with others were not performed.

## **5.2 User Provided Information**

### **5.2.1 Title Records, Environmental Liens, and AULs**

Partner was not provided with title records or environmental lien and AUL information for review as part of this assessment.

### **5.2.2 Specialized Knowledge**

No specialized knowledge of environmental conditions associated with the subject property was provided by the User at the time of the assessment.

### **5.2.3 Actual Knowledge of the User**

No actual knowledge of any environmental lien or AULs encumbering the subject property or in connection with the subject property was provided by the User at the time of the assessment.

#### **5.2.4 Valuation Reduction for Environmental Issues**

No knowledge of valuation reductions associated with the subject property was provided by the User at the time of the assessment.

#### **5.2.5 Commonly Known or Reasonably Ascertainable Information**

The User did not provide information that is commonly known or *reasonably ascertainable* within the local community about the subject property at the time of the assessment.

#### **5.2.6 Previous Reports and Other Provided Documentation**

No previous reports were provided to Partner for review during the course of this assessment.

## 6.0 SITE RECONNAISSANCE

The weather at the time of the site visit was sunny and warm. Refer to Section 1.5 for limitations encountered during the field reconnaissance, and Sections 2.1 and 2.2 for subject property operations. The table below provides the site assessment details:

### *Site Assessment Data*

<b>Site Assessment Performed By:</b>	Glenn S. Aro
<b>Site Assessment Conducted On:</b>	Wednesday, August 9, 2017

Partner was provided unescorted access to all areas of the undeveloped subject property and observed the interior of the temporary construction equipment storage yard in the southwest portion of the site through the chain link fencing. Adjacent properties were observed from the perimeter of the subject property.

No potentially significant environmental concerns or non-ASTM concerns were identified during the on-site reconnaissance.

### **6.1 General Site Characteristics**

#### **6.1.1 Solid Waste Disposal**

No solid waste is generated at the undeveloped and unoccupied subject property. Waste Management, Inc. provides solid waste disposal services for residents and businesses throughout the City of Reno. A small pile of non-hazardous construction debris (concrete and wood) was observed in the north portion of the large parcel. No other evidence of construction materials (except equipment stored in the temporary enclosure in the southwest portion of the site), debris or other non-hazardous or hazardous materials or wastes was observed stored, dumped or disposed at the subject property.

#### **6.1.2 Sewage Discharge and Disposal**

No sewage discharges are generated at the unoccupied subject property. The municipal sanitary sewer system operated by the City of Reno Public Works Department (RPWD) services the local area. Two concrete pillars providing access to the municipal sanitary sewer line are located in the central and northeast portions of the subject property. No evidence of current or former wastewater treatment facilities or septic systems was observed on the subject property during the site reconnaissance.

#### **6.1.3 Surface Water Drainage**

Stormwater percolates into the exposed soil at the subject property. A small stormwater collection area is located in the northeast portion of the subject property adjacent to the vehicle cutout from Double R Boulevard. No concerns (odors; standing water; stains) were observed on the soil or rocks in the stormwater collection area.

According to information obtained from the USFWS Wetlands Mapper, designated wetlands are located on the subject property in the north portion and passing through the northwest and southwest corners. However, a comprehensive wetlands survey would be required in order to formally determine actual

wetlands on the subject property. A copy of an aerial photograph of the subject property indicating the designated wetlands obtained from the USFWS Wetlands Mapper website is included in Appendix B of this report.

No surface impoundments, natural catch basins, settling ponds or lagoons were observed on the subject property. No drywells were identified on the subject property.

#### **6.1.4 Source of Heating and Cooling**

As there are no structures, no heating or cooling systems were observed at the subject property. Electric and natural gas service is provided to the local area by NV Energy.

#### **6.1.5 Wells and Cisterns**

No aboveground evidence of wells or cisterns was observed during the site reconnaissance.

#### **6.1.6 Wastewater**

No wastewater is generated at the unoccupied subject property. Sanitary discharges in the local area are directed into the municipal sanitary sewer system operated by the RPWD.

No industrial process is performed at the subject property.

#### **6.1.7 Septic Systems**

No septic systems were observed or reported on the subject property.

#### **6.1.8 Additional Site Observations**

No additional general site characteristics were observed during the site reconnaissance.

### **6.2 Potential Environmental Hazards**

#### **6.2.1 Hazardous Substances and Petroleum Products Used or Stored at the Site**

No hazardous substances or petroleum products were observed on the unoccupied subject property during the site reconnaissance, including in the temporary construction equipment fenced enclosure in the southwest portion of the parcel.

#### **6.2.2 Aboveground & Underground Hazardous Substance or Petroleum Product Storage Tanks (ASTs/USTs)**

No evidence of current or former ASTs or USTs was observed during the site reconnaissance.

#### **6.2.3 Evidence of Releases**

No spills, stained soil or other indications that a surficial release has occurred at the subject property were observed, including in the temporary construction equipment fenced enclosure in the southwest portion of the parcel.

#### **6.2.4 Polychlorinated Biphenyls (PCBs)**

No potential PCB-containing equipment (e.g., transformers; oil-filled switches; hoists; lifts; dock levelers; hydraulic elevators; compactors; balers, etc.) was observed on the subject property during the site reconnaissance.

#### **6.2.5 Strong, Pungent or Noxious Odors**

No strong, pungent or noxious odors were evident during the site reconnaissance.

#### **6.2.6 Pools of Liquid**

No pools of liquid were observed on the subject property during the site reconnaissance.

#### **6.2.7 Drains, Sumps and Clarifiers**

No drains, sumps or clarifiers were observed on the subject property during the site reconnaissance.

#### **6.2.8 Pits, Ponds and Lagoons**

No pits, ponds or lagoons were observed on the subject property.

#### **6.2.9 Stressed Vegetation**

Other than from lack of irrigation, no stressed vegetation was observed on the subject property.

#### **6.2.10 Additional Potential Environmental Hazards**

No additional environmental hazards, including landfill activities or radiological hazards, were observed.

### **6.3 Non-ASTM Services**

#### **6.3.1 Asbestos-Containing Materials (ACM)**

As the unoccupied and undeveloped subject property contains no structures, asbestos-containing materials were not reviewed as part of this assessment.

#### **6.3.2 Lead-Based Paint (LBP)**

As the unoccupied and undeveloped subject property contains no structures, LBP was not reviewed as part of this assessment.

#### **6.3.3 Radon**

Radon is a colorless, odorless, naturally occurring, radioactive, inert, gaseous element formed by radioactive decay of radium (Ra) atoms. The US EPA has prepared a map to assist National, State, and local organizations to target their resources and to implement radon-resistant building codes. The map divides the country into three Radon Zones, according to the table below:

<b>EPA Radon Zones</b>		
<b>EPA Zones</b>	<b>Average Predicted Radon Levels</b>	<b>Potential</b>
Zone 1	Exceed 4.0 pCi/L	Highest
Zone 2	Between 2.0 and 4.0 pCi/L	Moderate
Zone 3	Less than 2.0 pCi/L	Low

It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the US EPA recommends site-specific testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures.

Radon sampling was not conducted as part of this assessment. Review of the US EPA Map of Radon Zones places the subject property in Zone 2. Based upon the radon zone classification, radon is not considered to be a significant environmental concern.

#### **6.3.4 Lead in Drinking Water**

According to available information, a public water system operated by the Truckee Meadows Water Authority (TMWA) serves the subject property vicinity. According to the TMWA *2076 Water Quality Report*, shallow groundwater directly beneath the subject property is not used for domestic purposes. The sources of public water for the City of Reno are treated surface water from the Truckee River and treated groundwater from 32 municipal wells. According to the *TMWA 2076 Water Quality Report*, water supplied to the subject property is in compliance with all State and Federal regulations pertaining to drinking water standards, including lead and copper. Water sampling was not conducted to verify water quality.

A copy of the TMWA *2076 Water Quality Report* is included in Appendix B of this report.

#### **6.3.5 Mold**

As the unoccupied and undeveloped subject property contains no structures, mold was not reviewed as part of this assessment.

### **6.4 Adjacent Property Reconnaissance**

The adjacent property reconnaissance consisted of observing the adjacent properties from the subject property premises. No items of environmental concern were identified on the adjacent properties during the site assessment, including hazardous substances, petroleum products, ASTs, USTs, evidence of releases, PCBs, strong or noxious odors, pools of liquids, sumps or clarifiers, pits or lagoons, stressed vegetation, or any other potential environmental hazards, except for the following:

#### **6.4.1 Hazardous Substances and Petroleum Products Used or Stored at the Site**

An adjacent property south across Innovation Drive is developed with a large warehousing/offices flex building occupied by a variety of tenants, some of which presumably store and use regulated quantities of hazardous materials and generate and store regulated quantities of hazardous wastes. No outside storage, bulk storage, evidence of ASTs or USTs, or other significant environmental concerns were observed regarding the current operations at the adjacent property. Based on our observations, the nature of tenant operations and the adjacent property's hydrologically cross-gradient location, the presence of regulated hazardous materials and wastes at the adjacent property is unlikely to be a significant environmental concern to the subject property.

### **6.4.3 Evidence of Releases**

Surficial dry oil stains on the intact asphalt and concrete paving in the parking lots and drives due to normal vehicular use at the adjacent developed properties are not of environmental concern to the subject property.

### **6.4.4 PCBs**

Five pad-mounted NV Energy-owned transformers were observed at the adjacent developed properties. No staining or leakage was observed in the vicinity of the transformers. Based on these observations, the presence of utility-owned transformers at the adjacent properties is not a significant environmental concern to the subject property.

### **6.4.5 Drains, Sumps and Clarifiers**

Stormwater drains connected to the municipal system were observed in the parking lots and drives at the adjacent developed properties and along the adjacent streets. No evidence of stains, odors or improper disposal to the drains was noted, and the adjacent drains are not an environmental concern to the subject property.

## 7.0 FINDINGS AND CONCLUSIONS

---

### Findings

A *recognized environmental condition (REC)* refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: due to release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. The following was identified during the course of this assessment:

- Partner did not identify any recognized environmental conditions during the course of this assessment.

A *controlled recognized environmental condition (CREC)* refers to a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. The following was identified during the course of this assessment:

- Partner did not identify any controlled recognized environmental conditions during the course of this assessment.

A *historical recognized environmental condition (HREC)* refers to a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls. The following was identified during the course of this assessment:

- Partner did not identify any historical recognized environmental conditions during the course of this assessment.

An *environmental issue* refers to environmental concerns identified by Partner, which do not qualify as RECs; however, warrant further discussion. The following were identified during the course of this assessment:

- According to information obtained from the U.S. Fish & Wildlife Service (USFWS) Wetlands Mapper, designated wetlands are located on the subject property in the north portion and passing through the northwest and southwest corners. However, a comprehensive wetlands survey would be required in order to formally determine actual wetlands on the subject property. A copy of an aerial photograph of the subject property indicating the designated wetlands obtained from the USFWS Wetlands Mapper website is included in Appendix B of this report.

### **Conclusions, Opinions and Recommendations**

Partner has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-13 for the property located at the southeast corner of the intersection of Longley Lane to the northwest and Double R Boulevard to the northeast in the City of Reno, Washoe County, Nevada (the "subject property"). Any exceptions to, or deletions from, this practice are described in Section 1.5 of this report.

This assessment has revealed no evidence of recognized environmental conditions in connection with the subject property; however, environmental issues were identified. Based on the conclusions of this assessment, Partner recommends the following:

- Prior to the start of site development activities a wetlands survey should be conducted at the subject property to determine areas where wetlands protection measures and/or wetlands mitigation offsets may be required.

## 8.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

---

Partner has performed a Phase I Environmental Site Assessment of the property located at the southeast corner of the intersection of Longley Lane to the northwest and Double R Boulevard to the northeast in the City of Reno, Washoe County, Nevada in general conformance with the scope and limitations of the protocol and the limitations stated earlier in this report. Exceptions to or deletions from this protocol are discussed earlier in this report.

By signing below, Partner declares that, to the best of our professional knowledge and belief, we meet the definition of *Environmental Professional* as defined in §312.10 of 40 CFR §312. Partner has the specific qualifications based on education, training, and experience to assess a *property* of the nature, history, and setting of the subject *property*. Partner has developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Prepared By:

**DRAFT**

Glenn S Aro, REA  
Environmental Professional

Reviewed By:

**DRAFT**

Debbie Stott  
Senior Author

*I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and to the best of my knowledge comply with all applicable federal, state and local statutes, regulations and ordinances. The service provided is a Phase I Environmental Site Assessment.*

**DRAFT**

Debra B Stott  
August 22, 2017  
CEM Certificate 2359

## 9.0 REFERENCES

---

### Reference Documents

American Society for Testing and Materials, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, ASTM Designation: E1527-13

Environmental Data Resources, Inc. (EDR), *The Aerial Photo Decade Package*, August 10, 2010

EDR, *EDR Historical Topographic Map Report*, October 4, 2012

EDR, *The EDR Radius Map™ Report with GeoCheck®, 22-Acre Undeveloped Parcel, Southeast Corner of Longley Lane and Double R Boulevard, Reno, NV 89517*, August 2, 2017

Federal Emergency Management Agency, Federal Insurance Administration, National Flood Insurance Program, Flood Insurance Map, Community Number 32031C3234G, dated March 16, 2009, accessed via the Internet, August 2017

Seattle Public Library, Sanborn Fire Insurance Maps Database, accessed via the Internet, August 2017

Truckee Meadows Water Authority, *2076 Water Quality Report*, 2017

United States Department of Agriculture, Natural Resources Conservation Service (NRCS), Web Soil Survey, accessed via the Internet, August 2017

United States Environmental Protection Agency, EPA Map of Radon Zones (Document EPA-402-R-93-071), accessed via the Internet, August 2017

United States Geological Survey Topographic Map dated 2014, 7.5-minute series, *Mount Rose NE, Nevada*, accessed via the Internet, August 2017

Washoe County Assessor's Office property records database, accessed via the Internet, August 2017

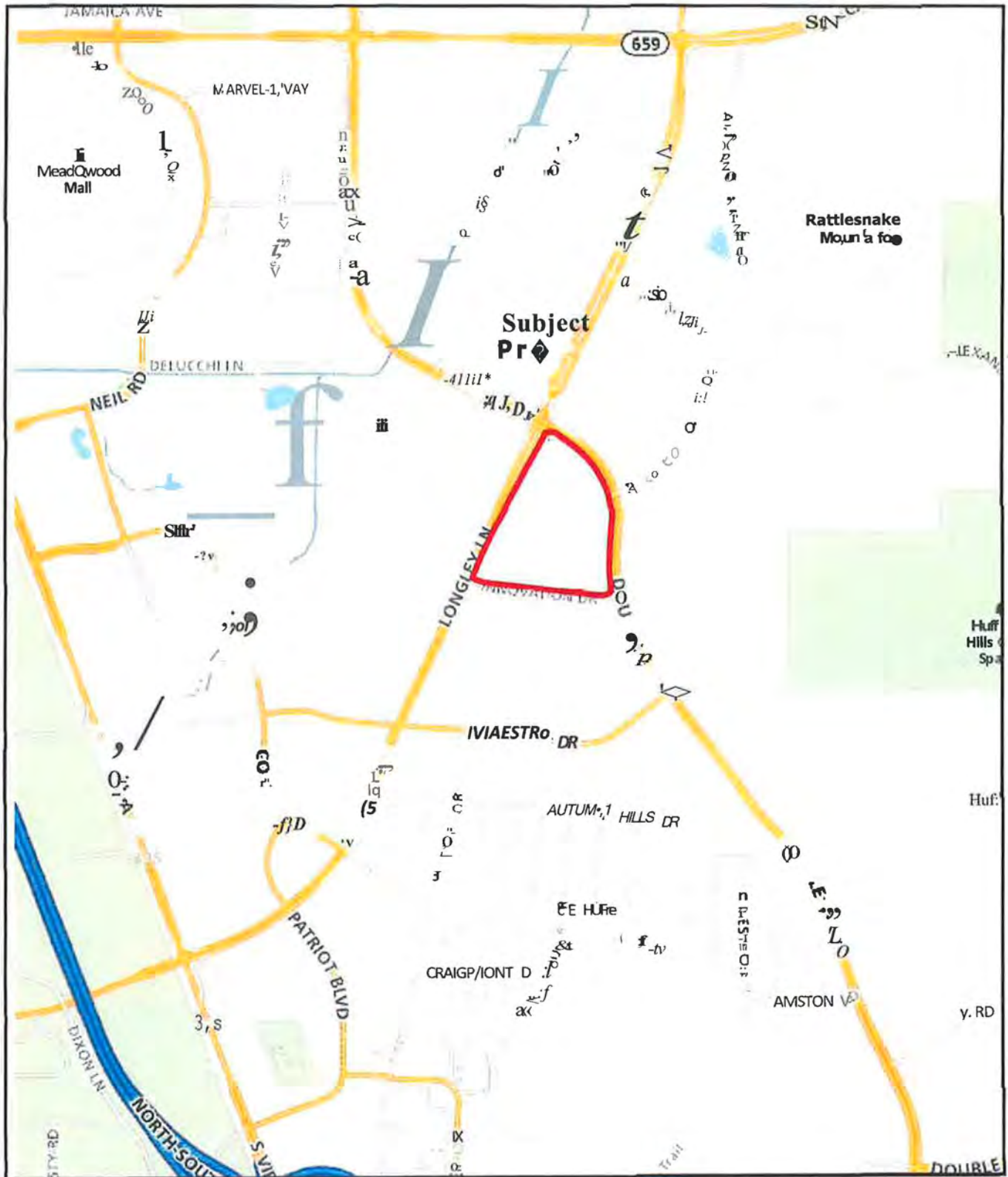
Washoe County Recorder's Office recorded documents database, accessed via the Internet, August 2017

## **FIGURES**

---

- 1 SITE LOCATION MAP**
- 2 SITE PLAN**
- 3 TOPOGRAPHIC MAP**

**PARTNER**



KEY:  
Subject Property [Z]

FIGURE 1: SITE LOCATION MAP  
Project No. 17-193766.1

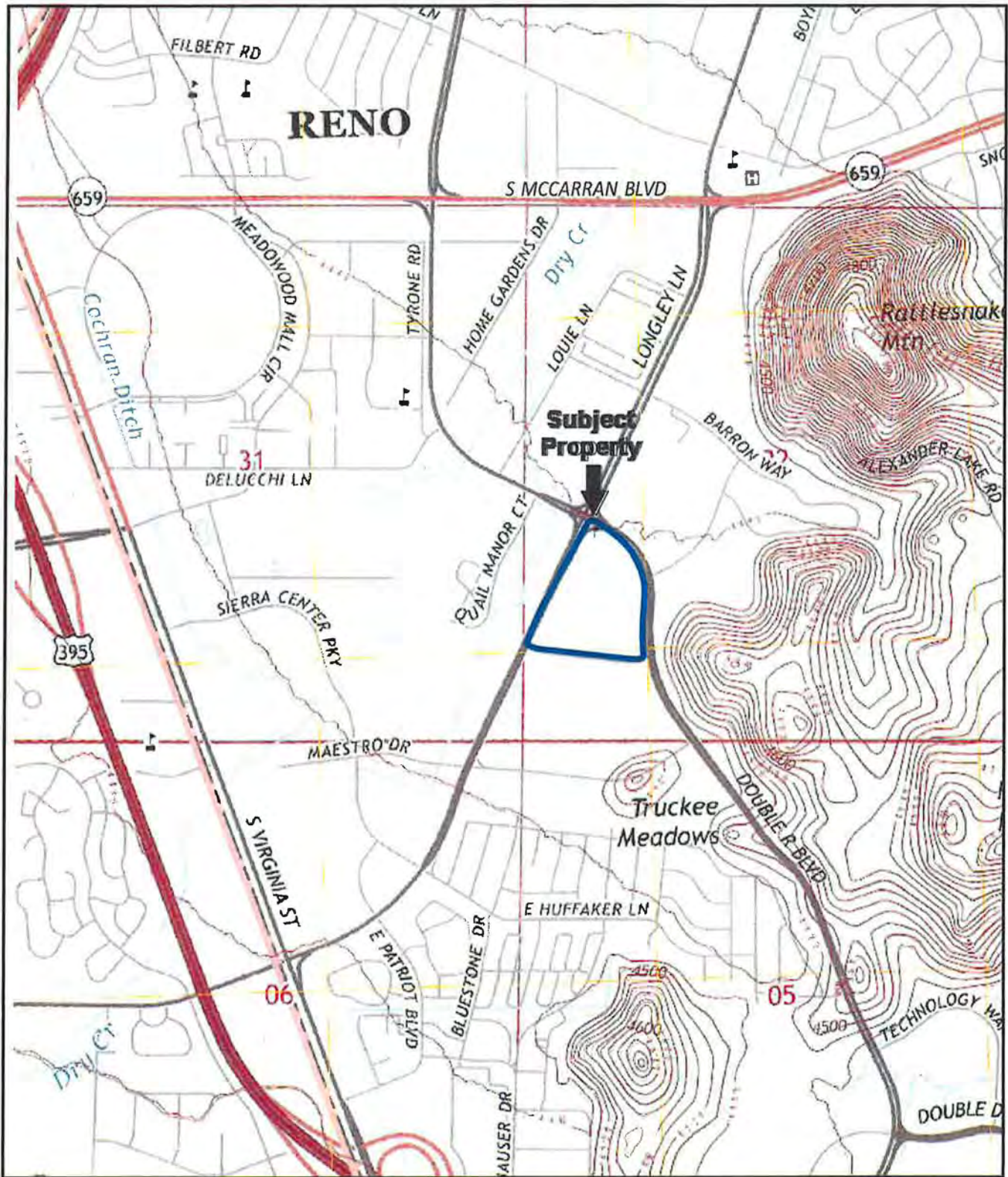
**PARTNER**



GROUNDWATER FLOW  


KEY:  
 Subject Property [Z]

FIGURE 2: SITE PLAN  
 Project No. 17-193766.1



USGS 7.5-Minute Mount Rose NE, Nevada Quadrangle  
 Dated: 2014

KEY:  
 Subject Property IZ]

FIGURE 3: TOPOGRAPHIC MAP  
 Project No. 17-193766.1

**PARTNER**

**APPENDIX A: SITE PHOTOGRAPHS**

---

**PARTNER**



1. View south of east boundary of subject property (north portion) along Double R Boulevard.



2. View north of east boundary of subject property (south portion) along Double R Boulevard.



3. View west of south boundary of subject property (east portion) along Innovation Drive.



4. View east of south boundary of subject property (west portion) along Innovation Drive.



5. View northeast of northwest boundary of subject property (south portion) along Longley Lane.



6. View southwest of northwest boundary of subject property (north portion) along Longley Lane.



7. View south of north portion of subject property (designated federal wetlands area).



8. View of surface in north portion of subject property.



9. View southeast of a construction debris pile in north portion of subject property.



10. View southwest of graded entrance from Double R Boulevard in northeast portion of subject property.



11. View west of gravel-covered area and parked truck trailers in northeast portion of subject property.



12. View north of gravel-covered road leading north from entrance in northeast portion of subject property.



13. View north from center of subject property.



14. View east from center of subject property.



15. View south from center of subject property.



16. View west from center of subject property.



17. View northwest from center of subject property.



18. View of surface in center of subject property.



19. View northwest of native vegetation in northwest portion of subject property.



20. View northwest of subject property from southeast corner (intersection of Double R Boulevard and Innovation Drive).



21. View southwest of subject property from east boundary.



22. View north of equipment storage area in southwest portion of subject property (temporary lease by contractor at adjacent south construction site).



23. View northeast of subject property from southwest corner (intersection of Longley Lane and Innovation Drive).



24. View north of stormwater collection in northeast portion of subject property.



25. View south of municipal sanitary sewer access in northeast portion of subject property.



26. View northwest of municipal sanitary sewer access in east-central portion of subject property.



27. View of adjacent property to north across Double R Boulevard, Infinity Hospice Care.



28. View of adjacent property to northeast across Double R Boulevard, office park and Rattlesnake Mountain in distance



29. View of adjacent property to east (north portion) across Double R Boulevard, Sandhill Business Campus.



30. View of adjacent property to east (south portion) across Double R Boulevard, Tanamera Corporate Center.



31. View of adjacent property to southeast across Double R Boulevard, undeveloped land and the Huffaker Hills.



32. View of adjacent property to south (east portion) across Innovation Drive, undeveloped land.



33. View of adjacent property to south (central portion) across Innovation Drive, warehouses/offices flex building.



34. View of adjacent property to south (west portion) across Innovation Drive, active construction site.



35. View of adjacent property to southwest across Longley Lane, utility station.



36. View of adjacent property to northwest across Longley Lane, undeveloped land (the former Capurro Ranch and the Quilici Residence properties).



# Appendix G

401 Court Street, Suite 101  
Reno, NV 89501

December 22, 2017

Mr. Andrew Van Loy  
Excel Engineering  
440 State Street  
Escondido, CA 92029  
avanloy@exclengineering.net

**Subject: Results of the Wetlands and Waters of the U.S. Assessment  
APN 164-354-01, Reno, Nevada**

Dear Mr. Van Loy:

On December 12, 2017, Rubicon Environmental Consulting (Rubicon) conducted a Wetlands and Waters of the U.S. Assessment to support due diligence activities at the undeveloped parcel located on the southeast corner of the intersection of Longley Lane and Double R Boulevard in Reno, Nevada. This letter presents the results of the assessment and includes a project background, survey approach, results, and conclusions and recommendations.

### **Project Background**

A Phase I Environmental Site Assessment identified a potential wetland area based on the review of the United States Fish and Wildlife Service's National Wetland Inventory (NWI) Maps. The site is a vacant lot and proposed for sale and future development.

### **Survey Approach**

Prior to conducting the field visit, Rubicon reviewed existing literature including the NWI wetland mapper (Attachment 1), aerial photography, Natural Resource Conservation Service (NRCS) soil survey (Attachment 2), and topographic maps. During the field visit, the entire site was surveyed for potential wetland and drainage features via a pedestrian survey. Photographs were taken to document existing conditions at the site (Attachment 3). The following United States Army Corps of Engineers documents were used to support this assessment:

- Corps of Engineers Wetlands Delineation Manual (USACE 1987);
- Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, version 2 (USACE 2008a);
- Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (USACE 2016);
- A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (USACE 2008b); and
- Updated Datasheet for the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States (USACE 2010).

## **Results**

### Wetlands Assessment

Rubicon surveyed the site for areas that have the three ACOE wetland criteria present to be considered a wetland feature (hydric soils, hydrophytic vegetation, and evidence of surface hydrology). Based on the NWI maps, the eastern portion of the site was designated as PEM1A (Palustrine Emergent). Based on site conditions and the literature review, it is assumed that this classification was based on an old NRCS soil map designation prior to the area's development and import of fill material. While some species of plants that prefer moister condition were noted in a small depression on the site, Tall Whitetop and Curly Dock, they did not meet the coverage and classification criteria to meet wetland conditions. In addition, no evidence of hydric soils or surface hydrology were present in the depressed area or anywhere else on the site. Furthermore, if there was an area on the site that did have the three indicators present, there would also have to be evidence of connection to a Traditional Navigable Body of Water (TNW), which in this case would be the Truckee River. Therefore, it is concluded that no features on the site meet ACOE wetland criteria.

### Waters of the U.S. Drainage Assessment

In addition to wetland features, drainage features can also be considered jurisdictional if they have a physical or nexus connection to a TNW. The entire site was walked and no drainage or channel features that have an established Ordinary High Water Mark (OHWM) or other indicators of connectivity were observed. The site has two stormwater drain outlets and there were not any established drainage features connecting to the storm drains. The NWI map showed Riverine linear features on the site that are no longer present and likely coincided with historic drainage ditches that supported agricultural activities in the area. The site is approximately 4 miles from the Truckee River, therefore, any precipitation on the site would not have a significant nexus with the Truckee River. Therefore, it is concluded that no drainage features are present on the site that have any connectivity to a TNW or would be considered jurisdictional.

## **Conclusions and Recommendations**

Based on the results of the assessment, Rubicon concludes the following:

- The site is heavily disturbed and bounded by urban development.
- The NWI maps referenced in the Phase I are not accurate when confirmed in the field.
- There are no features on the site that would be considered potentially jurisdictional by the ACOE.

Based on the results and conclusions presented above, Rubicon recommends the following:

- No additional delineations or surveys or ACOE coordination are needed to support the future development of the site.



## References

United States Army Corps of Engineers. 1987. *Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1*. Environmental Laboratory, U.S. Army Engineer Waterways Experiment Station. Vicksburg, Mississippi

\_\_\_\_\_. 2008a. *Interim Regional Supplement to the Corps of Engineers Wetland Assessment Manual: Arid West Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble, ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

\_\_\_\_\_. 2008b. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States*. ERDC/CRREL TR-08-12. August 2008.

\_\_\_\_\_. 2010. *Updated Datasheet for the Identification of the Ordinary High Water Mark in the Arid West Region of the Western United States*. ERDC/CRREL TN-10-01. July 2010.

\_\_\_\_\_. 2016. *Minimum Standards for Acceptance of Aquatic Delineation Reports*. January 2016.

United States Department of Agriculture, Natural Resources Conservation Service (NRCS). Web Soil Survey. Available at [websoilsurvey.nrcs.usda.gov](http://websoilsurvey.nrcs.usda.gov). Accessed December 2017.

United States Fish and Wildlife Service (USFWS). 2017. Wetland Mapper. Accessed from <http://www.fws.gov/wetlands/data/mapper.HTML>.

If you have any questions or require additional information, please contact me at 775-350-0866 or by e-mail at [mwendt@rubiconec.com](mailto:mwendt@rubiconec.com).

Respectfully submitted,  
**Rubicon Environmental Consulting**



Melissa R. Wendt  
Principal Environmental Specialist

## Attachments:

Figures

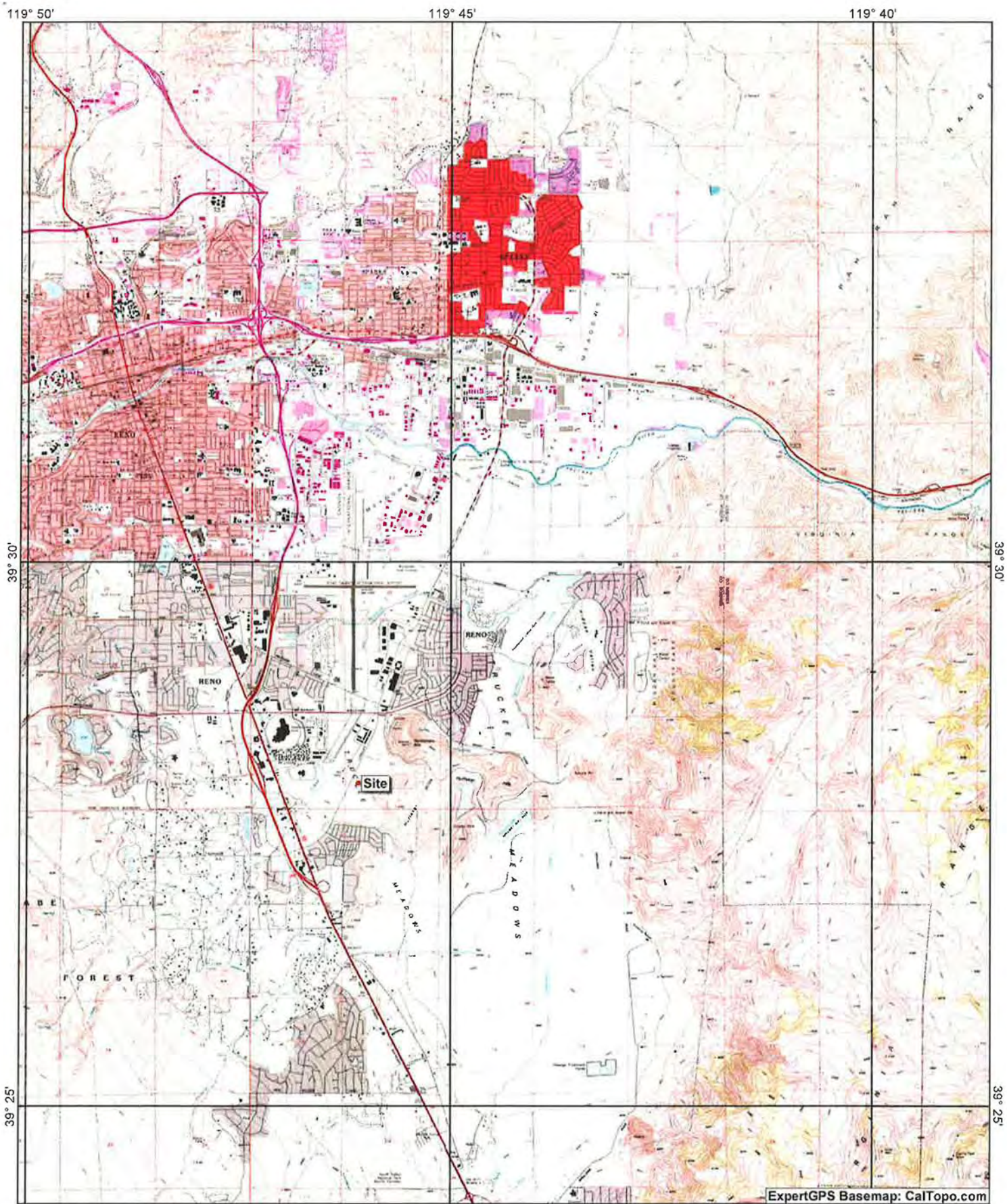
Attachment 1 – NWI Map

Attachment 2 – Custom Soil Survey

Attachment 3 - Site Photographs



# Figures



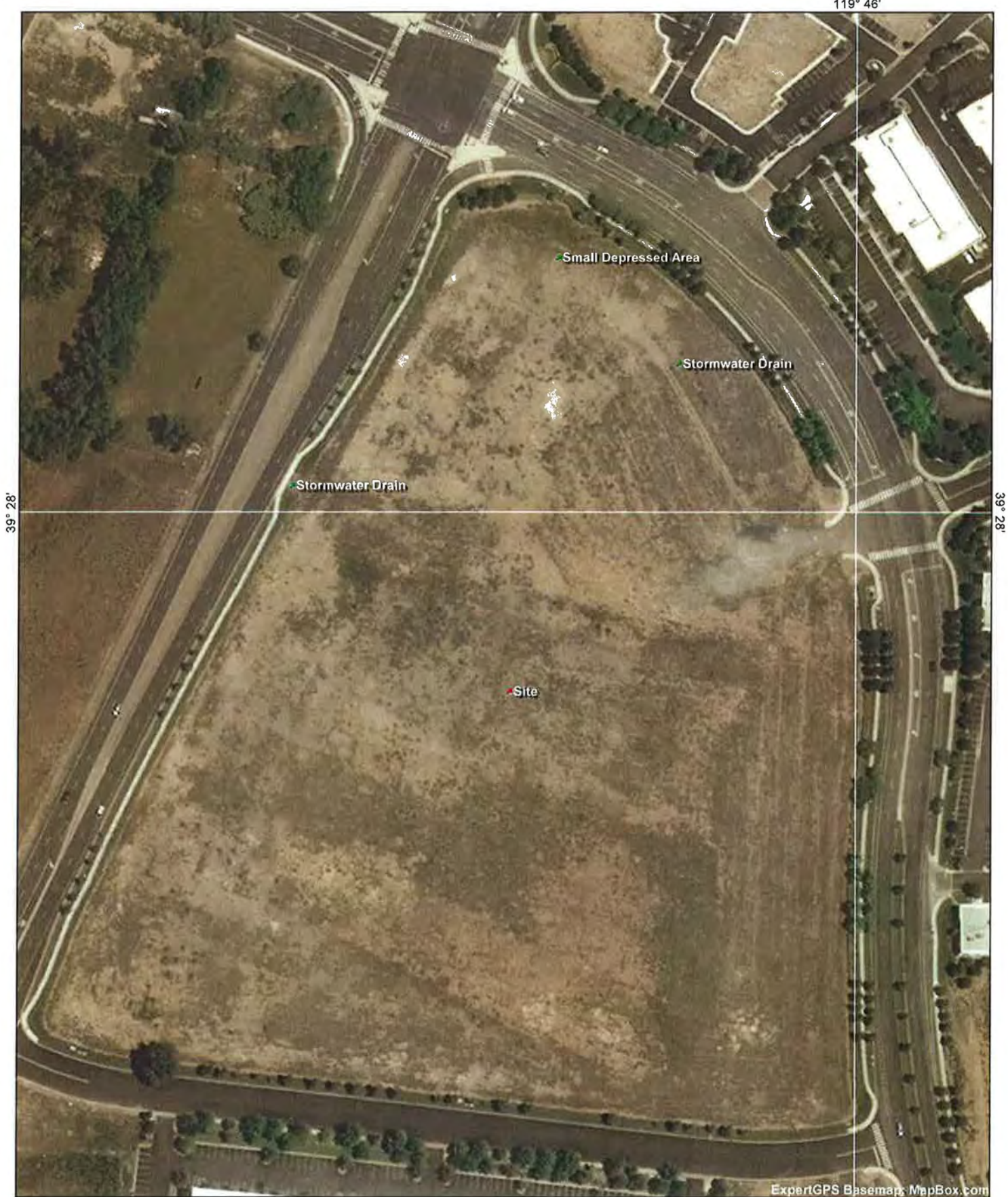
# Reno Corporate Center - Wetlands Assessment



1 mi

Figure 1 - Site Location

119° 46'



39° 28'

39° 28'

ExpertGPS Basemap: MapBox.com

## Reno Corporate Center - Wetlands Assessment



100 ft

Figure 2 - Site Map

## **Attachment 1 - NWI Map**



BASEMAPS >

MAP LAYERS >

- Wetlands ① ②
- Riparian ① ②
- Riparian Mapping Areas ① ②
- Data Source ① ②
  - Source Type
  - Image Scale
  - Image Year
- Areas of Interest ②
- FWS Managed Lands ① ②
- Historic Wetland Data ① ②



1:9,028  
39.469 | -119.768

## Attachment 2 – Custom Soil Survey





United States  
Department of  
Agriculture

**NRCS**

Natural  
Resources  
Conservation  
Service

A product of the National  
Cooperative Soil Survey,  
a joint effort of the United  
States Department of  
Agriculture and other  
Federal agencies, State  
agencies including the  
Agricultural Experiment  
Stations, and local  
participants

# Custom Soil Resource Report for Washoe County, Nevada, South Part

Reno Corporate Center



# Preface

---

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

# Contents

---

<b>Preface</b> .....	2
<b>How Soil Surveys Are Made</b> .....	5
<b>Soil Map</b> .....	8
Soil Map.....	9
Legend.....	10
Map Unit Legend.....	11
Map Unit Descriptions.....	11
Washoe County, Nevada, South Part.....	13
805—Truckee sandy loam, gravelly substratum.....	13
910—Vamp fine sandy loam, slightly saline-alkali.....	14
1130—Dithod sandy loam.....	16
<b>References</b> .....	18

# How Soil Surveys Are Made

---

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

## Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

## Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

## Soil Map

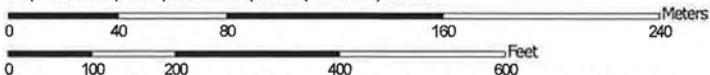
---

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report  
Soil Map







































Map Scale: 1:2,700 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge ticks: UTM Zone 11N WGS84

### MAP LEGEND

<b>Area of Interest (AOI)</b>		 Spoil Area	
 Area of Interest (AOI)		 Stony Spot	
<b>Soils</b>		 Very Stony Spot	
 Soil Map Unit Polygons		 Wet Spot	
 Soil Map Unit Lines		 Other	
 Soil Map Unit Points		 Special Line Features	
<b>Special Point Features</b>		<b>Water Features</b>	
 Blowout		 Streams and Canals	
 Borrow Pit		<b>Transportation</b>	
 Clay Spot		 Rails	
 Closed Depression		 Interstate Highways	
 Gravel Pit		 US Routes	
 Gravelly Spot		 Major Roads	
 Landfill		 Local Roads	
 Lava Flow		<b>Background</b>	
 Marsh or swamp		 Aerial Photography	
 Mine or Quarry			
 Miscellaneous Water			
 Perennial Water			
 Rock Outcrop			
 Saline Spot			
 Sandy Spot			
 Severely Eroded Spot			
 Sinkhole			
 Slide or Slip			
 Sodic Spot			

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Washoe County, Nevada, South Part  
 Survey Area Data: Version 13, Oct 12, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
805	Truckee sandy loam, gravelly substratum	4.2	19.6%
910	Vamp fine sandy loam, slightly saline-alkali	12.2	56.9%
1130	Dithod sandy loam	5.0	23.5%
<b>Totals for Area of Interest</b>		<b>21.4</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The

## Custom Soil Resource Report

delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Washoe County, Nevada, South Part

### 805—Truckee sandy loam, gravelly substratum

#### Map Unit Setting

*National map unit symbol:* hxmk  
*Elevation:* 4,400 to 4,800 feet  
*Mean annual precipitation:* 7 to 9 inches  
*Mean annual air temperature:* 50 to 52 degrees F  
*Frost-free period:* 100 to 110 days  
*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Truckee, gravelly substratum, and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Truckee, Gravelly Substratum

##### Setting

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Mixed alluvium

##### Typical profile

*H1 - 0 to 12 inches:* sandy loam  
*H2 - 12 to 30 inches:* stratified sandy loam to silty clay loam  
*H3 - 30 to 60 inches:* stratified gravelly sand to very gravelly sandy loam

##### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Poorly drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Calcium carbonate, maximum in profile:* 5 percent  
*Salinity, maximum in profile:* Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 12.0  
*Available water storage in profile:* Moderate (about 6.7 inches)

##### Interpretive groups

*Land capability classification (irrigated):* 3s  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* C  
*Ecological site:* MOIST FLOODPLAIN (R026XY001NV)  
*Hydric soil rating:* No

### Minor Components

#### Fettic

*Percent of map unit:* 6 percent  
*Landform:* Stream terraces  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* SODIC FLOODPLAIN (R026XY013NV)  
*Hydric soil rating:* No

#### Washoe

*Percent of map unit:* 5 percent  
*Landform:* Fan remnants  
*Down-slope shape:* Linear  
*Across-slope shape:* Convex  
*Ecological site:* LOAMY 8-10 P.Z. (R026XY016NV)  
*Hydric soil rating:* No

#### Rose creek

*Percent of map unit:* 4 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* WET MEADOW 10-14 P.Z. (R026XY003NV)  
*Other vegetative classification:* MOIST FLOODPLAIN (026XY001NV\_2)  
*Hydric soil rating:* No

## 910—Vamp fine sandy loam, slightly saline-alkali

### Map Unit Setting

*National map unit symbol:* hxn  
*Elevation:* 4,400 to 4,600 feet  
*Mean annual precipitation:* 7 to 9 inches  
*Mean annual air temperature:* 49 to 51 degrees F  
*Frost-free period:* 100 to 110 days  
*Farmland classification:* Farmland of statewide importance

### Map Unit Composition

*Vamp, slightly saline-alkali, and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Vamp, Slightly Saline-alkali

#### Setting

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Mixed alluvium

## Custom Soil Resource Report

### Typical profile

- H1 - 0 to 3 inches: fine sandy loam*
- H2 - 3 to 36 inches: stratified fine sandy loam to silt loam*
- H3 - 36 to 42 inches: cemented material*
- H4 - 42 to 60 inches: stratified loamy sand to silt loam*

### Properties and qualities

- Slope: 0 to 2 percent*
- Depth to restrictive feature: 20 to 39 inches to duripan*
- Natural drainage class: Somewhat poorly drained*
- Runoff class: Medium*
- Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)*
- Depth to water table: About 36 to 60 inches*
- Frequency of flooding: Rare*
- Frequency of ponding: None*
- Calcium carbonate, maximum in profile: 5 percent*
- Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)*
- Sodium adsorption ratio, maximum in profile: 30.0*
- Available water storage in profile: Low (about 5.3 inches)*

### Interpretive groups

- Land capability classification (irrigated): 3w*
- Land capability classification (nonirrigated): 6w*
- Hydrologic Soil Group: C*
- Ecological site: SALINE BOTTOM (R026XY004NV)*
- Hydric soil rating: No*

### Minor Components

#### Truckee

- Percent of map unit: 8 percent*
- Landform: Flood plains*
- Down-slope shape: Linear*
- Across-slope shape: Linear*
- Ecological site: MOIST FLOODPLAIN (R026XY001NV)*
- Other vegetative classification: MOIST FLOODPLAIN (026XY001NV\_2)*
- Hydric soil rating: No*

#### Voltaire, slightly saline

- Percent of map unit: 7 percent*
- Landform: Flood plains*
- Down-slope shape: Linear*
- Across-slope shape: Linear*
- Ecological site: WET SODIC BOTTOM (R026XY002NV)*
- Hydric soil rating: Yes*

## 1130—Dithod sandy loam

### Map Unit Setting

*National map unit symbol:* hxcn  
*Elevation:* 4,350 to 4,500 feet  
*Mean annual precipitation:* 6 to 8 inches  
*Mean annual air temperature:* 50 to 52 degrees F  
*Frost-free period:* 100 to 110 days  
*Farmland classification:* Prime farmland if irrigated and drained

### Map Unit Composition

*Dithod and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Dithod

#### Setting

*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Mixed alluvium

#### Typical profile

*H1 - 0 to 6 inches:* sandy loam  
*H2 - 6 to 15 inches:* silt loam  
*H3 - 15 to 46 inches:* stratified sandy loam to clay loam  
*H4 - 46 to 60 inches:* loamy sand

#### Properties and qualities

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat poorly drained  
*Runoff class:* Medium  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)  
*Depth to water table:* About 36 to 60 inches  
*Frequency of flooding:* Rare  
*Frequency of ponding:* None  
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 5.0  
*Available water storage in profile:* Moderate (about 8.6 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 2w  
*Land capability classification (nonirrigated):* 6w  
*Hydrologic Soil Group:* C  
*Ecological site:* MOIST FLOODPLAIN (R027XY002NV)  
*Hydric soil rating:* No

**Minor Components**

**Vamp**

*Percent of map unit:* 5 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* SALINE BOTTOM (R026XY004NV)  
*Hydric soil rating:* No

**Rose creek**

*Percent of map unit:* 5 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* WET MEADOW 10-14 P.Z. (R026XY003NV)  
*Other vegetative classification:* MOIST FLOODPLAIN (026XY001NV\_2)  
*Hydric soil rating:* No

**Voltaire, slightly saline**

*Percent of map unit:* 5 percent  
*Landform:* Flood plains  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Ecological site:* WET SODIC BOTTOM (R026XY002NV)  
*Hydric soil rating:* Yes

## References

---

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_054262](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262)
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053577](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577)
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053580](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580)
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2\\_053374](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374)
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

## Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2\\_054242](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242)

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. [http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2\\_053624](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624)

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. [http://www.nrcs.usda.gov/Internet/FSE\\_DOCUMENTS/nrcs142p2\\_052290.pdf](http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf)

## Attachment 3 - Site Photographs





Photo 1 – Small Depressed Area in northern portion of site.



Photo 2 – Larger storm drain along Longley Lane





Photo 3 – Soil conditions at the site.



Photo 4 – Overall site conditions



## **Appendix H**

**Council Decisions, Zoning Ordinance, Certification Letter, Regional  
Conformance Review, and Restrictive Covenant.**

Ashley D. Turney  
City Clerk  
(775) 334-2030  
TurneyA@reno.gov

Mikki Huntsman  
Chief Deputy City Clerk  
(775) 334-2030  
HuntsmanM@reno.gov



Office of the City Clerk  
Central Cashiering (775) 334-2030  
Parking Tickets (775) 334-2293

FILED THIS DATE  
7 / 5 / 2019  
BY: ML  
CITY CLERK

July 5, 2019


Universal Health Services, Inc.  
367 S Gulph Road  
King of Prussia, PA 19406

RE: Case No. LDC18-00077 and LDC18-00078 (Northern Nevada Sierra Medical Center MP and PUD ZM Amendments) - **FINAL ACTION, DECISION OR ORDER**

Dear Applicant:

At a regular meeting held June 5, 2019, and following a public hearing thereon, the Reno City Council upheld staff recommendation and approved the request to certify the Master Plan amendment and the Planned Unit Development Handbook for Northern Nevada Sierra Medical Center.

Sincerely,

  
Ashley D. Turney  
City Clerk

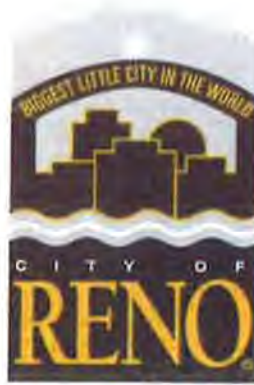
ADT:mh

Enc.

xc: Community Development  
Jeff Mann, Parks, Recreation & Community Services  
Heather Manzo, Community Development  
KLS Planing and Design, c/o John Krmpotic, 1 E 1st Street, Suite 1400, Reno NV 89501

**Ashley D. Turney**  
City Clerk  
(775) 334-2030  
TurneyA@reno.gov

**Mikki Bond**  
Chief Deputy City Clerk  
(775) 334-2030  
BondM@reno.gov



**Office of the City Clerk**  
Central Cashiering (775) 334-2030  
Parking Tickets (775) 334-2293

FILED THIS DATE  
03 / 15 / 2019  
BY: UMB  
CITY CLERK

March 15, 2019

Universal Health Services, Inc.  
367 S Gulph Road  
King of Prussia, PA 19406

RE: Case No. LDC18-00077 and LDC18-00078 (Northern Nevada Sierra Medical Center MP and PUD ZM Amendments)

Dear Applicant:

At a regular meeting held March 13, 2019, and following a public hearing thereon, the Reno City Council passed and adopted Ordinance No. 6505, approving the zoning map amendment for the above referenced case.

This ordinance shall not be effective until a finding of conformance has been made by the Truckee Meadows Regional Planning Commission for the Master Plan amendment and the PUD handbook as a Project of Regional Significance associated with this case.

Sincerely,

A handwritten signature in blue ink that reads "Ashley D. Turney".

Ashley D. Turney  
City Clerk

ADT:mb

Enc.

xc: Community Development  
Jeff Mann, Parks, Recreation & Community Services  
Heather Manzo, Community Development  
KLS Planing and Design, c/o John Krmptotic, 1 E 1st Street, Suite 1400, Reno NV 89501

EXPLANATION: Matter underlined is new; matter in brackets and stricken [--] is material to be repealed.

**BILL NO. 7079**

**ORDINANCE NO. 6505**

**AN ORDINANCE TO AMEND TITLE 18, CHAPTER 18.08 OF THE RENO MUNICIPAL CODE, ENTITLED "ZONING", REZONING A ±22.2 ACRE SITE ON A SITE BOUNDED BY LONGLEY LANE TO THE WEST, DOUBLE R BOULEVARD TO THE EAST AND INNOVATION DRIVE TO THE SOUTH FROM INDUSTRIAL COMMERCIAL (IC) TO PLANNED UNIT DEVELOPMENT (PUD); AND TENTATIVE APPROVAL OF THE ASSOCIATED PUD HANDBOOK; TOGETHER WITH OTHER MATTERS PROPERLY RELATING THERETO.**

SPONSORED BY: RENO CITY PLANNING COMMISSION

THE CITY COUNCIL OF THE CITY OF RENO DO ORDAIN:

SECTION 1. Chapter 18.08 of the Reno Municipal Code is hereby amended by adding thereto a new section to be known as Section 18.08.102(b).1377 relating to a ±22.2 acre site bounded by Longley Lane to the west, Double R Boulevard to the east and Innovation Drive to the south and more particularly described in the attached "Exhibit A" and rezoning said property from Industrial Commercial (IC) to Planned Unit Development (PUD); and tentative approval of the associated PUD Handbook, the same to read as follows:

*Sec. 18.08.102(b).1377. The zoning of the City of Reno as heretofore established is hereby amended in the manner shown on the map labeled Case No. LDC18-00078, thereby changing the use of land indicated therein, relating to a ±22.2 acre site bounded by Longley Lane to the west, Double R Boulevard to the east and Innovation Drive to the south and more particularly described in the attached "Exhibit A", and rezoning said property from Industrial Commercial (IC) to Planned Unit Development (PUD); and tentative approval of the associated PUD Handbook.*

CASE NO. LDC18-00078 (Northern Nevada Sierra Medical Center Zoning Map Amendment)

APN NO. 164-354-01

SECTION 2. This Ordinance shall be in effect from and after its passage, adoption and publication in one issue of a newspaper printed and published in the City of Reno, and upon approval of the Master Plan Amendment by the Truckee Meadows Regional Planning Agency for Case No. LDC18-00077 (Northern Nevada Sierra Medical Center Master Plan Amendment).

SECTION 3. The City Clerk and Clerk of the City Council of the City of Reno is hereby authorized and directed to have this Ordinance published in one issue of the Reno-Gazette Journal, a newspaper printed and published in the City of Reno.

PASSED AND ADOPTED this 13th day of March, 2019, by the following vote of the Council:


AYES:	<u>Duerr, Reese, Brekhus, Jardon, Schieve</u>
NAYS:	<u>NONE</u>
ABSTAIN:	<u>NONE</u>
ABSENT:	<u>Delgado, Weber</u>

APPROVED this 13th day of March, 2019.

  
HILLARY I. SCHIEVE  
MAYOR OF THE CITY OF RENO



ATTEST:

  
ASHLEY D. TURNEY  
CITY CLERK AND CLERK OF THE CITY  
COUNCIL OF THE CITY OF RENO, NEVADA

EFFECTIVE DATE: Friday, March 15, 2019

PROOF OF PUBLICATION

STATE OF WISCONSIN SS. COUNTY OF BROWN

RENO CITY OF 1 E 1ST ST FL 2

RENO NV 89501

Being first duly sworn, deposes and says: That as the legal clerk of the Reno Gazette-Journal, a daily newspaper of general circulation published in Reno, Washoe County, State of Nevada, that the notice referenced below has published in each regular and entire issue of said newspaper between the date: 03/15/2019 - 03/15/2019, for exact publication dates please see last line of Proof of Publication below.

03/15/19

Shelly Horva Legal Clerk

Subscribed and sworn before me this 15th of March 2019.

NOTARY PUBLIC RESIDING AT STATE OF WISCONSIN COUNTY OF BROWN

Notary Expires: 11/9/22



NOTICE OF CITY ORDINANCES

NOTICE IS HEREBY GIVEN that the ordinance(s) listed below by title and containing the vote of the Council, was prepared on February 27, 2019. Final action and adoption of such ordinance(s) took place on March 13, 2019.

BILL NO. 7078, ORDINANCE NO. 6504: ORDINANCE TO AMEND TITLE 18, CHAPTER 18.08 OF THE RENO MUNICIPAL CODE, ENTITLED "ZONING", REZONING A ±3.9 ACRE SITE LOCATED ON THE SOUTH SIDE OF HOLCOMB RANCH LANE, ±645 FEET WEST OF SOUTH VIRGINIA STREET FROM ±1.97 ACRES OF LARGE LOT RESIDENTIAL - 1 ACRE (L1R1) AND ±1.93 ACRES OF MIXED USE/SOUTH VIRGINIA STREET TRANSIT CORRIDOR (MU/SVTC) TO ±3.90 ACRES OF SINGLE-FAMILY RESIDENTIAL - 4,000 SQUARE FEET (SF4); TOGETHER WITH OTHER MATTERS PROPERLY RELATING THERETO.

YES: Duerr, Reese, Brekhuis, Jardon, Schieve
NAYS: None.
ABSTAIN: None.
ABSENT: Delgado, Weber

BILL NO. 7079, ORDINANCE NO. 6505: ORDINANCE TO AMEND TITLE 18, CHAPTER 18.08 OF THE RENO MUNICIPAL CODE, ENTITLED "ZONING", REZONING A ±22.2 ACRE SITE ON A SITE BOUNDED BY LONGLEY LANE TO THE WEST, DOUBLE R BOULEVARD TO THE EAST AND INNOVATION DRIVE TO THE SOUTH FROM INDUSTRIAL COMMERCIAL (IC) TO PLANNED UNIT DEVELOPMENT (PUD); AND TENTATIVE APPROVAL OF THE ASSOCIATED PUD HANDBOOK; TOGETHER WITH OTHER MATTERS PROPERLY RELATING THERETO.

YES: Duerr, Reese, Brekhuis, Jardon, Schieve
NAYS: None.
ABSTAIN: None.
ABSENT: Delgado, Weber

BILL NO. 7080, ORDINANCE NO. 6506: ORDINANCE AMENDING THE RENO MUNICIPAL CODE TITLE 18, "ANNEXATION AND LAND DEVELOPMENT," CHAPTER 18.16 "SIGNS," SECTION 18.16.203 "EXEMPTED ON-PREMISES PERMANENT SIGNS," AND CHAPTER 18.24 "RULES OF MEASUREMENT AND DEFINITION," SECTION 18.24.203.4570 "SIGN," IN ORDER TO DEFINE AND IDENTIFY SPECIFIC STANDARDS AND EXEMPTIONS FOR DRIVE-THROUGH FACILITY SIGNS, TOGETHER WITH OTHER MATTERS PROPERLY RELATING THERETO.

YES: Duerr, Brekhuis, Delgado, Jardon, Reese, Schieve
NAYS: None.
ABSTAIN: None.
ABSENT: Weber

Ordinance(s) shall be in full force and effect from and after March 15, 2019. Notice is further given that copies of the above ordinance(s) are available for inspection by all interested parties at the office of the City Clerk, City Hall, One East First Street, Second Floor, Reno, Nevada, or by accessing our website at reno.gov.

ASHLEY D. TURNEY, CITY CLERK AND CLERK OF THE CITY COUNCIL

No. 3440345

March 15, 2019

**EXHIBIT 'A'**

All that certain real property situate in the City of Reno, County of Washoe, State of Nevada, described as follows:

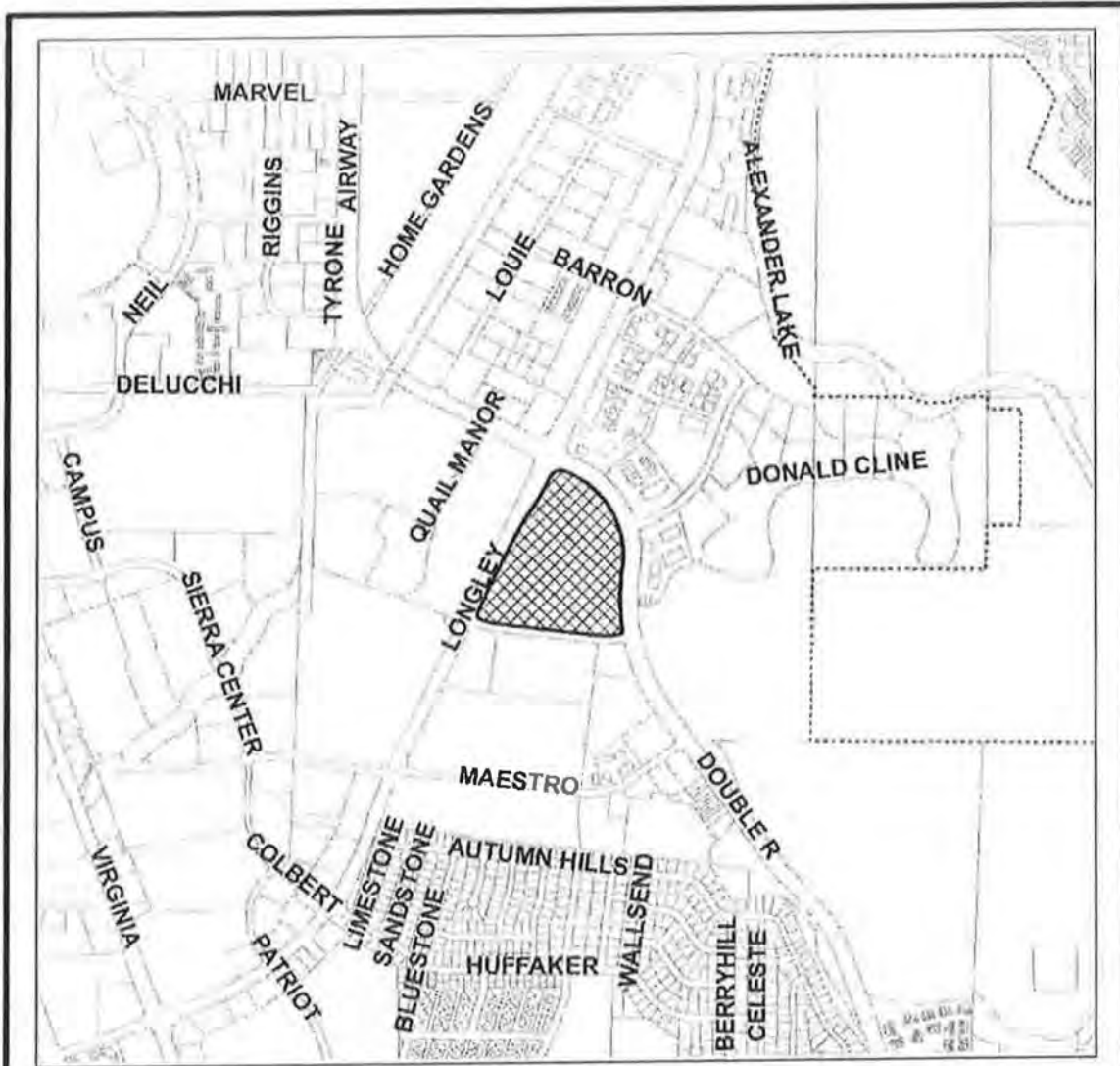
Parcel 2 of Parcel Map No. 4051, entitled "Parcel Map No. 1 for Reno Corporate Center, LLC, a Nevada Limited Liability Company, according to the map thereof, filed in the office of the County Recorder of Washoe County, State of Nevada, on June 30, 2003, as file No. 2881761, as amended by Certificate of Amendment recorded October 27, 2003, as Document No. 2944944 of Official Records.

Containing 22.2± more or less.

LEGAL DESCRIPTION PREPARED BY:




Guillermo Enrique Carey, PLS 17758  
MAPCA SURVEYS, INC.  
580 Mount Rose Street  
Reno, NV 89509




**LDC18-00077 & LDC18-00078  
(Northern Nevada Sierra Medical  
Center MP & PUD ZM Amendments)**

-  From: Industrial Commercial (IC) on ±22.2 acres
-  To: Planned Unit Development (PUD) on ±22.2 acres
-  City Limits



0 335 670 1340  
Feet

The information hereon is approximate and is intended for display purposes only. Reproduction is not permitted. For additional information, please contact the City of Reno Community Development Department. Map Produced December, 2018.



**Community Development  
Department**

1 East 1st Street Phone: 321-8300  
P.O. Box 1900 Fax: 334-2043  
Reno, NV 89505 www.reno.gov

**Ashley D. Turney**  
City Clerk  
(775) 334-2030  
TurneyA@reno.gov

**Mikki Bond**  
Chief Deputy City Clerk  
(775) 334-2030  
BondM@reno.gov



Office of the City Clerk  
Central Cashiering (775) 334-2030  
Parking Tickets (775) 334-2293

**FILED THIS DATE**  
03 / 06 / 2019  
BY: AMS  
CITY CLERK

March 5, 2019

Universal Health Services, Inc.  
367 S Gulph Road  
King of Prussia, PA 19406

RE: Case No. LDC18-00077 and LDC18-00078 (Northern Nevada Sierra Medical Center MP and PUD ZM Amendments)

Dear Applicant:

At a regular meeting held February 27, 2019, and following a public hearing thereon, the Reno City Council upheld the recommendation of the Planning Commission and approved the request to establish a Planned Unit Development (PUD) on a ±22.2 acre site which would allow for the development of a hospital, medical and professional offices, and other associated uses. This request includes: 1) a Master Plan amendment from Mixed Employment (ME) to Public/Quasi Public (PQP); 2) a zoning map amendment from Industrial Commercial (IC) to PUD; 3) tentative approval of the associated PUD Handbook; and 4) possible approval of a Fire Equipment Agreement between Universal Health Services, Inc. and the City of Reno for the purchase of a ladder truck (estimated cost of \$1.5 million). The site is bounded by Longley Lane to the west, Double R Boulevard to the east and Innovation Drive to the south. This request is considered a Project of Regional Significance for: (a) employment (exceeds 938 employees), (b) traffic (exceeds 6,250 average daily trips), and c) sewage (exceeds 187,500 gallons per day).

The City Council adopted Resolution No. 8633 approving the requested Master Plan amendment. The Master Plan amendment will become effective following a determination by the Regional Planning Commission that the amendment conforms to the Truckee Meadows Regional Plan.

Northern Nevada Sierra Medical Center  
Case No. LDC18-00077 and LDC18-00078 (Northern Nevada Sierra Medical Center MP and  
PUD ZM Amendments)

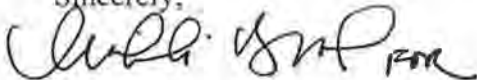
March 5, 2019

Page 2

The approved zoning map amendment will become effective upon passage and adoption of the appropriate ordinance, and upon approval of the Master Plan amendment by the Regional Planning Commission.

The Fire Equipment Agreement shall become effective upon recordation of the final PUD Handbook.

Sincerely,



Ashley D. Turney  
City Clerk



ADT:mb


Enc.

xc: Community Development  
Jeff Mann, Parks, Recreation & Community Services  
Heather Manzo, Community Development  
KLS Planing and Design, c/o John Krmptic, 1 E 1st Street, Suite 1400, Reno NV 89501



LDC18-00077 & LDC18-00078  
 (Northern Nevada Sierra Medical  
 Center MP & PUD ZM Amendments)

-  Subject Site
-  City Limits



0 335 670 1340  
 Feet

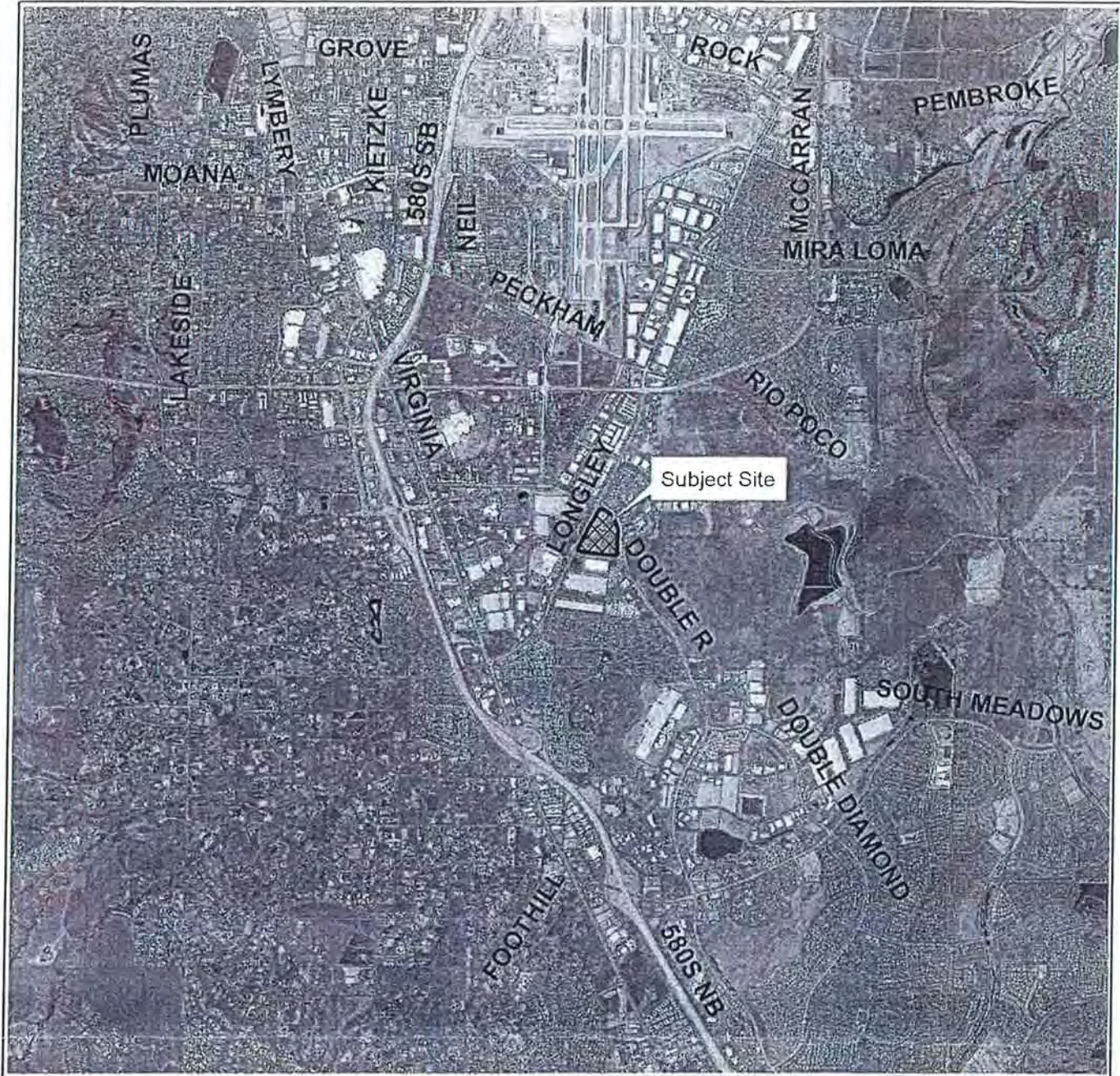
The information hereon is approximate and is intended for display purposes only. Reproduction is not permitted. For additional information, please contact the City of Reno Community Development Department  
 Map Produced: December, 2018





Community Development  
 Department


1 East 1st Street Phone: 321-8309  
 P.O. Box 1900 Fax: 334-2043  
 Reno, NV 89505 www.reno.gov





LDC18-00077 & LDC18-00078  
 (Northern Nevada Sierra Medical  
 Center MP & PUD ZM Amendments)

-  Subject Site
-  City Limits



0 0.225 0.45 0.9  
Miles

The information hereon is approximate and is intended for display purposes only. Reproduction is not permitted. For additional information, please contact the City of Reno Community Development Department  
 Map Produced: December, 2018



Community Development Department

1 East 1st Street Phone: 321-8309  
 P.O. Box 1900 Fax: 334-2043  
 Reno, NV 89505 www.reno.gov

Peter Gower, Chair • Sarah Chvilicek, Vice-Chair • James Barnes • Larry Chesney • James Fewins • Ed Hawkins • Frank Petersen • Dian VanderWell • Kevin Weiske • Kimberly H. Robinson, Executive Director

May 16, 2019

Kimberly H. Robinson  
Executive Director of Regional Planning, and  
Clerk of the Regional Planning Commission  
1105 Terminal Way, Suite 316  
Reno, Nevada 89502

Received by Clerk:  5.16.19

Emailed: CT. 5.16.19

Dear Ms. Robinson:


On May 8, 2019, the Regional Planning Commission (RPC) held a public hearing and determined that the following matter conforms with the comprehensive Regional Plan:

Regional Plan Conformance Review – City of Reno Master Plan amendment (CR19-003) and project of regional significance (CR19-004), Northern Nevada Sierra Medical Center – A Master Plan amendment from Mixed Employment (ME) to Public/Quasi Public (PQP) on a ±22.2 acre site, which would allow for the development of a hospital, medical and professional offices, and other associated uses. The request is considered a Project of Regional Significance for: (a) employment (exceeds 938 employees), (b) traffic (exceeds 6,250 average daily trips), and (c) sewage (exceeds 187,500 gallons per day). The site is bounded by Longley Lane to the west, Double R Boulevard to the east and Innovation Drive to the south

**This letter has been filed with the Clerk of the RPC on this date. Generally, appeals to the Regional Planning Governing Board (“RPGB”) must be filed by a person or entity seeking review of the RPC action or determination pursuant to Sections I.2, I.3, III.7 or IV.11 of the RPGB *Regulations on Procedure*. The applicable filing timeframe for a review of this matter is highlighted in the table on the following page.**

Please do not hesitate to contact me at 775-321-8392 if you have any questions on this matter.

Sincerely,



Chris Tolley  
Regional Planner

CC: File CR19-003 and 004  
City of Reno  
City of Sparks  
Washoe County  
Regional Transportation Commission

*\*A paper copy of this letter is available upon request*

RPC CONFORMANCE REVIEW, CR19-003 & 004  
 ACTION LETTER DATED MAY 16, 2019  
 PAGE 2

Regional Planning Governing Board Regulations on Procedure, appeals to the RPGB pursuant to statues and/or regulation:	Timeframe:
Appeal of Regional Planning Commission's finding of non-conformance with respect to a Project of Regional Significance ("PRS"). See RPGB Regulations on Procedure I.2 and III.7	45 days (calendar days)
Appeal of a finding of non-conformance of a master plan, facilities plan or other similar plan. See RPGB Regulations on Procedure I.2; IV.10 and IV.11	45 days (calendar days) to file objection with RPC; 30 days (calendar days) to file appeal to RPGB after RPC's determination of objection
Review of actions of the RPC that are not subject to a specific appeal process, which includes actions of the RPC finding that a PRS or master plan, facilities plan or other similar plan conforms with the Regional Plan. See RPGB Regulations on Procedure I.3	10 days (business days)

DOC #4962104

10/11/2019 03:20:01 PM  
Electronic Recording Requested By  
HOLLAND & HART LLP - RENO  
Washoe County Recorder  
Kalie M. Work  
Fee: \$41.00 RPTT: \$0  
Page 1 of 26

**RECORDING REQUESTED BY, AND  
WHEN RECORDED, MAIL TO:**

Douglas C. Flowers, Esq.  
Holland & Hart LLP  
5441 Kietzke Lane, 2<sup>nd</sup> Floor  
Reno, Nevada 89511

The undersigned hereby affirms that this document, including any exhibits, submitted for recording does not contain the social security number of any person or persons. (Per NRS 239B.030)

---

**RESTRICTIVE COVENANT**

FOR A VALUABLE CONSIDERATION, receipt and sufficiency of which is hereby acknowledged, **SPARKS FAMILY HOSPITAL, INC.**, a Nevada corporation ("SFH")---as owner of that certain real property in Washoe County, Nevada, more particularly described in **Exhibit "A"** attached hereto and incorporated herein by this reference ("Burdened Parcel"), and for the benefit of that certain real property in Washoe County, Nevada, more particularly described in **Exhibit "B"** attached hereto and incorporated herein by this reference (collectively, the "Benefited Parcels")---does hereby covenant as follows:

(1) Until such time as a Primary Airport is no longer operated on the Benefited Parcels, the following uses shall be prohibited within the Burdened Parcel: (i) schools, (ii) concert halls, (iii) outdoor music shells, (iv) amphitheatres, (v) nature exhibits, (vi) zoological parks, (vii) golf courses, (viii) riding stables, (ix) amusement parks, (x) parks, (xi) resorts, (xii) camps, (xiii) outdoor sports, (xiv) arena/spectator sports, (xv) governmental services, (xvi) residential, (xvii) group homes, (xviii) caretaker units, (xix) convents/monasteries, (xx) gun ranges, (xxi) cemeteries/mausoleums, (xxii) museums, (xxiii) prisons/custodial institutions, and (xxiv) transitional living facilities.

(2) Until such time as a Primary Airport is no longer operated on the Benefited Parcels, the following uses shall be prohibited within the Burdened Parcel except to the extent any such use is an accessory use to any medical office building or hospital located on the Burdened Parcel: (i) daycare facilities, (ii) preschools, (iii) transient lodging, (iv) hospice, (v) assisted living facilities, (vi) private dormitories, (vii) libraries, (viii) churches, (ix) nursing homes, and (x) auditoriums.

(3) Until such time as a Primary Airport is no longer operated on the Benefited Parcels, the owner of the Burdened Parcel shall not to protest, challenge or otherwise object to changes made or proposed to be made in operations at the airport thereon on the basis of the

reasonable, measurable external impacts of such changes (including noise levels, sight or smell impacts, or levels of dust or particulates).

For purposes hereof, the term **"Primary Airport"** means a Primary Airport, as defined in Title 49 of the United States Code, Section 47102(16).

Until such time as a Primary Airport is no longer operated on the Benefited Parcels, the terms of this Restrictive Covenant shall be binding upon the successors and assigns of SFH and shall be deemed to run with the Benefited Parcels and the Burdened Parcels as covenants running with the land or as equitable servitudes, as the case may be, and shall constitute benefits and burdens to the Benefited Parcels and the Burdened Parcels, and to all persons hereafter acquiring or owning any interest in the Benefited Parcels or the Burdened Parcels, however such interest may be obtained.

[SIGNATURE PAGE FOLLOWS]



**Exhibit "A"**

**Legal Description of the Burdened Parcels**

All that certain real property situated in the County of Washoe, State of Nevada, more particularly described as follows:

PARCEL 2 OF PARCEL MAP NO. 4051, ENTITLED "PARCEL MAP NO. 1 FOR RENO CORPORATE CENTER, L.L.C., A NEVADA LIMITED LIABILITY COMPANY", ACCORDING TO THE MAP THEREOF, FILED IN THE OFFICE OF THE COUNTY RECORDER OF WASHOE COUNTY, STATE OF NEVADA ON JUNE 30, 2003, AS FILE NO. 2881781, AS AMENDED BY CERTIFICATE OF AMENDMENT RECORDED OCTOBER 27, 2003, AS DOCUMENT NO. 2944944 OF OFFICIAL RECORDS.

## Exhibit "B"

Legal Description of the Benefitted Parcels

**APN:** 015-210-34  
**ACREAGE:** 1,131.28+/- acres  
**PRIMARY ADDRESS:** 2001 E. Plumb Lane, Reno, NV 89509

All that real property situate in the City of Reno, County of Washoe, State of Nevada described as follows:

## PARCEL 1

ALL THAT CERTAIN PROPERTY LYING WHOLLY WITHIN THE CITY OF RENO, COUNTY OF WASHOE, STATE OF NEVADA, AND BEING A PORTION OF SECTIONS 17, 18, 19, 20, 21, 29, AND 30, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.B.M., AND BEING ALSO A PORTION OF RECORD OF SURVEY NO. 899, FILED IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY UNDER FILE 369155 ON JUNE 27, 1975, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT RENO INTERNATIONAL AIRPORT BOUNDARY LINE MONUMENT DESIGNATED AS R.I.A. NO. 4, A BRASS CAP SET IN CONCRETE; THENCE ALONG THAT PORTION OF THE NORTHERLY LINE OF SAID BOUNDARY SOUTH 89°10'04" EAST A DISTANCE OF 1,724.22 FEET TO R.I.A. NO. 5; THENCE NORTH 0°49'56" EAST A DISTANCE OF 1,342.25 FEET TO R.I.A. NO. 6; THENCE SOUTH 89°10'04" EAST A DISTANCE OF 549.95 FEET TO R.I.A. NO. 7; THENCE NORTH 0°52'28" EAST A DISTANCE OF 829.20 FEET TO R.I.A. NO. 8, BEING A POINT ON THE ARC OF THE SOUTHERLY LINE OF MILL STREET, 84 FEET WIDE, A RADIAL BEARING TO SAID POINT BEARS NORTH 3°40'57" EAST; THENCE ALONG SAID ARC, HAVING A RADIUS OF 3,458.00 FEET, THROUGH A CENTRAL ANGLE OF 6°40'49" AND A LENGTH OF 403.18 FEET TO R.I.A. NO. 15; THENCE SOUTH 0°52'28" WEST A DISTANCE OF 785.92 FEET TO R.I.A. NO. 16; THENCE SOUTH 88°49'49" EAST A DISTANCE OF 298.83 FEET TO R.I.A. NO. 17; THENCE SOUTH 0°51'43" WEST A DISTANCE OF 3,934.42 FEET TO R.I.A. NO. 18; THENCE SOUTH 89°16'48" EAST A DISTANCE OF 958.13 FEET TO R.I.A. NO. 19, BEING A POINT ON THE ARC OF THE SOUTHWESTERLY LINE OF ROCK BOULEVARD, 80 FEET WIDE, A RADIAL BEARING TO SAID POINT BEARS SOUTH 77°27'41" WEST; THENCE ALONG SAID CURVE, CONCAVE NORTHEASTERLY AND HAVING A RADIUS OF 1,540 FEET, THROUGH A CENTRAL ANGLE OF 68°19'10" AND AN ARC LENGTH OF 1,836.39 FEET TO R.I.A. NO. 20; THENCE CONTINUING ALONG THE SOUTHERLY LINE OF ROCK BOULEVARD SOUTH 80°51'29" EAST A DISTANCE OF 794.10 FEET TO R.I.A. NO. 21, BEING THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHERLY AND HAVING A RADIUS OF 1,460.00 FEET; THENCE ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 24°46'24" AND AN ARC LENGTH OF 631.27 FEET TO R.I.A. NO. 22; THENCE SOUTH 56°05'05" EAST A DISTANCE OF

840.56 FEET TO R.I.A. NO. 31, BEING THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHWESTERLY AND HAVING A RADIUS OF 40.00 FEET; THENCE ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 79°13'12" AND AN ARC LENGTH OF 55.30 FEET TO R.I.A. NO. 32; THENCE SOUTH 23°08'07" WEST A DISTANCE OF 71.56 FEET TO R.I.A. NO. 33; THENCE SOUTH 27°43'08" WEST A DISTANCE 1,037.55 FEET TO R.I.A. NO. 34; THENCE SOUTH 39°09'32" WEST, A DISTANCE OF 271.50 FEET TO R.I.A. NO. 35; THENCE SOUTH 22°30'40" WEST A DISTANCE OF 438.79 FEET; THENCE, LEAVING THE WESTERLY LINE OF BOYNTON LANE, NORTH 89°00'30" A DISTANCE 985.78 FEET; THENCE SOUTH 65°59'02" WEST A DISTANCE OF 1,390.52 FEET TO R.I.A. NO. 38; THENCE SOUTH 13°05'40" WEST A DISTANCE OF 469.68 FEET TO R.I.A. NO. 39; THENCE NORTH 89°58'20" WEST A DISTANCE OF 403.52 FEET; THENCE SOUTH 0°03'40" WEST A DISTANCE OF 454.35 FEET TO R.I.A. NO. 41; THENCE NORTH 83°53'20" WEST A DISTANCE OF 418.51 FEET TO R.I.A. NO. 42; THENCE SOUTH 0°07'40" WEST A DISTANCE OF 908.41 FEET TO R.I.A. NO. 43; THENCE SOUTH 0°52'40" WEST A DISTANCE OF 3,187.08 FEET TO R.I.A. NO. 44, BEING A POINT ON THE NORTHERLY LINE OF PECKHAM LANE, 70 FEET WIDE; THENCE ALONG SAID NORTHERLY LINE NORTH 64°24'40" WEST A DISTANCE OF 1,412.01 FEET TO R.I.A. NO. 61; THENCE NORTH 64°06'00" WEST A DISTANCE OF 28.45 FEET TO R.I.A. NO. 62; THENCE NORTH 15°07'11" EAST A DISTANCE OF 98.35 FEET TO R.I.A. NO. 63; THENCE NORTH 0°02'02" EAST A DISTANCE OF 585.38 FEET TO R.I.A. NO. 64; THENCE NORTH 89°58'00" WEST A DISTANCE OF 249.54 FEET TO R.I.A. NO. 65; THENCE NORTH 12°26'04" EAST A DISTANCE OF 208.11 FEET TO R.I.A. NO. 66, BEING THE BEGINNING OF A NON-TANGENT CURVE CONCAVE WESTERLY AND HAVING A RADIUS OF 45.00 FEET, A RADIAL BEARING TO SAID POINT BEARS SOUTH 12°25'44" WEST; THENCE ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 177°14'13" AND AN ARC LENGTH OF 139.21 FEET TO R.I.A. NO. 67; THENCE NORTH 15°11'21" EAST A DISTANCE OF 194.78 FEET TO R.I.A. NO. 68; THENCE SOUTH 89°04'56" WEST A DISTANCE OF 50.32 FEET TO R.I.A. NO. 69; THENCE NORTH 0°51'42" WEST A DISTANCE OF 300.10 FEET TO R.I.A. NO. 70, BEING THE BEGINNING OF A NON-TANGENT CURVE CONCAVE WESTERLY AND HAVING A RADIUS OF 50.00 FEET, A RADIAL BEARING TO SAID POINT BEARS SOUTH 0°51'42" EAST; THENCE ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 180°00'00" AND AN ARC LENGTH OF 157.08 FEET TO R.I.A. NO. 71; THENCE NORTH 10°33'30" EAST A DISTANCE OF 226.24 FEET TO R.I.A. NO. 72; THENCE SOUTH 89°03'00" WEST A DISTANCE OF 169.56 FEET TO R.I.A. NO. 73; THENCE NORTH 0°02'00" EAST A DISTANCE OF 2,087.01 FEET TO R.I.A. NO. 74; THENCE NORTH 50°48'00" WEST A DISTANCE OF 93.32 FEET TO R.I.A. NO. 75; THENCE NORTH 51°10'00" WEST A DISTANCE OF 446.32 FEET TO R.I.A. NO. 76; THENCE NORTH 50°55'00" WEST A DISTANCE OF 1,625.69 FEET TO R.I.A. NO. 77, BEING A POINT ON THE SOUTHERLY LINE OF GENTRY WAY, 60.00 FEET WIDE; THENCE NORTH 1°02'30" EAST A DISTANCE OF 60.00 FEET TO R.I.A. NO. 78; THENCE ALONG THE NORTHERLY LINE OF GENTRY WAY, NORTH 88°57'30" WEST A DISTANCE OF 337.15 FEET TO R.I.A. NO. 79; THENCE NORTH 89°12'30" WEST A DISTANCE OF 1,277.04 FEET TO THE WESTERLY LINE OF TERMINAL WAY, 75 FEET WIDE; THENCE ALONG SAID WESTERLY LINE NORTH 7°41'21"

EAST A DISTANCE OF 1,224.06 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHEASTERLY AND HAVING A RADIUS OF 3,880 FEET; THENCE ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 15°50'37" AND AN ARC LENGTH OF 1,072.91 FEET TO A POINT OF COMPOUND CURVE, SAID CURVE HAVING A RADIUS OF 1,066 FEET; THENCE ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 32°17'04" AND AN ARC LENGTH OF 600.66 FEET; THENCE NORTH 55°49'02" EAST A DISTANCE OF 587.53 FEET TO THE BEGINNING OF A NONTANGENT CURVE CONCAVE WESTERLY AND HAVING A RADIUS OF 722.58 FEET, A RADIAL BEARING TO SAID POINT BEARS SOUTH 35°58'30" EAST; THENCE ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 54°56'45" AND AN ARC LENGTH OF 692.94 FEET; THENCE NORTH 0°52'21" EAST A DISTANCE OF 195.07 FEET TO THE BEGINNING OF A TANGENT CURVE CONCAVE SOUTHWESTERLY AND HAVING A RADIUS OF 64.48 FEET; THENCE ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 89°59'03" AND AN ARC LENGTH OF 101.27 FEET TO A POINT ON THE SOUTHERLY LINE OF EAST PLUMB LANE, 100 FEET WIDE; THENCE ALONG SAID SOUTHERLY LINE NORTH 89°21'05" WEST A DISTANCE OF 19.01 FEET TO THE POINT OF INTERSECTION WITH THAT PORTION OF THE WESTERN BOUNDARY OF SAID RECORD OF SURVEY WHICH LIES BETWEEN R.I.A. NO. 91 AND R.I.A. NO. 2; THENCE ALONG SAID WESTERLY BOUNDARY NORTH 0°51'08" EAST A DISTANCE OF 545.75 FEET TO R.I.A. NO. 2; THENCE SOUTH 54°29'06" EAST A DISTANCE OF 211.51 FEET TO A POINT ON THE WESTERLY LINE OF TERMINAL WAY, 80 FEET WIDE; THENCE ALONG SAID WESTERLY LINE AND THE NORTHERLY PROLONGATION THEREOF, NORTH 0°49'56" EAST A DISTANCE OF 1,576.42 FEET TO THE POINT OF BEGINNING.

NOTE: THE ABOVE METES AND BOUNDS LEGAL DESCRIPTION PREVIOUSLY APPEARED IN THAT CERTAIN DOCUMENT RECORDED JANUARY 30, 1980 IN BOOK 1472, PAGE 718 AS INSTRUMENT NO. 654767 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

TOGETHER WITH THOSE PORTIONS OF KAREN STREET AND GAYLE STREET AS VACATED IN AN ORDER OF ABANDONMENT RECORDED FEBRUARY 20, 1985 IN BOOK 2132, PAGE 156 AS INSTRUMENT NO. 979786 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

EXCEPTING THEREFROM THE FOLLOWING PORTION:

A PARCEL OF LAND SITUATE WITHIN THE NORTHWEST QUARTER (NW 1/4) OF SECTION 29 AND THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 20, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., CITY OF RENO, WASHOE COUNTY, NEVADA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT BRASS CAP R.I.A. NO. 42 AS SHOWN ON THE OFFICIAL PLAT OF RENO FREEPORT AIRCENTER UNIT NO. 2, TRACT MAP NO. 1994, DOCUMENT NO. 742783, RECORDED IN THE OFFICIAL RECORDS OF WASHOE COUNTY, NEVADA, ON JUNE 9, 1981; THENCE NORTH 0°06'38" EAST 343.05 FEET TO THE

BEGINNING OF A CURVE TO THE RIGHT THE TANGENT OF WHICH BEARS NORTH 38°24'51" EAST; THENCE 347.50 FEET ALONG THE ARC OF SAID CURVE HAVING A RADIUS OF 790.00 FEET AND A CENTRAL ANGLE OF 25°12'11"; THENCE NORTH 63°37'02" EAST 727.96 FEET; THENCE SOUTH 21°43'01" EAST 17.58 FEET TO BRASS CAP R.I.A. NO. 38 AS SHOWN ON SAID PLAT; THENCE SOUTH 13°05'27" WEST 469.43 FEET ALONG A BOUNDARY LINE COMMON TO RENO CANNON INTERNATIONAL AIRPORT AND BLOCK K OF THE OFFICIAL MAP OF RENO FREEPORT AIRPORT CENTER UNIT 2-B, TRACT NO. 2178, DOCUMENT NO. 938505; THENCE NORTH 89°58'13" WEST 404.42 FEET TO BRASS CAP R.I.A. NO. 40 AS SHOWN ON TRACT MAP NO. 2178; THENCE SOUTH 00°02'47" EAST 454.31 FEET TO A POINT ON THE NORTH BOUNDARY OF TRACT MAP NO. 1994, SAID POINT ALSO BEING R.I.A. NO. 41, A 1 1/4" I.P. SET IN CONCRETE AS SHOWN ON SAID PLAT; THENCE NORTH 83°56'20" WEST 160.59 FEET ALONG SAID BOUNDARY; THENCE DEPARTING SAID BOUNDARY NORTH 83°56'20" WEST 258.58 FEET TO THE POINT OF BEGINNING.

NOTE: THE ABOVE METES AND BOUNDS LEGAL DESCRIPTION PREVIOUSLY APPEARED IN THAT CERTAIN DOCUMENT RECORDED JANUARY 8, 1987 IN BOOK 2476, PAGE 597 AS INSTRUMENT NO. 1131087 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

ALSO EXCEPTING THEREFROM THE FOLLOWING PORTION:

A PORTION OF LOT 1 OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 19, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., AND MORE FULLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS, TO WIT:

BEGINNING AT THE INTERSECTION OF THE RIGHT OR EASTERLY RIGHT-OF-WAY LINE OF INTERSTATE ROUTE 580 (PROJECT ID-580-1(4)1), AND THE RIGHT OR EASTERLY RIGHT-OF-WAY LINE OF TERMINAL WAY, 216.28 FEET RIGHT OF AND MEASURED RADially FROM HIGHWAY ENGINEER'S STATION "03" 662+90.38 P.O.C., SAID POINT OF BEGINNING MORE FULLY DESCRIBED AS BEARING SOUTH 10°40'27" WEST A DISTANCE OF 1,532.25 FEET FROM THE NORTH QUARTER CORNER OF SECTION 19, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M.; THENCE FROM A TANGENT WHICH BEARS NORTH 53°40'36" WEST CURVING TO THE RIGHT ALONG SAID INTERSTATE ROUTE 580 RIGHT-OF-WAY LINE WITH A RADIUS OF 690 FEET, THROUGH AN ANGLE OF 6°14'00", AN ARC DISTANCE OF 75.07 FEET TO AN INTERSECTION WITH THE LEFT OR WESTERLY RIGHT-OF-WAY LINE OF TERMINAL WAY; THENCE FROM A TANGENT WHICH BEARS NORTH 37°55'26" EAST CURVING TO THE RIGHT ALONG THE FORMER RIGHT OR EASTERLY RIGHT-OF-WAY LINE OF INTERSTATE ROUTE 580 WITH A RADIUS OF 1,066 FEET, THROUGH AN ANGLE OF 16°35'46", AN ARC DISTANCE OF 308.77 FEET TO A POINT; THENCE FROM A TANGENT WHICH BEARS SOUTH 28°56'24" EAST CURVING TO THE LEFT ALONG THE RIGHT OR EASTERLY RIGHT-OF-WAY LINE OF INTERSTATE ROUTE 580 WITH A RADIUS OF 333 FEET, THROUGH AN ANGLE OF 12°55'55", AN ARC

DISTANCE OF 75.16 FEET TO AN INTERSECTION WITH THE RIGHT OR EASTERLY RIGHT-OF-WAY LINE OF TERMINAL WAY; THENCE FROM A TANGENT WHICH BEARS SOUTH 54°30'52" WEST CURVING TO THE LEFT ALONG SAID RIGHT-OF-WAY LINE WITH A RADIUS OF 991 FEET, THROUGH AN ANGLE OF 16°42'19", AN ARC DISTANCE OF 288.94 FEET TO THE POINT OF BEGINNING.

ALSO EXCEPTING THEREFROM THE FOLLOWING PORTION:

A PORTION OF LOT 1 OF THE NORTHWEST QUARTER (NW 1/4) AND THE NORTHEAST QUARTER (NE 1/4) OF SECTION 19, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., AND MORE FULLY DESCRIBED BY METES AND BOUNDS AS FOLLOWS, TO WIT:

BEGINNING AT THE INTERSECTION OF THE RIGHT OR EASTERLY RIGHT-OF-WAY LINE OF INTERSTATE ROUTE 580 (PROJECT ID-580-1(4)1), AND THE RIGHT OR EASTERLY RIGHT-OF-WAY LINE OF TERMINAL WAY, 216.28 FEET RIGHT OF AND MEASURED RADIALLY FROM HIGHWAY ENGINEER'S STATION "03" 662+90.38 P.O.C.; SAID POINT OF BEGINNING MORE FULLY DESCRIBED AS BEARING SOUTH 10°40'27" WEST A DISTANCE OF 1,532.25 FEET FROM THE NORTH QUARTER CORNER OF SECTION 19, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M.; THENCE FROM A TANGENT WHICH BEARS NORTH 37°48'33" EAST CURVING TO THE RIGHT ALONG THE RIGHT OR EASTERLY RIGHT-OF-WAY LINE OF TERMINAL WAY WITH A RADIUS OF 991 FEET, THROUGH AN ANGLE OF 16°42'19", AN ARC DISTANCE OF 288.94 FEET TO A POINT ON THE RIGHT OR EASTERLY RIGHT-OF-WAY LINE OF SAID INTERSTATE ROUTE 580; THENCE ALONG SAID RIGHT-OF-WAY LINE THE FOLLOWING COURSES AND DISTANCES: THENCE FROM A TANGENT WHICH BEARS SOUTH 41°52'19" EAST CURVING TO THE LEFT WITH A RADIUS OF 333 FEET, THROUGH AN ANGLE OF 98°14'02", AN ARC DISTANCE OF 570.93 FEET TO A POINT; THENCE FROM A TANGENT WHICH BEARS NORTH 44°31'08" WEST CURVING TO THE RIGHT WITH A RADIUS OF 163 FEET, THROUGH AN ANGLE OF 23°38'56", AN ARC DISTANCE OF 67.28 FEET TO A POINT; THENCE FROM A TANGENT WHICH BEARS NORTH 35°38'54" EAST CURVING TO THE LEFT WITH A RADIUS OF 270 FEET, THROUGH AN ANGLE OF 7°05'45", AN ARC DISTANCE OF 33.44 FEET TO A POINT; THENCE NORTH 28°33'09" EAST A DISTANCE OF 207.57 FEET TO A POINT; THENCE NORTH 38°00'57" EAST A DISTANCE OF 304.13 FEET TO A POINT; THENCE SOUTH 61°26'51" EAST A DISTANCE OF 13.00 FEET TO A POINT; THENCE NORTH 28°33'09" EAST A DISTANCE OF 250.00 FEET TO A POINT; THENCE SOUTH 61°26'51" EAST A DISTANCE 42.00 FEET TO A POINT; THENCE SOUTH 23°38'55" WEST A DISTANCE OF 760.36 FEET TO A POINT; THENCE FROM A TANGENT WHICH BEARS SOUTH 28°33'09" WEST CURVING TO THE RIGHT WITH A RADIUS OF 440 FEET, THROUGH AN ANGLE OF 8°42'30", AN ARC DISTANCE OF 66.88 FEET TO A POINT; THENCE NORTH 68°00'00" WEST A DISTANCE OF 42.65 FEET TO A POINT; THENCE FROM A TANGENT WHICH BEARS THE LAST DESCRIBED COURSE CURVING TO THE RIGHT WITH A RADIUS OF 163 FEET, THROUGH AN ANGLE OF 9°22'52", AN ARC DISTANCE OF 26.69 FEET TO A POINT; THENCE

FROM A TANGENT WHICH BEARS SOUTH 39°44'14" WEST CURVING TO THE RIGHT WITH A RADIUS OF 373 FEET, THROUGH AN ANGLE OF 7°11'31", AN ARC DISTANCE OF 46.82 FEET TO A POINT; THENCE SOUTH 8°52'48" EAST A DISTANCE OF 101.58 FEET TO A POINT; THENCE NORTH 81°07'12" EAST A DISTANCE OF 168.66 FEET TO A POINT; THENCE FROM A TANGENT WHICH BEARS SOUTH 73°48'50" EAST CURVING TO THE LEFT WITH A RADIUS OF 773 FEET, THROUGH AN ANGLE OF 2°46'28", AN ARC DISTANCE OF 37.43 FEET TO A POINT; THENCE SOUTH 6°07'16" EAST A DISTANCE OF 143.68 FEET TO A POINT; THENCE NORTH 89°37'00" WEST A DISTANCE OF 61.81 FEET TO A POINT; THENCE FROM A TANGENT WHICH BEARS THE LAST DESCRIBED COURSE CURVING TO THE LEFT WITH A RADIUS OF 50 FEET, THROUGH AN ANGLE 90°03'00", AN ARC DISTANCE OF 78.58 FEET TO A POINT; THENCE SOUTH 00°20'00" WEST A DISTANCE OF 121.08 FEET TO A POINT; THENCE NORTH 89°08'11" WEST A DISTANCE OF 115.68 FEET TO A POINT; THENCE FROM A TANGENT WHICH BEARS NORTH 0°51'49" EAST CURVING TO THE LEFT WITH A RADIUS OF 141 FEET, THROUGH AN ANGLE OF 99°44'37", AN ARC DISTANCE OF 245.46 FEET TO A POINT; THENCE SOUTH 81°07'12" WEST A DISTANCE OF 40.49 FEET TO A POINT; THENCE FROM A TANGENT WHICH BEARS THE LAST DESCRIBED COURSE CURVING TO THE RIGHT WITH A RADIUS OF 675 FEET, THROUGH AN ANGLE OF 14°09'04", AN ARC DISTANCE OF 166.71 FEET TO A POINT; THENCE SOUTH 5°16'16" WEST A DISTANCE OF 15.00 FEET TO A POINT; THENCE FROM A TANGENT WHICH BEARS NORTH 84°43'44" WEST CURVING TO THE RIGHT WITH A RADIUS OF 690 FEET, THROUGH AN ANGLE OF 31°03'08", AN ARC DISTANCE OF 373.95 FEET TO THE POINT OF BEGINNING.

NOTE: THE ABOVE METES AND BOUNDS LEGAL DESCRIPTION PREVIOUSLY APPEARED IN THAT CERTAIN DOCUMENT RECORDED SEPTEMBER 28, 1988 IN BOOK 2805, PAGE 438 AS INSTRUMENT NO. 1277423 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

ALSO EXCEPTING THEREFROM THE FOLLOWING PORTION:

ALL THAT CERTAIN PARCEL OF LAND SITUATE IN A PORTION OF THE WEST HALF (W 1/2) OF SECTION 21, AND THE EAST HALF (E 1/2) OF SECTION 20, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., WASHOE COUNTY, NEVADA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT R.I.A. NO. 32, AS SHOWN AND SO DESIGNATED ON THE RECORD OF SURVEY FOR RENO INTERNATIONAL AIRPORT, SURVEY MAP NO. 899 (A THROUGH F), FILE NO. 369155, IN THE OFFICIAL RECORDS OF WASHOE COUNTY, NEVADA, SAID POINT BEARS NORTH 50°48'56" EAST 93.87 FEET MORE OR LESS FROM THE QUARTER (1/4) CORNER COMMON TO SECTIONS 20 AND 21; THENCE FROM THE POINT OF BEGINNING, SOUTH 23°08'07" WEST 71.56 FEET MORE OR LESS; THENCE SOUTH 27°43'08" WEST 281.79 FEET MORE OR LESS; THENCE NORTH 63°19'50" WEST 0.46 FEET MORE OR LESS; THENCE NORTH 26°40'10" EAST 200.74 FEET MORE OR LESS; THENCE NORTH 27°48'52"

EAST 60.05 FEET MORE OR LESS; THENCE 71.13 FEET MORE OR LESS ALONG THE ARC OF A 135.00 FOOT RADIUS CURVE TO THE LEFT, THROUGH A CENTRAL ANGLE OF 30°11'13"; THENCE 16.36 FEET MORE OR LESS ALONG THE ARC OF A 95.00 FOOT RADIUS CURVE TO THE LEFT, THROUGH A CENTRAL ANGLE OF 9°51'49"; THENCE 94.68 FEET MORE OR LESS ALONG THE ARC OF A 155.00 FOOT RADIUS CURVE TO THE LEFT, THROUGH A CENTRAL ANGLE OF 35°00'00"; THENCE NORTH 47°14'01" WEST 32.11 FEET MORE OR LESS; THENCE SOUTH 56°05'05" EAST 32.50 FEET MORE OR LESS; THENCE SOUTH 56°05'41" EAST 68.00 FEET MORE OR LESS; THENCE 55.31 FEET MORE OR LESS ALONG THE ARC OF A 40.00 FOOT RADIUS CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 79°13'12" TO THE POINT OF BEGINNING.

ALSO EXCEPTING THEREFROM THE FOLLOWING PORTION:

ALL THAT CERTAIN PARCEL OF LAND SITUATE IN A PORTION OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 20, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., WASHOE COUNTY, NEVADA, AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT ON THE WESTERLY RIGHT-OF-WAY OF LONGLEY LANE AND THE EASTERLY BOUNDARY OF RENO INTERNATIONAL AIRPORT, AS SHOWN AND SO DESIGNATED ON THE RECORD OF SURVEY FOR RENO INTERNATIONAL AIRPORT, SURVEY MAP NO. 899 (A THROUGH F), FILE NO. 369155, IN THE OFFICIAL RECORDS OF WASHOE COUNTY, NEVADA, SAID POINT BEARS SOUTH 24°53'01" WEST 859.95 FEET MORE OR LESS FROM THE QUARTER (1/4) CORNER COMMON TO SECTIONS 20 AND 21; THENCE FROM THE POINT OF BEGINNING, SOUTH 27°43'07" WEST 163.63 FEET MORE OR LESS; THENCE SOUTH 39°09'32" WEST 271.50 FEET MORE OR LESS; THENCE SOUTH 22°30'40" WEST 703.42 FEET MORE OR LESS; THENCE NORTH 20°26'27" EAST 199.65 FEET MORE OR LESS; NORTH 20°39'00" EAST 24.19 FEET MORE OR LESS; THENCE NORTH 22°30'40" EAST 149.85 FEET MORE OR LESS; THENCE NORTH 22°12'27" EAST 123.96 FEET MORE OR LESS; THENCE NORTH 24°30'00" EAST 100.00 FEET MORE OR LESS; THENCE NORTH 65°30'01" WEST 8.00 FEET MORE OR LESS; THENCE 309.17 FEET MORE OR LESS ALONG THE ARC OF A 1,042.00 FOOT RADIUS CURVE TO THE LEFT, THROUGH A CENTRAL ANGLE OF 17°00'00"; THENCE 115.66 FEET MORE OR LESS ALONG THE ARC OF A 862.27 FOOT RADIUS CURVE TO THE LEFT, THROUGH A CENTRAL ANGLE OF 7°41'08"; THENCE NORTH 32°12'39" EAST 115.97 FEET MORE OR LESS TO THE POINT OF BEGINNING.

NOTE: THE ABOVE METES AND BOUNDS LEGAL DESCRIPTION PREVIOUSLY APPEARED IN THAT CERTAIN DOCUMENT RECORDED JUNE 20, 1991 IN BOOK 3279, PAGE 320 AS INSTRUMENT NO. 1488368 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

ALSO EXCEPTING THEREFROM ANY PORTION LYING WEST OF THE WESTERLY RIGHT-OF-WAY LINE OF OR TERMINAL WAY.

PARCEL 2:

A PORTION OF SECTIONS 17 AND 20, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT R.I.A. SURVEY MONUMENT NO. 18 AS DELINEATED ON RECORD OF SURVEY FILE NO. 369155, RECORDED IN THE WASHOE COUNTY RECORDER'S OFFICE ON JUNE 27, 1975; THENCE NORTH 0°51'43" EAST 3,934.42 FEET (3,933.76 FEET R.S. NO. 320130) TO R.I.A. SURVEY MONUMENT NO. 17; THENCE NORTH 88°49'49" WEST 105.23 FEET; THENCE NORTH 0°52'28" EAST 260.21 FEET; THENCE SOUTH 88°53'33" EAST 656.24 FEET; THENCE SOUTH 0°52'00" WEST 2,036.43 FEET; THENCE SOUTH 89°08'00" EAST 652.28 FEET TO A POINT ON THE WESTERLY LINE OF SOUTH ROCK BOULEVARD; THENCE ALONG THE WESTERLY LINE OF SOUTH ROCK BOULEVARD THE FOLLOWING COURSES AND DISTANCES: SOUTH 10°38'31" WEST 1,127.67 FEET; THENCE ALONG A 30.00 FOOT RADIUS CURVE TO THE RIGHT, THROUGH A CENTRAL ANGLE OF 90°00'00", AN ARC LENGTH OF 47.12 FEET; THENCE SOUTH 10°38'31" WEST 80.00 FEET; THENCE ALONG A 30.00 FOOT RADIUS CURVE TO THE RIGHT FROM A TANGENT BEARING SOUTH 79°21'29" EAST THROUGH A CENTRAL ANGLE OF 90°00'00" AN ARC LENGTH OF 47.12 FEET; THENCE SOUTH 10°38'31" WEST 290.00 FEET; THENCE ALONG A 1,540.00 FOOT RADIUS CURVE TO THE LEFT THROUGH A CENTRAL ANGLE OF 23°10'50" AN ARC LENGTH OF 623.05 FEET TO R.I.A. SURVEY MONUMENT NO. 19; THENCE LEAVING THE WESTERLY LINE OF SOUTH ROCK BOULEVARD, NORTH 89°16'48" WEST 958.13 FEET TO THE TRUE POINT OF BEGINNING.

NOTE: THE ABOVE METES AND BOUNDS LEGAL DESCRIPTION PREVIOUSLY APPEARED IN THAT CERTAIN DOCUMENT RECORDED JANUARY 30, 1980 IN BOOK 1472, PAGE 718 AS INSTRUMENT NO. 654767 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

PARCEL 3:

THAT PORTION OF SECTION 17, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., IN THE COUNTY OF WASHOE, STATE OF NEVADA, DESCRIBED AS FOLLOWS:

BEGINNING AT R.I.A. SURVEY MONUMENT NO. 17 AS DELINEATED ON RECORD OF SURVEY FILE NO. 369155 RECORDED IN THE WASHOE COUNTY RECORDER'S OFFICE ON JUNE 27, 1975, AND AS FURTHER DESCRIBED IN THAT CERTAIN FINAL ORDER OF CONDEMNATION IN CASE NO. 316124 OF THE 2ND JUDICIAL DISTRICT COURT OF NEVADA ENTITLED JOHN A. DERMODY, ET AL VS. CITY OF RENO, A CERTIFIED COPY OF WHICH RECORDED JANUARY 23, 1978, AS DOCUMENT NO. 510312 IN BOOK 1186, AT PAGE 528 OF OFFICIAL

RECORDS OF WASHOE COUNTY; THENCE NORTH 88°49'49" WEST 105.23 FEET; THENCE NORTH 0°52'28" EAST 260.21 FEET; THENCE SOUTH 88°53'33" EAST 656.24 TO THE TRUE POINT OF BEGINNING; THENCE SOUTH 0°52'00" WEST 2,036.43 FEET; THENCE SOUTH 89°08'00" EAST 40.00 FEET; THENCE NORTH 0°52'00" EAST 2,036.26 FEET; THENCE NORTH 88°53'33" WEST 40.00 FEET TO THE TRUE POINT OF BEGINNING.

NOTE: THE ABOVE METES AND BOUNDS LEGAL DESCRIPTION PREVIOUSLY APPEARED IN THAT CERTAIN DOCUMENT RECORDED AUGUST 29, 1985 IN BOOK 2217, PAGE 727 AS INSTRUMENT NO. 1018786 AND RE-RECORDED JUNE 13, 1986 IN BOOK 2353, PAGE 478 AS INSTRUMENT NO. 1078117 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

PARCEL 4:

ALL THAT CERTAIN REAL PROPERTY SITUATE IN THE NORTH HALF (N 1/2) OF SECTION 17, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., CITY OF RENO, COUNTY OF WASHOE, STATE OF NEVADA, AND MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHWEST CORNER OF A PARCEL OF LAND SHOWN ON A "RECORD OF SURVEY NO. 844 FOR JOHN A. DERMODY AND ERNEST W. MCKENZIE", FILE NO. 320130, SAID POINT BEING THE TRUE POINT OF BEGINNING; THENCE SOUTH 0°54'06" WEST 336.06 FEET; THENCE SOUTH 88°49'49" EAST 266.93 FEET; THENCE SOUTH 0°54'06" WEST 130.00 FEET; THENCE SOUTH 88°49'49" EAST 300.00 FEET; THENCE NORTH 0°54'06" EAST 370.61 FEET TO A POINT ON THE SOUTHERLY RIGHT-OF-WAY LINE OF MILL STREET; THENCE ALONG SAID RIGHT-OF-WAY LINE NORTH 79°16'28" WEST 553.67 FEET TO THE BEGINNING OF A 3,458.00 FOOT RADIUS CURVE TO THE LEFT; THENCE ALONG SAID CURVE THROUGH A CENTRAL ANGLE OF 0°21'23" AN ARC LENGTH OF 21.68 FEET TO THE TRUE POINT OF BEGINNING.

NOTE: THE ABOVE METES AND BOUNDS LEGAL DESCRIPTION PREVIOUSLY APPEARED IN THAT CERTAIN DOCUMENT RECORDED AUGUST 28, 1986 IN BOOK 2395, PAGE 687 AS INSTRUMENT NO. 1095932 AND RE-RECORDED OCTOBER 16, 1986 IN BOOK 2424, PAGE 402 AS INSTRUMENT NO. 1108643 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

PARCEL 5:

A PORTION OF SECTION 17, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., IN THE CITY OF RENO, COUNTY OF WASHOE, STATE OF NEVADA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT R.I.A. SURVEY MONUMENT NO. 16 AS SHOWN ON RECORD OF SURVEY NO. 899, JUNE 27, 1975, IN THE OFFICE OF THE WASHOE COUNTY

RECORDER, FILE NO. 369155; THENCE NORTH  $0^{\circ}52'28''$  EAST 450 FEET MORE OR LESS TO THE SOUTHWEST CORNER OF A PARCEL OF LAND DESCRIBED IN A DEED FROM MCKENZIE TO THE AIRPORT AUTHORITY, RECORDED AUGUST 28, 1986 AS FILE NO. 1095932 AND RE-RECORDED OCTOBER 16, 1986 AS FILE NO. 1108643; THENCE SOUTH  $88^{\circ}49'49''$  EAST 193.60 FEET ALONG THE SOUTHERLY LINE OF THE LAST MENTIONED PARCEL; THENCE SOUTH 450 FEET MORE OR LESS TO A POINT THAT LIES SOUTH  $88^{\circ}49'49''$  EAST 194.30 FEET FROM THE POINT OF BEGINNING; THENCE NORTH  $88^{\circ}49'49''$  WEST 194.30 FEET TO THE POINT OF BEGINNING.

PARCEL 6:

A PORTION OF SECTION 17, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., IN THE CITY OF RENO, COUNTY OF WASHOE, STATE OF NEVADA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

BEGINNING AT R.I.A. SURVEY MONUMENT NO. 17 AS SHOWN ON RECORD OF SURVEY NO. 899, FILE NO. 369155, RECORDED IN THE WASHOE COUNTY RECORDER'S OFFICE ON JUNE 27, 1975, AND AS FURTHER DESCRIBED IN THAT CERTAIN FINAL ORDER OF CONDEMNATION IN CASE NO. 316124 OF THE 2ND JUDICIAL DISTRICT COURT OF NEVADA ENTITLED JOHN A. DERMODY, ET AL VS. CITY OF RENO, A CERTIFIED COPY OF WHICH RECORDED JANUARY 23, 1978 AS DOCUMENT NO. 510312 IN BOOK 1186, AT PAGE 528 OF OFFICIAL RECORDS OF WASHOE COUNTY; THENCE NORTH  $88^{\circ}49'49''$  WEST 105.23 FEET; THENCE NORTH  $0^{\circ}52'28''$  EAST 260.21 FEET TO THE TRUE POINT OF BEGINNING; THENCE SOUTH  $88^{\circ}53'33''$  EAST 696.24 FEET; THENCE NORTH  $0^{\circ}52'00''$  EAST TO THE SOUTHERLY LINE OF MILL STREET AS DESCRIBED IN THE DEED TO THE CITY OF RENO RECORDED MARCH 3, 1970, AS DOCUMENT NO. 167881 IN BOOK 447, AT PAGE 440, OFFICIAL RECORDS; THENCE WESTERLY ALONG SAID SOUTHERLY LINE, TO THE NORTHEAST CORNER OF THE LAND DESCRIBED IN THAT CERTAIN DEED RECORDED AUGUST 28, 1986, AS DOCUMENT NO. 1095932 AND RE-RECORDED OCTOBER 16, 1986, AS DOCUMENT NO. 1108643; THENCE SOUTH  $0^{\circ}54'06''$  WEST 370.61 FEET TO THE SOUTHEAST CORNER OF SAID PARCEL OF LAND; THENCE ALONG THE SOUTHERLY LINE OF SAID PARCEL NORTH  $88^{\circ}49'49''$  WEST 300 FEET; THENCE NORTH  $0^{\circ}54'06''$  EAST 130 FEET; THENCE NORTH  $88^{\circ}49'49''$  WEST 73.33 FEET, MORE OR LESS, TO THE NORTHERLY PROLONGATION OF THAT CERTAIN LINE RUNNING THROUGH THE TRUE POINT OF BEGINNING AND HEREIN DESCRIBED AS NORTH  $0^{\circ}52'28''$  EAST 260.21 FEET; THENCE SOUTHERLY ALONG SAID NORTHERLY PROLONGATION TO THE TRUE POINT OF BEGINNING.

THE EAST LINE BEING THE NORTHERLY PROLONGATION OF THE EAST LINE OF THAT PORTION OF LAND CONVEYED TO THE AIRPORT AUTHORITY OF WASHOE COUNTY, A QUASI-MUNICIPAL CORPORATION, DATED AUGUST 29, 1985 AND RECORDED AUGUST 29, 1985 IN BOOK 2217, PAGE 727 AS DOCUMENT NO. 1018786, OFFICIAL RECORDS.

NOTE: THE ABOVE METES AND BOUNDS LEGAL DESCRIPTION PREVIOUSLY APPEARED IN THAT CERTAIN DOCUMENT RECORDED DECEMBER 31, 1986 IN BOOK 2470, PAGE 289 AS INSTRUMENT NO. 1128434 AND RE-RECORDED JUNE 17, 1987 IN BOOK 2568, PAGE 655 AS INSTRUMENT NO. 1171159 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

PARCEL 7:

A PORTION OF THE WEST HALF (W 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 17, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID SECTION 17, SHOWN ON A RECORD OF SURVEY MAP FILED UNDER NO. 206934, WASHOE COUNTY, NEVADA, RECORDS; THENCE SOUTH 34°35'56" EAST 1,356.24 FEET TO AN IRON PIN; THENCE SOUTH 34°06'20" WEST 70.34 FEET TO A PIPE SET AT THE INTERSECTION OF THE SOUTH LINE OF MILL STREET WITH THE EAST BOUNDARY FENCE OF THE MATLEY LAND; THENCE NORTH 85°31'40" WEST 381.41 FEET ALONG SAID SOUTH LINE OF MILL STREET TO THE TRUE POINT OF BEGINNING; THENCE SOUTH 0°51'44" WEST 312.05 FEET; THENCE NORTH 85°31'40" WEST 200.00 FEET; THENCE NORTH 0°51'44" EAST 312.09 FEET TO A POINT ON SAID SOUTH LINE OF MILL STREET; THENCE SOUTH 85°31'40" EAST 200.00 FEET ALONG SAID SOUTH LINE TO THE TRUE POINT OF BEGINNING.

EXCEPTING THAT STRIP OF LAND ADJACENT TO MILL STREET CONVEYED TO THE CITY OF RENO BY RALPH C. AND VIRGINIA D. THOMPSON BY THAT CERTAIN DEED DATED OCTOBER 27, 1969 AND RECORDED OCTOBER 28, 1969 IN THE OFFICE OF THE COUNTY RECORDER OF WASHOE COUNTY, NEVADA AS DOCUMENT NO. 157961, IN BOOK 422, AT PAGE 717.

NOTE: THE ABOVE METES AND BOUNDS LEGAL DESCRIPTION PREVIOUSLY APPEARED IN THAT CERTAIN DOCUMENT RECORDED OCTOBER 22, 1986 IN BOOK 2427, PAGE 957 AS INSTRUMENT NO. 1110289 AND RE-RECORDED DECEMBER 23, 1986 IN BOOK 2464, PAGE 821 AS INSTRUMENT NO. 1126379 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

PARCEL 8:

A PORTION OF THE WEST HALF (W 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 17, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHWEST CORNER OF SAID SECTION 17; THENCE SOUTH 34°35'56" EAST 1,356.24 FEET TO THE SOUTHWEST CORNER OF THE STEELE YARD DESCRIBED IN DEED FROM WARD TO STEINBERGER,

RECORDED IN BOOK 38, PAGE 217, DEED RECORDS; THENCE SOUTH 34°06'20" WEST 70.34 FEET TO A POINT ON THE SOUTHERN LINE OF MILL STREET; THENCE NORTH 85°31'40" WEST ALONG SAID SOUTHERN LINE OF MILL STREET 581.41 FEET TO THE TRUE POINT OF BEGINNING; THENCE NORTH 85°31'40" WEST ALONG SAID SOUTHERN LINE OF MILL STREET 75.67 FEET; THENCE WESTERLY ALONG SAID SOUTHERN LINE OF MILL STREET ALONG THE ARC OF A CURVE TO THE LEFT WITH A RADIUS OF 1,470.00 FEET, CENTRAL ANGLE OF 2°30'18" AN ARC DISTANCE OF 64.27 FEET; THENCE SOUTH 0°51'44" WEST 310.64 FEET; THENCE SOUTH 85°31'40" EAST 140.00 FEET TO A LINE DRAWN SOUTH 00°51'44" WEST FROM THE TRUE POINT OF BEGINNING; THENCE NORTH 0°51'44" EAST 312.00 FEET TO THE TRUE POINT OF BEGINNING.

EXCEPTING THEREFROM THAT PORTION CONVEYED TO THE CITY OF RENO BY DEED RECORDED DECEMBER 12, 1969 IN BOOK 433, PAGE 185 AS INSTRUMENT NO. 161922 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

NOTE: THE ABOVE METES AND BOUNDS LEGAL DESCRIPTION PREVIOUSLY APPEARED IN THAT CERTAIN DOCUMENT RECORDED DECEMBER 22, 1986 IN BOOK 2464, PAGE 800 AS INSTRUMENT NO. 1126371 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

PARCEL 9:

A PORTION OF THE WEST HALF (W 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 17 AND THE EAST HALF (E 1/2) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 18, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SAID SECTION 18; THENCE SOUTH 34°35'56" EAST 1,356.24 FEET TO THE SOUTHWEST CORNER OF THE STEELE YARD, AS DESCRIBED IN THAT CERTAIN DEED FROM WARD TO STEINBERGER, RECORDED IN BOOK 38, PAGE 217, DEED RECORDS; THENCE SOUTH 34°06'20" WEST 70.34 FEET TO A POINT ON THE SOUTHERN LINE OF MILL STREET; THENCE NORTH 85°31'40" WEST ALONG SAID SOUTHERN LINE OF MILL STREET 657.80 FEET; THENCE WESTERLY ALONG SAID SOUTHERN LINE OF MILL STREET ALONG THE ARC OF A CURVE TO THE LEFT WITH A RADIUS OF 1,470.00 FEET, A CENTRAL ANGLE OF 2°30'18", FOR AN ARC DISTANCE OF 64.27 FEET TO THE TRUE POINT OF BEGINNING; THENCE WESTERLY ALONG SAID CURVE TO THE LEFT WITH A RADIUS OF 1,470.00 FEET, A CENTRAL ANGLE 6°54'19", FOR AN ARC DISTANCE OF 177.16 FEET TO THE EASTERN LINE OF THE PARCEL OF LAND DESCRIBED IN THAT CERTAIN DEED TO MARSHALL R. MATLEY, ET AL, RECORDED IN BOOK 333, PAGE 396, UNDER DOCUMENT NO. 221424, DEED RECORDS; THENCE SOUTH 7°21'15" EAST ALONG THE LAST MENTIONED LINE, 161.59 FEET TO THE SOUTHEAST CORNER OF SAID MATLEY PARCEL; THENCE SOUTH 0°51'44" WEST 133.76 FEET; THENCE SOUTH 85°31'40" EAST 154.12 FEET TO A LINE DRAWN SOUTH

0°51'44" WEST FROM THE TRUE POINT OF BEGINNING; THENCE NORTH 0°51'44" EAST 310.64 FEET TO THE TRUE POINT OF BEGINNING.

EXCEPTING THEREFROM THAT PARCEL OF LAND CONVEYED IN DEED TO THE CITY OF RENO, NEVADA, A MUNICIPAL CORPORATION, RECORDED FEBRUARY 12, 1970 IN BOOK 444, PAGE 475, DOCUMENT NO. 166627, OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

NOTE: THE ABOVE METES AND BOUNDS LEGAL DESCRIPTION PREVIOUSLY APPEARED IN THAT CERTAIN DOCUMENT RECORDED OCTOBER 27, 1986 IN BOOK 2430, PAGE 158 AS INSTRUMENT NO. 1111260 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

PARCEL 10:

A PORTION OF THE WEST HALF (W 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 17 AND THE SOUTHEAST QUARTER (SE 1/4) OF THE NORTHEAST QUARTER (NE 1/4) OF SECTION 18, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., DESCRIBED AS FOLLOWS:

COMMENCING AT THE NORTHEAST CORNER OF SECTION 18, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M.; THENCE SOUTH 34°35'56" EAST 1,356.24 FEET TO THE SOUTHWEST CORNER OF THE STEELE YARD, DESCRIBED IN DEED FROM WARD TO STEINBERGER, RECORDED IN BOOK 38, PAGE 217, DEED RECORDS; THENCE SOUTH 34°06'20" WEST 70.34 FEET TO A POINT ON THE SOUTHERN LINE OF MILL STREET; THENCE NORTH 85°31'40" WEST ALONG SAID SOUTHERN LINE OF MILL STREET 364.66 FEET TO THE WESTERN LINE OF PARCEL E AS DESCRIBED IN THE DEED TO THE CITY OF RENO, RECORDED IN BOOK 611, FILE NO. 351210, DEED RECORDS, THE LAST DETERMINED POINT BEING THE TRUE POINT OF BEGINNING; THENCE NORTH 85°31'40" WEST ALONG SAID SOUTHERN LINE OF MILL STREET 16.75 FEET TO THE EASTERN LINE OF THE PARCEL OF LAND DESCRIBED IN THE DEED TO RALPH C. THOMPSON AND WIFE, RECORDED IN BOOK 530, FILE NO. 312191, DEED RECORDS; THENCE SOUTH 0°51'44" WEST ALONG THE LAST MENTIONED LINE 312.05 FEET; THENCE NORTH 85°31'40" WEST 494.12 FEET; THENCE NORTH 56°43' WEST 43.81 FEET; THENCE SOUTH 0°13'40" WEST 585.88 FEET TO THE NORTHERN LINE OF PARCEL NO. 1 AS DESCRIBED IN BOOK 21, FILE NO. 228192, DECREES OF COURT; THENCE SOUTH 89°56' EAST ALONG THE LAST MENTIONED LINE 551.88 FEET TO SAID WESTERN LINE OF SAID PARCEL E; THENCE NORTH 0°05'58" EAST ALONG THE LAST MENTIONED LINE 835.09 FEET TO THE TRUE POINT OF BEGINNING.

EXCEPTING THEREFROM THOSE PORTIONS CONVEYED TO THE CITY OF RENO BY DEEDS RECORDED JULY 20, 1970 IN BOOK 477, PAGES 91 AND 94, AS DOCUMENT NO. 179542 AND 197543, OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

NOTE: THE ABOVE METES AND BOUNDS LEGAL DESCRIPTION PREVIOUSLY APPEARED IN THAT CERTAIN DOCUMENT RECORDED DECEMBER 24, 1984 IN BOOK 2110, PAGE 5 AS INSTRUMENT NO. 969358 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

PARCEL 11:

A PARCEL OF LAND SITUATE WITHIN THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 29, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., WASHOE COUNTY, NEVADA, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT A POINT ON THE BOUNDARY LINE OF RENO FREEPORT AIRCENTER SUBDIVISION UNIT NO. 1, FILED MARCH 13, 1980, DOCUMENT NO. 662071 IN THE OFFICIAL RECORDS OF WASHOE COUNTY, NEVADA, SAID POINT BEING R.I.A. NO. 44 LYING ON THE NORTHERLY RIGHT-OF-WAY LINE OF SPRING DRIVE; THENCE NORTH  $0^{\circ}52'11''$  EAST 3,158.22 FEET TO THE CENTERLINE OF AN EXISTING 25.00 FOOT WIDE SANITARY SEWER EASEMENT, DOCUMENT NO. 165251 IN BOOK 441, PAGE 266, OFFICIAL RECORDS OF WASHOE COUNTY, NEVADA, SAID POINT BEING THE TRUE POINT OF BEGINNING; THENCE ALONG SAID CENTERLINE SOUTH  $88^{\circ}10'48''$  EAST 325.87 FEET; THENCE LEAVING SAID CENTERLINE SOUTH  $1^{\circ}49'12''$  WEST 402.55 FEET; THENCE NORTH  $89^{\circ}07'49''$  WEST 319.15 FEET; THENCE NORTH  $0^{\circ}52'11''$  EAST 407.90 FEET TO THE TRUE POINT OF BEGINNING.

NOTE: THE ABOVE METES AND BOUNDS LEGAL DESCRIPTION PREVIOUSLY APPEARED IN THAT CERTAIN DOCUMENT RECORDED JUNE 3, 1980 IN BOOK 1508, PAGE 844 AS INSTRUMENT NO. 676030 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

PARCEL 12:

THAT PORTION OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 30, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., DESCRIBED AS FOLLOWS:

BEGINNING AT THE MOST EASTERLY CORNER OF LOT 45, AS SHOWN ON THE MAP OF REWANA SUBDIVISION NO. 2, FILED IN THE OFFICE OF THE COUNTY RECORDER OF WASHOE COUNTY, NEVADA, ON JUNE 26, 1958; THENCE ALONG THE NORTHERLY LINE OF SAID LOT 45 NORTH  $65^{\circ}11'$  WEST A DISTANCE OF 279.03 FEET TO THE MOST NORTHERLY CORNER OF SAID LOT 45; THENCE NORTH  $24^{\circ}49'$  EAST ALONG THE EASTERLY RIGHT-OF-WAY LINE OF PAMELA AVENUE AS SHOWN ON THE MAP OF REWANA SUBDIVISION NO. 3 FILED IN THE OFFICE OF THE COUNTY RECORDER OF WASHOE COUNTY, NEVADA ON AUGUST 9, 1961 A DISTANCE OF 6.74 FEET; THENCE ON A CURVE TO THE RIGHT HAVING A RADIUS OF 20 FEET THROUGH A CENTRAL ANGLE OF  $90^{\circ}$  FOR AN ARC DISTANCE OF 31.42 FEET; THENCE SOUTH  $65^{\circ}11'$  EAST ALONG THE

SOUTHWESTERLY RIGHT-OF-WAY LINE OF KAREN STREET AS SHOWN ON SAID REWANA SUBDIVISION NO. 3 A DISTANCE OF 259.03 FEET; THENCE SOUTH 24°49' WEST A DISTANCE OF 26.74 FEET TO THE POINT OF BEGINNING.

NOTE: THE ABOVE METES AND BOUNDS LEGAL DESCRIPTION PREVIOUSLY APPEARED IN THAT CERTAIN DOCUMENT RECORDED MARCH 15, 1985 IN BOOK 2143, PAGE 148 AS INSTRUMENT NO. 984912 AND RE-RECORDED JUNE 13, 1986 IN BOOK 2353, PAGE 482 AS INSTRUMENT NO. 1078118 AND RE-RECORDED AUGUST 14, 1986 IN BOOK 2388, PAGE 14 AS INSTRUMENT NO. 1092473 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

PARCEL 13:

THAT PORTION OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 30, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF LOT 47, AS SHOWN ON THE MAP OF REWANA SUBDIVISION NO. 3, FILED IN THE OFFICE OF THE COUNTY RECORDER OF WASHOE COUNTY, NEVADA, ON AUGUST 9, 1961; THENCE NORTH 88°25' EAST ALONG THE SOUTHERLY LINE OF LOTS 49 AND 38 IN SAID SUBDIVISION, A DISTANCE OF 235.35 FEET; THENCE SOUTH 14°27' WEST 194.44 FEET; THENCE ON A CURVE TO THE LEFT THE TANGENT OF WHICH BEARS NORTH 75°33' WEST HAVING A RADIUS OF 45 FEET THROUGH A CENTRAL ANGLE OF 65°07' FOR AN ARC DISTANCE OF 51.14 FEET; THENCE ON A CURVE TO THE RIGHT, THE TANGENT OF WHICH BEARS SOUTH 39°20' WEST HAVING A RADIUS OF 15 FEET THROUGH A CENTRAL ANGLE OF 53°08' FOR AN ARC DISTANCE OF 13.91 FEET; THENCE NORTH 87°32' WEST 162.0 FEET TO THE MOST SOUTHERLY CORNER OF SAID LOT 47; THENCE NORTH 9°42' EAST ALONG THE EASTERLY LINE OF SAID LOT 47 A DISTANCE OF 198.18 FEET TO THE POINT OF BEGINNING.

NOTE: THE ABOVE METES AND BOUNDS LEGAL DESCRIPTION PREVIOUSLY APPEARED IN THAT CERTAIN DOCUMENT RECORDED OCTOBER 1, 1979 IN BOOK 1435, PAGE 393 AS INSTRUMENT NO. 632674 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

TOGETHER WITH THAT PORTION OF KAREN STREET AS VACATED IN AN ORDER OF ABANDONMENT RECORDED FEBRUARY 20, 1985 IN BOOK 2132, PAGE 156 AS INSTRUMENT NO. 979786 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

PARCEL 14:

THAT PORTION OF THE SOUTHEAST QUARTER (SE 1/4) OF SECTION 30, TOWNSHIP 19 NORTH, RANGE 20 EAST, M.D.M., DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF LOT 45 OF REWANA SUBDIVISION NO. 2, ACCORDING TO THE MAP THEREOF, FILED IN THE OFFICE OF THE COUNTY RECORDER OF WASHOE COUNTY, STATE OF NEVADA, ON JUNE 26, 1958; THENCE NORTH 24°49' EAST A DISTANCE OF 31.32 FEET; THENCE SOUTH 87°32' EAST A DISTANCE OF 179.26 FEET TO A POINT OF A CUL-DE-SAC; THENCE ALONG SAID CUL-DE-SAC ON A CURVE TO THE RIGHT HAVING A RADIUS OF 15 FEET THROUGH A CENTRAL ANGLE OF 53°08' FOR AN ARC DISTANCE OF 13.91 FEET; THENCE ON A CURVE TO THE LEFT HAVING A RADIUS OF 45 FEET THROUGH A CENTRAL ANGLE OF 44°03' FOR AN ARC DISTANCE OF 34.60 FEET; THENCE SOUTH 11°33' WEST A DISTANCE OF 208.13 FEET TO A POINT ON THE SOUTHERLY LINE OF A PARCEL CONVEYED TO REWANA FARMS, INCORPORATED, BY DEED RECORDED JUNE 10, 1960, UNDER FILING NO. 321035, DEED RECORDS; THENCE SOUTH 89°20' WEST ALONG THE SOUTHERLY LINE OF SAID REWANA FARMS, INCORPORATED PARCEL A DISTANCE OF 202 FEET TO A POINT ON THE EASTERLY LINE OF SAID LOT 45 IN SAID SUBDIVISION; THENCE NORTH 39°11' EAST ALONG SAID LINE A DISTANCE OF 166.80 FEET TO THE PLACE OF BEGINNING.

NOTE: THE ABOVE METES AND BOUNDS LEGAL DESCRIPTION PREVIOUSLY APPEARED IN THAT CERTAIN DOCUMENT RECORDED AUGUST 12, 1983 IN BOOK 1904, PAGE 511 AS INSTRUMENT NO. 872945 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

TOGETHER WITH THAT PORTION OF KAREN STREET AS VACATED IN AN ORDER OF ABANDONMENT RECORDED FEBRUARY 20, 1985 IN BOOK 2132, PAGE 156 AS INSTRUMENT NO. 979786 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

PARCEL 15:

LOT 45 OF REWANA SUBDIVISION NO. 2, ACCORDING TO THE MAP THEREOF, FILED IN THE OFFICE OF THE COUNTY RECORDER OF WASHOE COUNTY, STATE OF NEVADA, ON JUNE 26, 1958.

EXCEPTING THEREFROM THE FOLLOWING PORTION:

BEGINNING AT THE SOUTHEAST QUARTER OF SAID LOT 45; THENCE ALONG THE SOUTHERLY LINE OF SAID LOT 45, NORTH 64°26'30" WEST 105.68 FEET; THENCE DEPARTING SAID SOUTHERLY LINE, ALONG THE ARC OF A NON-TANGENT CURVE TO THE LEFT, FROM A TANGENT WHICH BEARS NORTH 10°02'54" WEST, HAVING A RADIUS OF 598.00 FEET, THROUGH A CENTRAL ANGLE OF 14°35'14" AND AN ARC LENGTH OF 152.25 FEET TO THE EASTERLY RIGHT-OF-WAY LINE OF PAMELA AVENUE; THENCE ALONG SAID EASTERLY RIGHT-OF-WAY, AND ALONG THE WESTERLY LINE OF SAID LOT 45, NORTH 25°33'31" EAST 158.80 FEET; THENCE DEPARTING SAID EASTERLY RIGHT-OF-WAY AND SAID WESTERLY LINE, ALONG THE ARC OF A NON-TANGENT CURVE

TO THE RIGHT, FROM A TANGENT WHICH BEARS SOUTH 36°06'35" EAST, HAVING A RADIUS OF 500.00 FEET, THROUGH A CENTRAL ANGLE OF 10°55'31" AND AN ARC LENGTH OF 95.34 FEET TO A POINT OF COMPOUND CURVATURE; THENCE ALONG THE ARC OF A CURVE TO THE RIGHT, HAVING A RADIUS OF 730.00 FEET, THROUGH A CENTRAL ANGLE OF 16°57'08" AND AN ARC LENGTH OF 215.99 FEET TO THE EASTERLY LINE OF SAID LOT 45; THENCE ALONG SAID EASTERLY LINE, SOUTH 39°55'31" WEST, 59.70 FEET TO THE POINT OF BEGINNING.

ALSO EXCEPTING THEREFROM THE FOLLOWING PORTION:

BEGINNING AT THE SOUTHWEST CORNER OF SAID LOT 45; THENCE ALONG THE WESTERLY LINE OF SAID LOT 45 ALSO BEING THE EASTERLY RIGHT-OF-WAY OF PAMELA AVENUE, NORTH 25°33'31" EAST 111.23 FEET; THENCE DEPARTING SAID WESTERLY LINE AND SAID EASTERLY RIGHT-OF-WAY, ALONG THE ARC OF A NON-TANGENT CURVE TO THE RIGHT, FROM A TANGENT WHICH BEARS SOUTH 24°38'08" EAST, HAVING A RADIUS OF 598.00 FEET, THROUGH A CENTRAL ANGLE OF 14°35'14" AND AN ARC LENGTH OF 152.25 FEET TO THE SOUTHERLY LINE OF SAID LOT 45; THENCE ALONG SAID SOUTHERLY LINE, NORTH 64°26'30" WEST, 103.36 FEET TO THE POINT OF BEGINNING.

NOTE: THE ABOVE METES AND BOUNDS LEGAL DESCRIPTION PREVIOUSLY APPEARED IN THAT CERTAIN DOCUMENT RECORDED JUNE 24, 2003 AS INSTRUMENT NO. 2877046 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA

PARCEL 16:

LOTS 34, 35, 36, 37, 38, 47, 48, 49, AND 60 THROUGH 70 INCLUSIVE AS SHOWN ON THE MAP OF REWANA SUBDIVISION NO. 3, FILED IN THE OFFICE OF THE COUNTY RECORDER OF WASHOE COUNTY, NEVADA, ON AUGUST 9, 1961.

TOGETHER WITH THAT PORTION OF GAYLE STREET AS VACATED IN AN ORDER OF ABANDONMENT RECORDED FEBRUARY 20, 1985 IN BOOK 2132, PAGE 156 AS INSTRUMENT NO. 979786 OF OFFICIAL RECORDS, WASHOE COUNTY, NEVADA.

**APN:** 012-284-01  
**ACREAGE:** 42.67+/- acres  
**PRIMARY ADDRESS:** 365 S. Rock Blvd., Reno, NV 89502

**APN:** 013-324-01  
**ACREAGE:** 1.00+/- acres  
**PRIMARY ADDRESS:** 1190 Telegraph St., Reno, NV 89502

**APN:** 013-324-05  
**ACREAGE:** 1.00+/- acres  
**PRIMARY ADDRESS:** 1120 Telegraph St., Reno, NV 89502

**APN:** 013-324-22  
**ACREAGE:** 0.86+/- acres  
**PRIMARY ADDRESS:** 1186 Telegraph St., Reno, NV 89502

**APN:** 013-324-24  
**ACREAGE:** 2.15+/- acres  
**PRIMARY ADDRESS:** 1140 Telegraph St., Reno, NV 89502

**APN:** 013-351-01  
**ACREAGE:** 1.14+/- acres  
**PRIMARY ADDRESS:** 1280 Terminal Way, Reno, NV 89502

**APN:** 013-351-04  
**ACREAGE:** 10.00+/- acres  
**PRIMARY ADDRESS:** 2750 Vassar Street, Reno, NV 89502

**APN:** 013-351-05  
**ACREAGE:** 8.55+/- acres  
**PRIMARY ADDRESS:** 2890 Vassar Street, Reno, NV 89502

**APN:** 013-351-06  
**ACREAGE:** 2.50+/- acres  
**PRIMARY ADDRESS:** 1200 Terminal Way, Reno, NV 89502

**APN:** 015-350-03  
**ACREAGE:** 101.52+/- acres  
**PRIMARY ADDRESS:** 0 Rock Blvd., Reno, NV 89502

**APN:** 020-292-01  
**ACREAGE:** 0.19+/- acres  
**PRIMARY ADDRESS:** 1590 Riley Ave., Reno, NV 89502

**APN:** 020-292-03  
**ACREAGE:** 0.23+/- acres  
**PRIMARY ADDRESS:** 1515 Evelyn Way, Reno, NV 89502

**APN:** 020-292-13  
**ACREAGE:** 0.22+/- acres  
**PRIMARY ADDRESS:** 1580 Riley Ave., Reno, NV 89502

**APN:** 020-292-24  
**ACREAGE:** 0.21+/- acres  
**PRIMARY ADDRESS:** 1545 Evelyn Way, Reno, NV 89502

**APN:** 020-292-25  
**ACREAGE:** 0.20+/- acres  
**PRIMARY ADDRESS:** 1585 Evelyn Way, Reno, NV 89502

**APN:** 021-456-13  
**ACREAGE:** 2.16+/- acres  
**PRIMARY ADDRESS:** 0 Turbo Circle, Reno, NV 89502

**APN:** 021-456-19  
**ACREAGE:** 8.24+/- acres  
**PRIMARY ADDRESS:** 0 Doolittle Court, Reno, NV 89502

**APN:** 021-456-20  
**ACREAGE:** 0.18+/- acres  
**PRIMARY ADDRESS:** 0 Terminal Way, Reno, NV 89502

**APN:** 021-458-07  
**ACREAGE:** 1.00+/- acres  
**PRIMARY ADDRESS:** 0 Turbo Circle, Reno, NV 89502

**APN:** 021-458-08  
**ACREAGE:** 1.02+/- acres  
**PRIMARY ADDRESS:** 0 Turbo Circle, Reno, NV 89502

**APN:** 021-458-18  
**ACREAGE:** 10.59+/- acres  
**PRIMARY ADDRESS:** 0 Turbo Circle, Reno, NV 89502

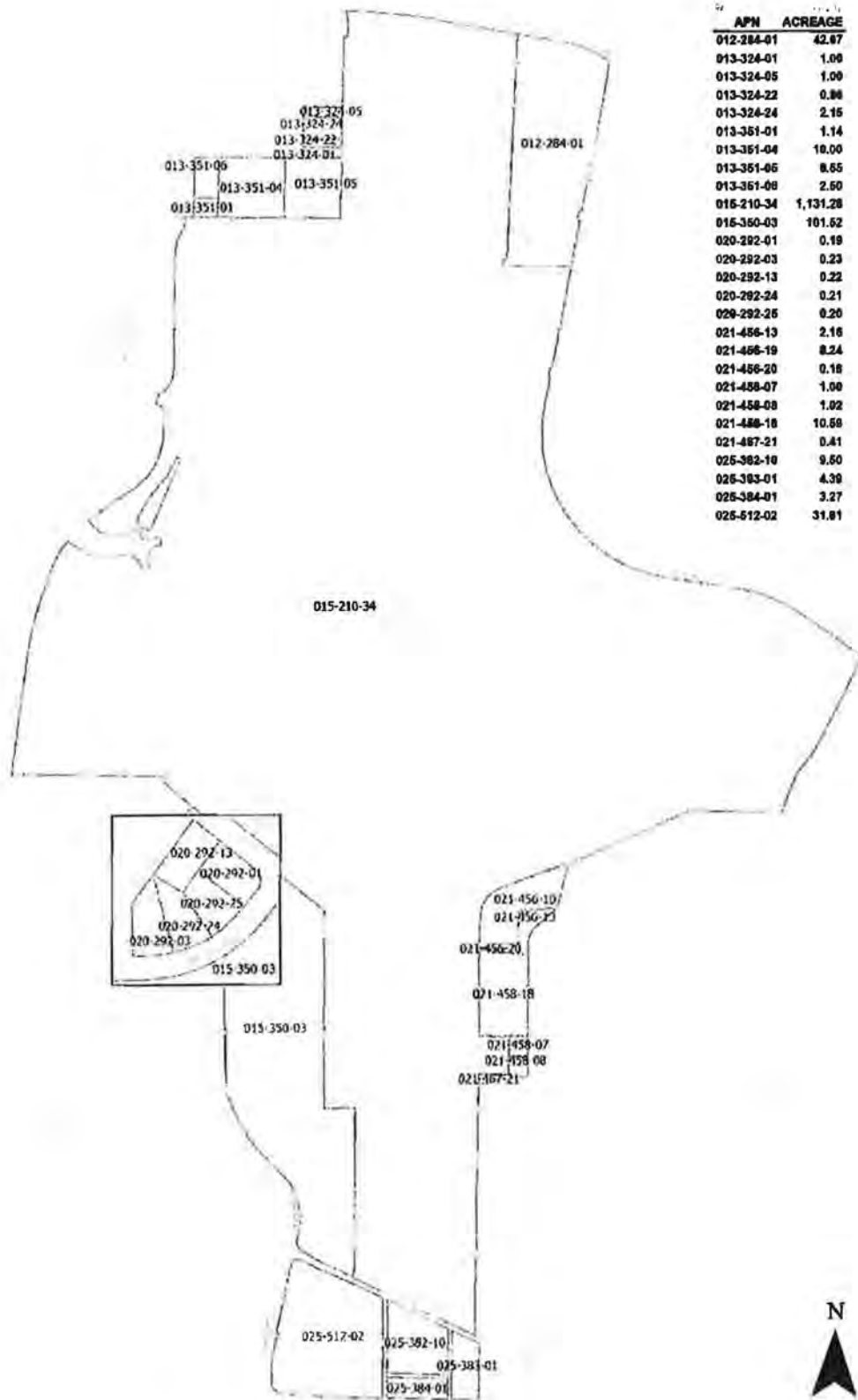
**APN:** 021-467-21  
**ACREAGE:** 0.41+/- acres  
**PRIMARY ADDRESS:** 0 Spitfire Court, Reno, NV 89502

**APN:** 025-382-10  
**ACREAGE:** 9.50+/- acres  
**PRIMARY ADDRESS:** 0 E. Peckham Lane, Reno, NV 89502

**APN:** 025-383-01  
**ACREAGE:** 4.39+/- acres  
**PRIMARY ADDRESS:** 0 S. McCarran Blvd., Reno, NV 89502

**APN:** 025-384-01  
**ACREAGE:** 3.27+/- acres  
**PRIMARY ADDRESS:** 4999 S. McCarran Blvd., Reno, NV 89502

**APN:** 025-512-02  
**ACREAGE:** 31.81+/- acres  
**PRIMARY ADDRESS:** 0 E. Peckham Lane., Reno, NV 89502



# WASHOE COUNTY RECORDER

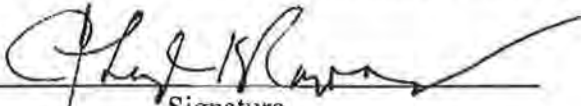
OFFICE OF THE RECORDER  
KALIE M. WORK, RECORDER

1001 E. NINTH STREET  
RENO, NV 89512  
Phone: (775) 328-3661  
Fax: (775) 325-8010

## LEGIBILITY NOTICE

The Washoe County Recorder's Office has determined that the attached document may not be suitable for recording by the method used by the Recorder to preserve the Recorder's records. The customer was advised that copies reproduced from the recorded document would not be legible. However, the customer demanded that the document be recorded without delay as the parties rights may be adversely affected because of a delay in recording. Therefore, pursuant to NRS 247.120 (3), the County Recorder accepted the document conditionally, based on the undersigned's representation (1) that a suitable copy will be submitted at a later date (2) it is impossible or impracticable to submit a more suitable copy.

By my signing below, I acknowledge that I have been advised that once the document has been microfilmed it may not reproduce a legible copy.

  
\_\_\_\_\_  
Signature

10/10/19  
\_\_\_\_\_  
Date

Cheryl K. Ramagano  
\_\_\_\_\_  
Printed Name