## PRELIMINARY SANITARY SEWER REPORT

FOR

PRADO RANCH - AREA 4 TENTATIVE MAP

Prepared for:

Lansing Companies 12671 High Bluff Drive, Suite 150 San Diego, CA 92130

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Prepared by: Wood Rodgers Inc. 1361 Corporate Boulevard Reno, Nevada 89502 (775) 823-4056 Mark Cendagorta, PE – Principal

MARKJ. PROFESSA ENDAGORT Exp: 12-31-1 0 160



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BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

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## 1 INTRODUCTION

This report shall serve as the preliminary sanitary sewer report for the Prado Ranch Area 4 subdivision, which will consist of 538 single family lots. The proposed project site (a portion of APN's 080-723-01, 02, 03 and 04) is approximately 146.3± acres in size and is located within portions of Sections 22 and 23 of T21N, R19E, MDM, City of Reno, Washoe County, Nevada. The project site is bounded by Lemmon Drive to the west, existing single family housing to the north, undeveloped land to the east and Nectar Street to the south. Area 4 is a portion of the larger Prado Ranch landholding, which also includes approximately 445 acres located to the south that was annexed into the City of Reno in 2015 and is currently in process for entitlements (Planned Unit Development-PUD) to develop a mix of single family, multi-family, industrial and commercial uses. As the timing of approval for the PUD entitlements through the City of Reno is unknown at this time, the PUD will be considered not a part for the purposes of this preliminary report. A Vicinity Map is included in the **Appendix** of this report for reference. As this report is preliminary in nature, a more detailed study will need to be conducted and a final technical sewer report will need to be submitted, with the final improvement plans for the project.

## 2 BACKGROUND

The 146.3 $\pm$  acre site is undeveloped and surrounded by existing large lot residential to the northwest and southeast. An undeveloped area of the larger Prado Ranch landholding exists to the north of the subject site, and to the west of Lemmon Drive and adjacent to Swan Lake. The westernmost portion of the site is located within the FEMA mapped 100-year floodplain and will require placement of additional fill within the Swan Lake Floodplain. The existing topography consists of relatively flat slopes (0.2% -1%) trending generally from northeast to southwest towards Swan Lake.

The Prado Ranch Area 4 concept envisions a mix of lot sizes in multiple villages along with open space corridors and park areas to create a cohesive project. The majority of lots within each village range between 5,000 sf and 7,000 sf while perimeter lots abutting existing residential are approximately 15,000 sf. The project will be constructed in multiple phases, of which the exact sequence is yet to be determined at this time. The development plan for Prado Ranch Area 4 includes the following village breakdown and acreages:



Land Use Designation	Gross Acres	Proposed Lot Count	Allowable Dwelling Units (4 du/ac max)	Density
Village 1				
Single Family Residential	24.0±	108 lots	96	4.5
Village 2				
Single Family Residential	40.5±	148 lots	162	3.65
Village 3				
Single Family Residential	41.2±	131 lots	164	3.98
Village 4				
Single Family Residential	40.6±	151 lots	162	3.72
Totals	146.3±	538 lots	584	3.68

#### Table 1: Land Use Categories

The project site resides outside of existing municipal sanitary sewer service areas, and is located approximately 1.5 miles to the north of the existing Washoe County owned and operated Lemmon Valley Wastewater Treatment Plant (LVWTP). There is no sanitary sewer infrastructure in place between the LVWTP and the project site, and per recent conversations with Washoe County representatives, the LVWTP does not have sufficient treatment capacity to serve the project. As such, development of the site requires construction of sanitary sewer infrastructure to convey flows to the City of Reno owned and operated Reno Stead Water Reclamation Facility (RSWRF), where additional treatment capacity is currently available. The conveyance of flows to the RSWRF will require an inter-local agreement between the City of Reno and Washoe County for sewage treatment and disposal. It is anticipated that this infrastructure will be designed and constructed to public standard, and oversized to accommodate future growth, which will aid in the development of adjacent areas located outside of the project boundaries. (Reference Figure 1-Existing Facilities Exhibit)

In response to growth projections in the North Valleys, the City of Reno and Washoe County have jointly commissioned a sanitary sewer study and master plan for the area which analyzes the existing infrastructure in place (both conveyance and treatment), identifies existing uses and proposed developments that have or will contribute flows to the system, and provides capital expenditure recommendations to provide additional capacity for future growth. The study prepared by Stantec and entitled *North Valleys Sanitary Sewer Capacity Analysis and Master Plan, November 2017*, recommends utilizing existing treatment capacity at the regional Truckee Meadows Water Reclamation Facility (TMWRF) in the near term until the growth projections for the North Valleys are proven and would thereby warrant the large capital costs necessary to

increase treatment capacity at the RSWRF. As such, the study recommends as capital expenditures in the near term, conveyance and pumping capacity projects that would redirect flows from the LVWTP and the RSWRF to TMWRF, thereby freeing up additional capacity at both plants in the North Valleys.

Currently, the RSWRF is treating approximately 1,500,000 gpd with capacity to treat approximately 2,000,000 gpd according to information provided by representatives from Washoe County and the City of Reno at a joint meeting to discuss the project. That equates to approximately 500,000 gpd of available capacity at the plant. Of note is the ability for the RSWRF to increase total treated capacity to 2,300,000 gpd, or an additional 300,000 gpd beyond the current capacity, with relatively lower cost improvements that do not require extensive Nevada Division of Environmental Protection (NDEP) permitting measures. This limited expansion is referred to as Phase 1, while a larger scale project to expand the plant capacity by an additional 2,500,000 gpd is referred to as Phase 2. The Phase 2 expansion carries a large capital cost in terms of plant expansion and effluent disposal, as well as a longer permitting process through NDEP. In total, the available treatment capacity, with the additional 300,000 gpd treatment considered at the RSWRW, is approximately 800,000 gpd.

City of Reno Staff, at a joint City Council and Planning Commission workshop in February of 2017, also identified two projects for capital expenditure that will, if implemented, redirect flows to TMWRF. The first, identified as the North Hills Lift Station Improvements project to be located near Buck Drive, will replace two aging lift stations and will redirect flows from the LVWTP to TMWRF, freeing up an additional 70,000 gpd of treatment capacity at that plant. That project is currently in design, and slated for near term construction. The second project, identified as the Sky Vista II Lift Station Improvements project to be located on Lear Boulevard just east of Military Road, will replace an existing lift station and redirect flows from the RSWRF to TMWRF, freeing up an additional 700,000 gpd of treatment capacity at that plant. The Sky Vista II Lift Station Improvements capacity at that plant. The Sky Vista II Lift Station Improvements capacity at that plant. The Sky Vista II Lift Station Improvements projected for the 2020 to 2021 timeframe. In total, both projects would free up an additional 770,000 gpd of additional treatment capacity at the two plants in the North Valleys.

## **3 PROPOSED CONDITIONS**

As the project site is devoid of existing sanitary sewer infrastructure, new collection and conveyance networks will be required for individual villages within the overall project. These systems are anticipated to be typical gravity networks designed to Washoe County standards, and are proposed to be public as they will be located within public roadways serving each village. The

project will require the construction of a lift station and associated force main to convey flows to the RSWRF. (Reference Figure 2-Proposed Conditions Exhibit)

The following table estimates the proposed sewerage contribution from the project in relation to Washoe County's minimum sewer system requirements.

Land Use Quantity		Unit Rate	Peak Flow*	Treated Flow**
			(gpd)	(gpd)
Village 1	108 Lots	270 gal/day*3.0 PF	87,480	34,992
Village 2	148 Lots	270 gal/day*3.0 PF	119,880	47,952
Village 3	131 Lots	270 gal/day*3.0 PF	106,110	42,444
Village 4	151 Lots	270 gal/day*3.0 PF	122,310	48,924
Open Space	13.2 Acres	664 gal/day/acre*3.0 PF	26,294	10,518
TOTAL			462,074	184,830

Table 2: Proposed Contributions

\*Peak flow design values per the Washoe County Design Standards

\*\*Treated flow design values equivalent to peak flow divided by a factor of 2.5

As can be seen above, the current available treatment capacity at the RSWRF (±500,000 gpd) exceeds the estimated project contribution (184,830 gpd) at total buildout. Should the two capital improvement projects detailed above along with the possible Phase 1 RSWRF plant expansion be implemented, the available treatment capacity would far exceed the estimated project contribution. Note the difference between peak flow and treated flow rates in the table. Peak flow rates are used for conveyance system design, while treated flow rates are commonly estimated by dividing the peak flow rates by a factor of 2.5. The anticipated treated flows are thereby slightly higher than the estimated average daily flows (3.0 peaking factor not applied) for a measure of conservatism.

It is anticipated that the lift station and force main infrastructure will be designed and constructed as public facilities, and would include oversizing flexibility to accommodate future growth. The lift station is currently proposed to be constructed on property that is part of the larger Prado Ranch landholding to the south and west of the project site and adjacent to Swan Lake. The force main would be constructed from the lift station along Lemmon Drive and the within the future alignment for Lear Boulevard to the RSWRF. (Reference Figure 2-Proposed Conditions Exhibit)

Based upon recent discussions with City of Reno and Washoe County representatives, the lift station and force main may also be designed in accordance with the Lemmon Drive II Lift Station Improvements project identified in the Stantec study for years 2022 to 2023, which includes construction of a lift station at the outfall to the LVWTP and associated force main within Lear

Boulevard to the RSWRF. The Lemmon Drive II Lift Station project is intended to divert flows to the RSWRF with the long range goal of decommissioning the LVWTP. The design and construction delivery method for the lift station and force main will depend upon a number of factors including timing and implementation of public capital expenditures, but the opportunity exists for a public/private partnership to meet certain goals of the sewer master plan for the North Valleys on an accelerated schedule while also allowing for full development of the proposed project. Should the lift station and force main be constructed by the master developer, it is anticipated that any upsizing to accommodate future growth outside of the project limits would be subject to a development agreement with Washoe County and the City of Reno and eligible for cost reimbursement.

## 4 **CONCLUSION**

Prior to development of any portion of the proposed project, the developer will be required to provide a full technical sanitary sewer study that not only details the conveyance system design but verifies treatment capacity exists for the project. The technical studies will be provided in accordance with the final mapping application for the first subdivision, and will include an analysis for the project in total. As the treatment capacity at the RSWRF is limited and recognizing that other projects in the tributary area to the plant will utilize portions of the existing capacity as they come online, an analysis of the plant capacity at the time of each final map application will be necessary.

#### 5 <u>References</u>

Washoe County Community Services Department Gravity Sewer Collection Design Standards, March 2017.

North Valleys Sanitary Sewer Capacity Analysis and Master Plan, Stantec, November 2017.

# **APPENDIX**

VICINITY MAP FIGURE 1-EXISTING FACILITIES EXHIBIT FIGURE 2-PROPOSED CONDITIONS EXHIBIT FIGURE 3-PROPOSED FACILITIES EXHIBIT





Nobs/1669\_Villages at Swan Lake\Prado\_Ranch\_Area 4\GIS\Tasks\Existing\_Facilities\_20171219\_V1.mxd 12/19/2017 1:07:13 PM eford



PROPOSED CONDITIONS EXHIBIT PRADO RANCH AREA 4 RENO, NV DECEMBER, 2017





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# PRADO RANCH AREA 4

# TRAFFIC STUDY

# JANUARY, 2018



Prepared by: Solaegui Engineers, Ltd. 715 H Street Sparks, Nevada 89431 (775) 358-1004

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# PRADO RANCH AREA 4 TRAFFIC STUDY

# EXECUTIVE SUMMARY

The proposed Prado Ranch Area 4 development will be located in Washoe County, Nevada. The project site is located north of Nectar Street, south of Tupelo Street, east of Lemmon Drive, and west of Chesapeake Drive. The project site is currently undeveloped land. The purpose of this study is to address the project's impact upon the adjacent street network. The Lemmon Drive intersections with Sky Vista Parkway-Buck Drive, Military Drive, Arkansas Drive, Nectar Street, Chickadee Drive, and Prado Ranch Boulevard have been identified for AM and PM peak hour capacity analysis for the existing, existing plus project, and 2028 scenarios.

The proposed Prado Ranch Area 4 development will consist of the construction of a residential subdivision containing 538 single family detached homes. The project is anticipated to generate 4,939 average daily trips with 386 trips occurring during the AM peak hour and 478 trips occurring during the PM peak hour.

Traffic generated by Prado Ranch Area 4 will have some impact on the adjacent street network. The following recommendations are made to mitigate project buildout traffic impacts.

It is recommended that any required signing, striping, or traffic control improvements comply with Washoe County requirements.

It is recommended that the Lemmon Drive/Nectar Street intersection be improved to include an exclusive right turn lane at the south approach containing 245 feet of storage/deceleration length with a 100 foot taper.

It is recommended that the Lemmon Drive/Prado Ranch Boulevard intersection be designed to include stop sign control and separate left and right turn lanes at the east approach and an exclusive right turn lane at the south approach containing 245 feet of storage/deceleration length with a 100 foot taper.

It is recommended that the Nectar Street access road shown on the project site plan be eliminated and a new access connection be provided on Nectar Street from an extension of the most easterly internal north/south street. It is recommended that the segment of this new connection road between Nectar Street and the first internal east/west street be designed to collector street standards.

# INTRODUCTION

## STUDY AREA

The proposed Prado Ranch Area 4 development will be located in Washoe County, Nevada. The project site is located north of Nectar Street, south of Tupelo Street, east of Lemmon Drive, and west of Chesapeake Drive. Figure 1 shows the location of the project site. The purpose of this study is to address the project's impact upon the adjacent street network. The Lemmon Drive intersections with Sky Vista Parkway-Buck Drive, Military Drive, Arkansas Drive, Nectar Street, Chickadee Drive, and Prado Ranch Boulevard have been identified for AM and PM peak hour capacity analysis for the existing, existing plus project, and 2028 scenarios.

## EXISTING AND PROPOSED LAND USES

The project site is currently undeveloped land. Adjacent properties generally include single family homes and undeveloped land to the north, single family homes to the east and south, and undeveloped land to the west. The proposed Prado Ranch Area 4 development will consist of the construction of a residential subdivision containing 538 single family detached homes.

#### EXISTING AND PROPOSED ROADWAYS AND INTERSECTIONS

Lemmon Drive is a six-lane roadway from US-395 to Sky Vista Parkway, a four-lane roadway from Sky Vista Parkway to Fleetwood Drive, and a two-lane roadway north of Fleetwood Drive. The speed limit is posted for 45 miles per hour except for 35 mile per hour zones south of Sky Vista Parkway and from Hydraulic Street to south of Palace Drive. Roadway improvements generally include curb, gutter and sidewalk in developed areas and paved or graded shoulders in undeveloped areas. Raised center medians exist near the Sky Vista Parkway and Military Road intersections, a depressed median exists north of Military Road to Fleetwood Drive, and centerline striping exists on the two-lane segment.

Sky Vista Parkway is a four-lane roadway with two through lanes in each direction from Lemmon Drive to Vista Knoll Parkway. The speed limit is posted for 35 miles per hour. Roadway improvements include curb, gutter, sidewalk and a bike lane on both sides of the street and a raised center median or center two-way left turn lane. The roadway narrows to one lane in each direction west of Vista Knoll Parkway.

Buck Drive is a three-lane roadway with two eastbound lanes and one westbound lane from Lemmon Drive to the shopping center's east driveway. The speed limit is not posted. Roadway improvements include curb, gutter, sidewalk and a bike lane on both sides of the street and a center two-way left turn lane.

Arkansas Drive is a two-lane roadway with one through lane in each direction east of Lemmon Drive. The speed limit is posted for 25 miles per hour. Roadway improvements generally include paved travel lanes and graded shoulders.







PRADO RANCH AREA 4 VICINITY MAP FIGURE 1 Military Road is a four-lane roadway with two through lanes in each direction just west of Lemmon Drive and a two-lane roadway with one through lane in each direction further north to Echo Avenue. The speed limit is posted for 45 miles per hour. Roadway improvements generally include curb, gutter, sidewalk, and a bike lane on both sides of the four-lane roadway and bike lanes and graded shoulders on the two-lane section. Some curb, gutter, and sidewalk improvements exist on the two-lane section in developed areas.

Nectar Street is a two-lane roadway with one through lane in each direction east of Lemmon Drive. The speed limit is posted for 25 miles per hour. Roadway improvements generally include paved travel lanes and graded shoulders.

Chickadee Drive is a two-lane roadway with one through lane in each direction east of Lemmon Drive. The speed limit is posted for 25 miles per hour. Roadway improvements generally include paved travel lanes and graded shoulders. Chickadee Drive between Lemmon Drive and Chesapeake Drive will be replaced with Prado Ranch Boulevard with development of the project. Prado Ranch Boulevard will be constructed as a major arterial road from Lemmon Drive to the project's northeast boundary.

The Lemmon Drive/Sky Vista Parkway-Buck Drive intersection is a signalized four-leg intersection with protected phasing for all left turn movements. The north and south approaches each contain dual left turn lanes, two through lanes, and one shared through-right turn lane. The west approach contains one left turn lane, one through lane, and dual right turn lanes. The east approach contains one left turn lane, one through lane, and one right turn lane. Crosswalks exist at all approaches.

The Lemmon Drive/Military Road intersection is a signalized four-leg intersection with protected left turn phasing at the north and south approaches. The north approach contains one left turn lane, one through lane, and one shared through-right turn lane. The south approach contains dual left turn lanes, one through lane and one shared through-right turn lane. The west approach contains one shared left turn-through lane and one free right turn lane with a southbound acceleration lane. The east approach serves a church and contains one shared left turn-through-right turn lane.

The Lemmon Drive/Arkansas Drive intersection is an unsignalized three-leg intersection with stop sign control at the east approach. The north approach contains one shared left turn-through lane. The south approach contains one shared through-right turn lane. The east approach contains one shared left turn-right turn lane.

The Lemmon Drive/Nectar Street intersection is an unsignalized three-leg intersection with stop sign control at the east approach. The north approach contains one shared left turn-through lane. The south approach contains one shared through-right turn lane. The east approach contains one shared left turn-right turn lane.

The Lemmon Drive/Chickadee Drive intersection is an unsignalized three-leg intersection with stop sign control at the east approach. The north approach contains one shared left turn-through lane. The south approach contains one shared through-right turn lane. The east approach contains one shared left turn-right turn lane. This intersection will be eliminated with development of the project.

The Lemmon Drive/Prado Ranch Boulevard intersection is anticipated to be constructed as an unsignalized three-leg intersection with stop sign control at the east approach with development of the project. The intersection will be analyzed with single lanes at all approaches.

# TRIP GENERATION

In order to assess the magnitude of traffic impacts of the proposed development on the key intersections, trip generation rates and peak hours had to be determined. Trip generation rates were obtained from the Ninth Edition of *ITE Trip Generation* (2012) for Land Use 210: Single Family Detached Housing. Trip generation was calculated for the peak hours occurring between 7:00 AM and 9:00 AM and 4:00 PM and 6:00 PM which correspond to the peak hours of adjacent street traffic. Table 1 shows a summary of the average daily traffic volumes and peak hour volumes generated by the project. The trip generation worksheet is included in the Appendix.

TABLE 1 TRIP GENERATION										
		AM PEAK HOUR PM PEAK HOUR								
LAND USE	ADT	IN	OUT	TOTAL	IN	OUT	TOTAL			
Single Family (538 Dwelling Units)	4,939	97	289	386	301	177	478			

# TRIP DISTRIBUTION AND ASSIGNMENT

The distribution of project trips to the key intersections was based on existing peak hour traffic patterns and the locations of attractions and productions in the area. Figure 2 shows the anticipated trip distribution. The peak hour trips were assigned to the key intersections based on this distribution. Figure 3 shows the AM and PM peak hour trip assignment.

# EXISTING AND PROJECTED TRAFFIC VOLUMES

Figure 4 shows the existing traffic volumes at the key intersections during the AM and PM peak hours. The existing traffic volumes were obtained from traffic counts taken in December of 2017 and from RTC's North Valleys Multimodal Transportation Study. Figure 5 shows the existing plus project traffic volumes at the key intersections during the AM and PM peak hours. The existing plus project volumes were obtained by adding the trip assignment volumes shown on Figure 3 to the existing traffic volumes shown on Figure 4. Figure 6 shows the 2028 traffic volumes at the key intersections during the AM and PM peak hours. The volumes at the key intersections during the AM and PM peak hours at the key intersections during the AM and PM peak hours. The 2028 traffic volumes were estimated based on a review of existing traffic volumes presented in this study and 2035 traffic volumes obtained from the North Valleys Multimodal Transportation Study. Prado Ranch was listed as a planned 20-year forecast project in the North Valleys Multimodal Transportation Study. The 2028 volumes are a combination of Prado Ranch buildout volumes and factored 2035 volumes.











# INTERSECTION CAPACITY ANALYSIS

The key intersections were analyzed for capacity based on procedures presented in the *Highway Capacity Manual (6th Edition)*, prepared by the Transportation Research Board, for unsignalized and signalized intersections using the latest version of the Highway Capacity software.

The result of capacity analysis is a level of service (LOS) rating for each signalized intersection or minor movement at a two-way stop controlled intersection. Level of service is a qualitative measure of traffic operating conditions where a letter grade "A" through "F", corresponding to progressively worsening traffic operation, is assigned to the signalized intersection or unsignalized intersection minor movement.

The *Highway Capacity Manual* defines level of service for stop controlled intersections in terms of computed or measured control delay for each minor movement. Level of service is not defined for the intersection as a whole. The level of service criteria for unsignalized intersections is shown in Table 2.

TABLE 2 LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS									
LEVEL OF SERVICE DELAY RANGE (SEC/VEH)									
А	≤10								
В	>10 and $\leq 15$								
С	>15 and ≤25								
D	>25 and ≤35								
E	>35 and ≤50								
F	>50								

Level of service for signalized intersections is stated in terms of the average control delay per vehicle for a peak 15 minute analysis period. The level of service criteria for signalized intersections is shown in Table 3.

TABLE 3   LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS									
LEVEL OF SERVICE	CONTROL DELAY PER VEHICLE (SEC)								
А	≤10								
В	>10 and ≤20								
С	>20 and ≤35								
D	>35 and ≤55								
E	>55 and ≤80								
F	>80								

TABLE 4 INTERSECTION LEVEL OF SERVICE AND DELAY RESULTS											
	EXIS	TING	EXIS + PRC	TING DJECT	√G .CT 20						
INTERSECTION	AM	PM	AM	PM	AM	PM					
Lemmon/Sky Vista/Buck (Signal)	C30.5	D35.8	C32.2	D37.3	D51.0	F115.2					
Lemmon/Military (Signal)	B16.3	B16.4	B16.9	B16.9	C33.4	C31.2					
Lemmon/Arkansas (Stop at East) WB Left-Right SB Left	B10.7 A7.4	B11.9 A8.0	C15.1 A7.6	C18.8 A9.0	C16.9 A7.7	C24.5 A9.5					
Lemmon/Nectar (Stop at East) WB Left-Right SB Left	B10.5 A7.4	B11.5 A7.9	C16.5 A7.6	C20.1 A8.9	C19.7 A7.7	D31.4 A9.4					
Lemmon/Chickadee (Stop at East) WB Left-Right SB Left	B10.1 A7.3	B11.0 A7.8	N/A N/A	N/A N/A	N/A N/A	N/A N/A					
Lemmon/Prado Ranch (Stop at East) WB Left-Right SB Left	N/A N/A	N/A N/A	B11.9 A7.4	B13.4 A8.2	B13.4 A7.6	C17.8 A8.6					

Table 4 shows a summary of the level of service and delay results at the key intersections for the existing, existing plus project, and 2028 scenarios. The level of service worksheets are included in the Appendix.

## Lemmon Drive/Sky Vista Parkway-Buck Drive Intersection

The Lemmon Drive/Sky Vista Parkway/Buck Drive intersection was analyzed as a signalized fourleg intersection with the existing approach lanes for all scenarios. The intersection currently operates at LOS C with a delay of 30.5 seconds per vehicle during the AM peak hour and LOS D with a delay of 35.8 seconds per vehicle during the PM peak hour. For the existing plus project traffic volumes the intersection operates at LOS C with a delay of 32.2 seconds per vehicle during the AM peak hour and LOS D with a delay of 37.3 seconds per vehicle during the PM peak hour. For the 2028 traffic volumes the intersection is anticipated to operate at LOS D with a delay of 51.0 seconds per vehicle during the AM peak hour and LOS F with a delay of 115.2 seconds per vehicle during the PM peak hour. The intersection meets RTC's policy LOS E or better standard for the existing and existing plus project scenarios but not for the 2028 scenario. The North Valleys Multimodal Transportation Study recommends long-term intersection capacity improvements at this intersection that will include a combination of measures such as adding additional through lanes or turning lanes, lengthening existing turn pockets, upgrading intersection control, signal timing optimization and coordination, and upgrade to a roundabout.

## Lemmon Drive/Military Road Intersection

The Lemmon Drive/Military Road intersection was analyzed as a signalized four-leg intersection with the existing approach lanes for all study scenarios. The intersection currently operates at LOS B with a delay of 16.3 seconds per vehicle during the AM peak hour and 16.4 seconds per vehicle during the PM peak hour. For the existing plus project traffic volumes the intersection is anticipated to continue to operate at LOS B with delays slightly increasing to 16.9 seconds per vehicle during both the AM and PM peak hours. For the 2028 traffic volumes the intersection is anticipated to operate at LOS C with a delay of 33.4 seconds per vehicle during the AM peak hour and 31.2 seconds per vehicle during the PM peak hour. The intersection meets RTC's policy LOS E or better standard for all scenarios.

## Lemmon Drive/Arkansas Drive Intersection

The Lemmon Drive/Arkansas Drive intersection was analyzed as an unsignalized three-leg intersection with stop control at the east approach for all scenarios. The intersection minor movements currently operate at LOS B or better during the AM and PM peak hours. For the existing plus project volumes the intersection minor movements operate at LOS C or better during the AM and PM peak hours. For the 2028 traffic volumes the intersection minor movements operate at LOS C or better during the AM and PM peak hours. For the 2028 traffic volumes the intersection minor movements operate at LOS C or better during the AM and PM peak hours. The intersection was analyzed with the existing lanes for all scenarios. The intersection meets RTC's policy LOS D or better standard for all study scenarios.

#### Lemmon Drive/Nectar Street Intersection

The Lemmon Drive/Nectar Street intersection was analyzed as an unsignalized three-leg intersection with stop control at the east approach for all study scenarios. The intersection minor movements currently operate at LOS B or better during the AM and PM peak hours. For the existing plus project volumes the intersection minor movements operate at LOS C or better during the AM and PM peak hours. For the 2028 traffic volumes the intersection minor movements operate at LOS D or better during the AM and PM peak hours. The intersection was analyzed with the existing lanes for all scenarios. The intersection meets RTC's policy LOS D or better standard for all study scenarios.

The need for an exclusive right turn deceleration lane on Lemmon Drive at Nectar Street was reviewed based on RTC's access management standards. The access management standards indicate that right turn deceleration lanes are required on moderate access control arterials (Lemmon Drive) if the right turn movement serves more than 60 vehicles per hour. An exclusive right turn deceleration lane is required based on the existing plus project traffic volumes. A minimum deceleration length of 145 feet is required for the right turn lane based on the 45 mile per hour speed limit on Lemmon Drive and a 100 foot minimum taper is required based on RTC's Regional Traffic Guidelines. It is recommended that 100 feet of storage length also be provided for the right turn lane.

The need for an exclusive left turn lane on Lemmon Drive at Nectar Street was reviewed based on AASHTO guidelines for left turn lanes on two-lane roadways. Table 9-23 of the AASHTO publication lists traffic volumes and operating speeds which necessitate the need for left turn lanes on two-lane roads. The traffic volumes to be considered include advancing traffic volumes, opposing traffic volumes, and the percent of advancing traffic which is turning left. The existing plus project and 2028 traffic volumes do not meet the requirements for an exclusive left turn lane based on the 45 mile per hour speed limit on Lemmon Drive.

#### Lemmon Drive/Chickadee Drive (Prado Ranch Boulevard) Intersection

The Lemmon Drive/Chickadee Drive intersection was analyzed as an unsignalized three-leg intersection with stop control at the east approach for only the existing scenario. The intersection minor movements currently operate at LOS B or better during the AM and PM peak hours. The Lemmon Drive/Prado Ranch Boulevard intersection was analyzed as an unsignalized three-leg intersection with stop control at the east approach for the existing plus project and 2028 scenarios. The intersection minor movements operate at LOS B or better during the AM and PM peak hours for the existing plus project volumes and LOS C or better during the AM and PM peak hours for 2028 volumes. The intersection meets RTC's policy LOS D or better standard for all scenarios. The intersection was analyzed with single lanes at each approach for all scenarios. However, it is recommended that the east approach contain separate left and right turn lanes.

The need for an exclusive left turn lane on Lemmon Drive at Prado Ranch Boulevard was reviewed based on AASHTO guidelines for left turn lanes on two-lane roadways. Table 9-23 of the AASHTO publication lists traffic volumes and operating speeds which necessitate the need for left turn lanes on two-lane roads. The traffic volumes to be considered include advancing traffic volumes, opposing traffic volumes, and the percent of advancing traffic which is turning left. The existing plus project and 2028 traffic volumes do not meet the requirements for an exclusive left turn lane based on the 45 mile per hour speed limit on Lemmon Drive.

The need for an exclusive right turn deceleration lane on Lemmon Drive at Prado Ranch Boulevard was reviewed based on RTC's access management standards. The access management standards indicate that right turn deceleration lanes are required on moderate access control arterials (Lemmon Drive) if the right turn movement serves more than 60 vehicles per hour. A northbound right turn deceleration lane is required based on the existing plus project traffic volumes. A minimum deceleration length of 145 feet is required for the right turn lane based on the 45 mile per hour speed limit on Lemmon Drive and a minimum 100 foot taper is required based on RTC's Regional Traffic Guidelines. It is recommended that 100 feet of storage length also be provided for the right turn lane.

# SITE PLAN REVIEW

A copy of the site plan for the Prado Ranch Area 4 development is included with this submittal. The site plan indicates that the project is divided into four villages and includes a newly proposed arterial roadway, Prado Ranch Boulevard, which will extend off Lemmon Drive, run northeasterly through the site, and terminate at the project's northeast boundary. Prado Ranch Boulevard will replace the existing segment of Chickadee Drive between Lemmon Drive and Chesapeake Drive. The site plan also indicates that a new segment of Chickadee Drive will be constructed between Chesapeake Drive and Prado Ranch Boulevard near the project's northeast boundary. Access to the project's four villages will be provided from two access roads intersecting Prado Ranch Boulevard and one access road each intersecting Nectar Street and Chickadee Drive.

Average daily traffic volumes were subsequently reviewed on the access roads intersecting Prado Ranch Boulevard, Nectar Street, and Chickadee Drive in order to determine if they meet Washoe County street loading standards. Washoe County street standards indicate that local streets can carry 1,000 ADT or less and collector streets can carry up to 7,300 ADT. Collector streets with residential driveways can carry a maximum volume of 2,000 ADT.

The site plan indicates that the two access roads from Prado Ranch Boulevard serving the northwest portion of the site and the access road from Chickadee Drive are designated local streets. These three access roads are each anticipated to serve less than 1,000 vehicles per day which meet local street standards. The access road from Prado Ranch Boulevard serving the southern portion of the site is designated a collector street. This access road will serve traffic volumes that are well under the 7,300 vehicle per day threshold for collector streets.

The site plan indicates that the access road from Nectar Street is designated a local street. This access road is estimated to serve approximately 2,700 vehicles per day due to its close proximity to Nectar Street and Lemmon Drive. This access road from Nectar Street and potentially other internal roads will exceed the 1,000 vehicle per day threshold for local streets. The access road from Nectar Street will also exceed the 2,000 vehicle per day threshold for a collector with residential driveway access allowed. An alternate Nectar Street access location was subsequently reviewed. Relocating the Nectar Street access further east is anticipated to increase travel times along this route. The increased travel times will reduce the number of lots served by Nectar Street while increasing the number of lots served by Prado Ranch Boulevard. It is recommended that the Nectar Street westerly access shown on the site plan be eliminated and a new Nectar Street access be provided from an extension of the most easterly internal street. The segment between Nectar Street and the first east-west street is anticipated to serve approximately 1,400 vehicles per day which will require a collector street.

# RECOMMENDATIONS

Traffic generated by Prado Ranch Area 4 will have some impact on the adjacent street network. The following recommendations are made to mitigate project buildout traffic impacts.

It is recommended that any required signing, striping, or traffic control improvements comply with Washoe County requirements.

It is recommended that the Lemmon Drive/Nectar Street intersection be improved to include an exclusive right turn lane at the south approach containing 245 feet of storage/deceleration length with a 100 foot taper.

It is recommended that the Lemmon Drive/Prado Ranch Boulevard intersection be designed to include stop sign control and separate left and right turn lanes at the east approach and an exclusive right turn lane at the south approach containing 245 feet of storage/deceleration length with a 100 foot taper.

It is recommended that the Nectar Street access road shown on the project site plan be eliminated and a new access connection be provided on Nectar Street from an extension of the most easterly internal north/south street. It is recommended that the segment of this new connection road between Nectar Street and the first internal east/west street be designed to collector street standards.

# APPENDIX

Project: New Project Alternative: Alternative 1				Ope Analysi	n Date: s Date:	1/2/201 1/2/201	18 18		
	Avera	age Daily	, Trips	AM I Adjace	Peak Ho nt Street	ur of Traffic	PM Peak Hour of Adjacent Street Traffic		
ITE Land Use	Enter	Exit	_Total_	Enter	Exit	Total	Enter	_Exit	Total
210 SFHOUSE 1	2470	2469	4939	97	289	386	301	177	478
538 Dwelling Units									
Unadjusted Volume	0	0	0	0	0	0	0	0	0
Internal Capture Trips	0	0	0	0	0	0	0	0	0
Pass-By Trips	0	0	0	0	0	0	0	0	0
Volume Added to Adjacent Streets		0	0	0	0	0	0	0	0
Total AM Peak Hour Internal Capture = 0 Perc	cent								

Total PM Peak Hour Internal Capture = 0 Percent

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Urban Street				Analys	is Year	Existin	g	A	nalysis	Period	1> 7:0	0				
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Case Number				2.0		3.0	2.0		3.0	2.0	-	4.0	2.0		4.0	
Phase Duration	, S			15.0 2		27.0	15.0 27.0		18.0 30		30.0	18.0		30.0		
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Green Ratio (g	1/C)			0.11	0.24	0.24	0.11	0.24	0.24	0.14	0.28	0.28	0.14	0.28	0.28	
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Volume-to-Cap	acity Ra	atio (X)		0.258	0.678	0.442	0.450	0.162	0.238	0.370	0.281	0.290	0.557	0.585	0.587	
Back of Queue	(Q), ft	/In (95 th percentile	)	46.6	263.5	123.2	83.5	55.8	71.3	82.1	108.3	103.9	129	237.6	230.5	
Back of Queue	(Q), V	eh/In (95 th percent	tile)	1.8	10.4	4.9	3.3	2.2	2.8	3.2	4.3	4.2	5,1	9.4	9.3	
Queue Storage	Ratio (	RQ) (95 th percen	itile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Uniform Delay ( d 1 ), s/veh				36.6	30.8	28.8	37.4	26.7	27.3	34.8	25.5	25.5	35.8	28.0	28.0	
Incremental Delay (d 2), s/veh			0.3	3.3	0.2	0.6	0.1	0.1	0.2	0.1	0.1	0.8	0.6	1.2		
Initial Queue Delay (d 3), s/veh			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Control Delay ( d ), s/veh			36.9	34.1	29.0	38.0	26.8	27.4	35.0	25.5	25.6	36.7	28.6	29.3		
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Volume-to-Capacity Ratio (X)			0.737	154 7	0.003	172	0.777	0.408	0.000	0.490	0.499	0.563	04.38	0.458		
Back of Queue (Q), ft/in (50 th percentile)			117.0	151.7	89.0	1/3	205.5	80.5	187.8	147.2	140	04.2	91.2	80.8		
Back of Queue (Q), Ven/In (50 th percentile)			4.0	0.0	3.0	0.0	0.1	3.4	7.4	0.0	0.00	2.5	3.0	3.4		
Uniform Dolay ( d c) alugh			41.0	0.00	0.00	20.00	0.00	0.00	21 5	0.00	0.00	0.00	0.00	0.00		
Uniform Delay (d 1), s/veh			41.9	24	07	0.4	30.7	0.4	31.5	20.2	20.2	42.2	0.1	0.2		
Initial Quara De	ay (U2			0.0	3.1	0.7	9.0	0.3	0.4	1.7	0.1	0.2	1.2	0.1	0.3	
Control Dolou (	d) chu	3 /, 3/VCII		52.2	20.2	0.0	47.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.0	
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Bicycle LOS Score / LOS	1.7	В	1.7	В	1.4	А	0.9	A		

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Case Number				2.0		3.0	2.0		3.0	2.0	-	4.0	2.0		4.0	
Phase Duration, s			15.0 2		27.0	15.0		27.0	18.0	30.0		18.0		30.0		
Change Period, (Y+R c), s			5.0 5.		5.0	5.0 5.0		5.0	5.0		5.0	5.0		5.0		
Max Allow Headway (MAH), s			3.1	3.1 3.2		3.1	3.1 3.2		3.1	3.1 3.1		3.1		3.1		
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Green Ratio (g	/C)	and the second the second second		0.11	0.24	0.24	0.11	0.24	4 0.24	0.14	0.28	0.28	0.14	0.28	0.28	
Capacity (c), v	eh/h			198	457	686	198	457	7 387	500	1039	492	500	1039	502	
Volume-to-Capa	acity Ra	tio (X)		0.308	0.678	0.442	0.450	0.16	0.267	0.370	0.328	0.336	0.620	0.750	0.751	
Back of Queue	(Q), ft/	In (95 th percentile)		55.9	263.5	123.2	83.5	55.8	8 80.3	82.1	128.7	123.4	147.6	312.8	317.4	
Back of Queue	(Q), ve	h/In ( 95 th percentil	e)	2.2	10.4	4.9	3.3	2.2	3.2	3.2	5.1	4.9	5.8	12.3	12.5	
Queue Storage	Ratio (	RQ) (95 th percent	ile)	0.00	0.00	0.00	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Uniform Delay (d1), s/veh			36.8	30.8	28.8	37.4	26.	7 27.5	34.8	25.8	25.9	36.2	29.7	29.7		
Incremental Delay (d 2), s/veh		0.3	3.3	0.2	0.6	0.1	0.1	0.2	0.1	0.1	1.8	2.7	5.6			
Initial Queue Delay ( d 3 ), s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Control Delay ( d ), s/veh			37.1	34.1	29.0	38.0	26.8	3 27.6	35.0	25.9	26.0	37.9	32.4	35.3		
Level of Service (LOS)			D	С	С	D	С	С	С	С	С	D	С	D		
Approach Delay, s/veh / LOS			32.1		С	C 30.9		C 28.4		C		34.3		С		
Intersection Delay, s/veh / LOS					and the second	32	2.2		C							
				a property and		Ser and		AL.	the second s							
Multimodal Results					EB			WE	3		NB			SB		
Pedestrian LOS	Score /	LOS		3.4		С	3.4	_	С	2.9		С	3.0		С	
Bicycle LOS Score / LOS			1.6		В	0.9		А	0.9		A	1.3		A		

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		HCS	7 Sig	naliz	ed In	tersed	ction	Resu	lts Su	mmai	у				
	Kitty St	and the second second				San Sta						T. Small		A CARE	
General Information							Interse	ction In	_	1444	1.1				
Agency Solaegui Engineers									Duration, h 0.25				-		
Analyst MSH			Analysis Date Jan 2, 20					Area Ty	ре	Othe	er	4-5		A.	
Jurisdiction City of Reno			Time	Period	PM F	Peak Ho	ur	PHF		0.92			17 N -	*	
Urban Street			Analy	sis Yea	r Exist	ing + Pr	oject	Analysis	Period	1> 7	:00	14			
Intersection Lemmon & Sky Vista			File N	lame	LeSv	18pw.x	us						55 f f	*	
Project Description			in and	Contraction of the			and and a state of the		ATTIATIES				14144	1.4	
Demand Information			A CHES	FB		Star 1	10/1	2018.24	Contraction of the	NB	The state		SD		
Approach Move	ement			1	Т	R		Т		11	T	IP	1		T P
Demand $(v)$ , v	eh/h		-	187	237	400	240	20	4 220	635	1 100	1 00	214	1 500	1 1 2 0
	a start		States .	A STA	LOI	A SEL	E CHI	120	ACC CLASS	000	1100	1 30	214	1 500	120
Signal Informa	tion				TG		121		at whit Roll end	5_	5				
Cycle, s	100.0	Reference Phase	2		R	M			5			>	V	-	
Offset, s	0	Reference Point	End	Green	110	13.0	21.0	12	0 10	21	2	1	2	3	<u>¥</u> 4
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4 0		4 0	_	× /		7	A
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	1.0	1.0	0.0	1.0		5	6	7	8
	C. Salar							16 C			No. Start	ALL PLUE			
Timer Results			EBL		EBT	WE	3L	WBT	NB	L	NBT		L	SBT	
Assigned Phase			7		4	3		8		5		1	1		
Case Number			2.0 :		3.0	2.0	)	3.0		2.0		2.0	) 4.0		
Phase Duration, s			18.0	D C	26.0	19.	0 27.0		29.0	29.0		16.	0	26.0	
Change Period, (Y+R c), s			5.0		5.0	0.0	)	5.0 0		) 5.0		5.0		5.0	
Max Allow Headway ( MAH ), s			3.1		3.2	3.1		3.2		3.1		3.1		3.1	
Queue Clearance Time ( $g_s$ ), s			13.2	2	14.6	15.	9	18.1	19.7	7	19.6	8.4		13.2	
Green Extensio	n Time	(ge), s		0.0		0.5	0.2	2	1.2			4.1	0.1		0.0
Phase Call Prot	ability			1.00	)	1.00	1.0	0	) 1.00			1.00	1.00	D C	1.00
Max Out Probab	oility	down and the second second second		1.00 1.		1.00	1.0	0	0.79		0.04		1.00	C	1.00
Movement Gro		ulto		E.B.					and the second second						
Approach Move	up nes ment	uits			EB			VVB	I B		NB			SB	
Assigned Mover	ment			7	1		2	0	10	E	2	10			R
Adjusted Flow F	Rate ( v	) veh/h		203	258	326	261	220	106	600	705	270	1	0	10
Adjusted Satura	tion Flo	w Rate (s) veh/h/lr		1781	1870	1403	1781	1870	1595	1720	1970	1905	233	450	210
Queue Service	Time ( c	ts). S		11.2	12.6	10.4	13.9	16.1	11.0	17.30	17.5	17.6	64	1070	11.0
Cycle Queue Cl	earance	Time (qc), s		11.2	12.6	10.4	13.9	16.1	11.0	17.7	17.5	17.0	6.4	10.0	11.2
Green Ratio ( g/	(C)			0.13	0.21	0.21	0.19	0.22	0.22	0.29	0.34	0.34	0.4	0.21	0.21
Capacity (c), veh/h			232	393	589	338	411	349	1003	1272	614	291	796	257	
Volume-to-Capacity Ratio (X)			0.878	0.656	0.553	0.771	0 777	0.561	0.688	0.617	0.619	0.611	0.572	357	
Back of Queue (Q), ft/ln (50 th percentile)			169.2	151.7	89.6	173	205.5	108.3	187.8	104 0	188.5	71.2	124 4	110.2	
Back of Queue (Q), veh/ln (50 th percentile)			6.7	6.0	3.5	6.8	8 1	4.3	74	77	7.5	2.8	124.4	47	
Queue Storage Ratio (RQ) (50 th percentile)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.7	
Uniform Delay (d 1), s/veh			42.7	36.2	35.3	38.4	36.7	34.7	31.5	27.6	27.6	42.5	35.5	35.6	
Incremental Delay (d 2), s/veh				28.5	3.1	07	9.5	83	13	17	0.7	14	21	0.7	1.9
Initial Queue Delay (d 3), s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0
Control Delay ( d	d), s/ve	h		71.2	39.3	36.0	47.9	45.0	36.0	33.2	28.2	29.0	44.6	36.1	37.4
Level of Service	(LOS)	The second s		E	D	D	D	D	D	G	C	<u> </u>	- <b></b>	D	D
the second s						have not been as a second seco	Real Property lies and the second sec				-			_	

46.2 D 43.7 D 30.2 С 38.6 D Intersection Delay, s/veh / LOS 37.3 D **Multimodal Results** EB WB NB SB Pedestrian LOS Score / LOS 3.4 С 3.4 С 2.9 С 3,1 С Bicycle LOS Score / LOS 1.8 в 1.8 в 1.5 В 1.0 А

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Approach Delay, s/veh / LOS

HCS7™ Streets Version 7.3

Generated: 1/5/2018 8:28:39 AM
HCS7 Signal	ized Intersectio	on Results Sum	mary
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						S. Ant		55							A DELSE	AL STATE
General Inform	nation								Inter	rsect	tion Inf	ormati	on		444	
Agency		Solaegui Engineers	5						Durat	ition,	h	0.25			4++ 4	
Analyst		MSH		Analys	is Date	Jan 2	2018		Area	Тур	е	Othe	٢	ا مر ا		
Jurisdiction		City of Reno		Time F	Period	AM P	eak Hou	ır	PHF			0.92			u i	÷
Urban Street				Analys	is Year	2028			Analy	ysis	Period	1> 7:	00	1		Ţ
Intersection	(	Lemmon & Sky Vist	ta	File Na	ame	LeSv2	28aw.xu	s							<u>1111</u>	
Project Descrip	tion													3	4149	- 1
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Demand Inform	nation				EB			V	VB			NB	_		SB	
Approach Move	ement			L	T	R	L	_	T	R		T	R	L	Т	R
Demand (v), v	eh/h	ALC: NO. OF THE OWNER WATER	united and the	103	502	477	130	1	22 2	256	246	679	91	610	1528	109
Cine al lafarma	an were	and the second	AD-STA	1 1 1 2 4	12. 7 12		Sizes and	8573	T.A. CALLER	estal (s				Not address	States.	
Signal Informa		Deference Dhese	2		2	217	21	L		2		ן <u>ב</u>		ta	-	W2
Cycle, s	90.0	Reference Phase			5		1 î	2	F	R.	3	1	1	2	3	
Unset, s	Vee	Reference Point	Ena	Green	9.0	5.0	25.0	8.	0 2	2.0	21.0	100			11/2	2
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	14.	0 0	0.0	4.0	- 60				
Force Mode	Fixed	Simult. Gap N/S	Un	Red	11.0	10.0	11.0	11.		0.0	11.0	HARRING	6	6	T CHINA THE PERSON	BALLAN
Time	and the second		22 12 5 AL	EDI	1252	FDT	1A/E	a dep		-	NIDI	1	ARTHIN	ODI	100	ODT
Annier Results	-			EBL		FRI	VVB	-	VVB	1	NBL		NBI	SBL		SBI
Assigned Phase	e					4	3		8		5		2	1		6
Case Number				2.0		3.0	2.0		3.0		2.0		4.0	2.0		4.0
Phase Duration	, S	and the state of the state		15.0		28.0	13.0	,	26.0	J	14.0		30.0	19.0		35.0
Change Period,		c), S		5.0		5.0	5.0		5.0		5.0		5.0	0.0		5.0
Oucus Clearer	Jway ( A	//AH), S		3.1		3.2	3.1	-+	3.2	_	3.1		3.1	3.1		3.1
Groop Extensio	n Timo	$(g_s), s$		7.4		25.0	9.1	-	13.4	+	0.0		0.0	10.0		0.0
Bhase Call Brok	hability	(ye), s		1.00		1.00	1.00		1.00		1.00		1.00	1.00		1.00
Max Out Brobal	bility			1.00		1.00	1.00		1.00	2	1.00		1.00	1.00		1.00
Max Out Plobal	Dilly		-Istitude	1.00	CHERRICH	1.00	1.00	CERCITA	0.33	5 CARGE	1.00	San Free	1.00	1.00	ALL PLAN	1.00
Movement Gro	up Res	ults	The second second	The set of the set	EB	AT ST AFFER	Aller and the second	W	B	C SALINA	CT LA LAND	NB	20477 A 115	125.25	SB	ment en
Approach Move	ment			L	Т	R	L	Т	F	R	L	Т	R	L	Т	R
Assigned Move	ment			7	4	14	3	8	18	8	5	2	12	1	6	16
Adjusted Flow F	Rate (v	), veh/h		112	546	410	141	13	3 22	24	267	559	267	663	1191	577
Adjusted Satura	ation Flo	w Rate (s), veh/h/l	n	1781	1870	1403	1781	187	0 15	85	1730	1870	1765	1730	1870	1810
Queue Service	Time ( g	() s), S		5.4	23.0	11.5	7.1	5.3	3   11	1.4	6.8	11.4	11.6	16.8	28.0	28.1
Cycle Queue C	learance	e Time (g c), s		5.4	23.0	11.5	7.1	5.3	3   11	1.4	6.8	11.4	11.6	16.8	28.0	28.1
Green Ratio (g.	/C)			0.11	0.26	0.26	0.09	0.2	3 0.2	23	0.10	0.28	0.28	0.21	0.33	0.33
Capacity ( c ), v	eh/h			198	478	717	158	43	6 37	70	346	1039	490	730	1247	603
Volume-to-Capa	acity Ra	tio (X)		0.566	1.142	0.572	0.892	0.30	04 0.6	305	0.773	0.538	0.544	0.908	0.955	0.957
Back of Queue	(Q), ft/	In (95 th percentile)		110.3	794	173.1	213.9	105	.6 198	8.9	149.1	218.8	209.6	331.2	529.8	568.1
Back of Queue	( Q ), ve	eh/In ( 95 th percenti	le)	4.3	31.3	6.8	8.4	4.2	2 7.	.8	5.9	8.6	8.4	13.0	20.9	22.4
Queue Storage	Ratio (	RQ) (95 th percent	ile)	0.00	0.00	0.00	0.00	0.0	0 0.0	00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (	(d1), s/	/veh		37.9	33.5	29.2	40.6	28.	5 30	0.8	39.5	27.6	27.7	34.6	29.3	29.4
Incremental Del	lay ( d 2	), s/veh		2.4	86.2	0.7	41.0	0.1	1 2.	.0	9.4	0.3	0.7	14.9	15.9	26.0
Initial Queue De	elay ( d :	( d 2 ), s/veh ( d 3 ), s/veh			0.0	0.0	0.0	0.0	0 0.	.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (	d), s/veh			40.3	119.7	29.9	81.5	28.	6 32	2.8	48.9	27.9	28.4	49.5	45.2	55.4
Level of Service	e (LOS)			D	F	С	F	С	C	0	D	С	С	D	D	E
Approach Delay	, s/veh	LOS	)S			E	45.5	5	D		33.2		С	48.8	1	D
Intersection Del	ay, s/ve	h/LOS			51	.0	and a second						D	and a second		
					10 E 90	To partice			These for all				1201			
Multimodal Res	sults							W	3			NB		a margaret	SB	
Pedestrian LOS	Score	LOS		3.4		С	3.4		С		2.9		С	3.1		С
Bicycle LOS Sc	ore / LC	S		2.2		В	1.3		А		1.1		A	1.8		В

		HCS	7 Sig	nalize	ed Int	ersec	tion F	Resul	ts Su	mmar	У				
				1. (6)	1.1				Kot - I	日本語	- Suither	(1) (1)		The gas	
General Inform	nation	v							ntersec	tion Inf	ormatio	on		14441	
Agency		Solaegui Engineers	;					[	Duration	, h	0.25			4444	
Analyst		MSH		Analys	sis Date	e Jan 2	, 2018	ŀ	Area Typ	be	Other		4-1		· · · · · · · · · · · · · · · · · · ·
Jurisdiction		City of Reno		Time I	Period	PM P	eak Hou	ur F	PHF		0.92		+		÷
Urban Street				Analys	sis Yea	r 2028		F	Analysis	Period	1> 7:	00	1		7
Intersection		Lemmon & Sky Vist	ta	File N	ame	LeSv2	28pw.xu	S						11 tt	*
Project Descript	tion	A STRATEGART AND A STRATEGART AND A	No. of Lot of Lo											14144	14
Demand Inform	nation			PERSONAL PROPERTY AND	EB		C Sasm			and and	NB	10		SB	AR GER
Approach Move	mont		10000	1	L T	В	1	UVD T		-	T T	l n	1	<u>56</u>	
Demand (y) y	oh/h			301	111	520	401	520	167	054	1560	162	169	050	214
Demand (V), V	CIIIII	a property in the second		301	414	520	401	1.058	407	904	100	102	400	000	214
Signal Informa	tion	n in the territory of the second		Concession and		Contract Interest	IJ		Store Switcher	2	6			CONTRACTOR OF THE	- INCOMPANY
Cycle, s	102.0	Reference Phase	2	1	32		2 10.4	R	2	2	Course C	>	t	~	
Offset, s	0	Reference Point	End	1	2		C I	r		-5	22	1	2	3	Y 4
Uncoordinated	Yes	Simult, Gap E/W	On	Green	13.0	11.0	22.0	10.0	4.0	22.0	, <u> </u>		Cont 1		4
Force Mode	Fixed	Simult, Gap N/S	On	Red	1.0	0.0	1.0	1.0	0.0	1.0		] 6	6	7	8
and the second strength		4 M 40 1			i state		C. C. S.							and the second	
Timer Results			10.0000	EBI	_	EBT	WB	L	WBT	NB	L	NBT	SB	L	SBT
Assigned Phase	Э			7		4	3		8	5		2	1		6
Case Number				2.0		3.0	2.0		3.0	2.0		4.0	2.0		4.0
Phase Duration	, S			15.0	)	27.0	19.0		31.0	29.0	)	38.0	18.0	2	27.0
Change Period,	( Y+R	c ), S		5.0		5.0	0.0		5.0	0.0		5.0	5.0		5.0
Max Allow Head	dway ( I	<i>MAH</i> ), s		3.1		3.2	3.1		3.2	3.1		3.1	3.1		3.1
Queue Clearand	ce Time	e (gs), s		12.0	)	24.0	21.0		28.0	31.0	)	35.0	15.0	5	23.4
Green Extensio	n Time	(ge),s		0.0		0.0	0.0		0.0	0.0		0.0	0.0		0.0
Phase Call Prob	oability			1.00	)	1.00	1.00	)	1.00	1.00	)	1.00	1.00	2	1.00
Max Out Probat	oility			1.00	)	1.00	1.00	)	1.00	1.00	)	1.00	1.00	)	1.00
		a de la companya de la	F Maria			国家の開始						Seng Sa		A States	A States
Wovement Gro	up Res	Suits		§	EB	-		WB			NB			SB	
Approach Move	ment			L		R	L		R	L		R	L	T	R
Assigned Move	ment	N		/	4	14	3	8	18	5	2	12	1	6	16
Adjusted Flow F	Rate (V	), ven/h		327	450	457	436	586	464	1037	1255	602	509	786	357
Adjusted Satura	Time (	bw Rate ( s ), ven/h/l	n	1/81	1870	1403	1781	1870	1585	1730	1870	1788	1730	1870	1691
Queue Service		$g_s$ , s		10.0	22.0	15.5	19.0	26.0	26.0	29.0	33.0	33.0	13.0	21.3	21.4
Green Ratio ( a		e fille (gc), s		0.10	0.22	15.5	0.10	20.0	20.0	29.0	0.22	0.22	0.12	21.3	21.4
Canacity (c) y	eh/h			175	403	605	332	477	404	984	1210	578	441	807	365
Volume-to-Cana	acity Ra	tio (X)		1 873	1 115	0.754	1 314	1 220	1 1/0	1.054	1 037	1.040	1 154	0.075	0.070
Back of Queue	(O) ft	(In ( 50 th percentile)		620.4	477 3	142.5	583.5	697.8	510	452.5	517.9	536.0	282	314.2	326.1
Back of Queue	(Q), vi	eh/ln ( 50 th percenti	le)	24.4	18.8	5.6	23.0	27.5	20.1	17.8	20.4	21.5	11 1	12.4	12.8
Queue Storage	Ratio (	RQ) (50 th percent	ile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (	d 1), s	/veh		46.0	40.0	37.5	41.5	38.0	38.0	36.5	34.5	34.5	44.5	39.7	39.8
Incremental Del	ncremental Delay ( d 2), s/veh					4.8	161.0	120.4	92.0	44.1	35.9	48.3	92.2	25.4	41.3
Initial Queue De	nitial Queue Delay ( d ₃), s/veh					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (	control Delay ( d ), s/veh					42.3	202.5	158.4	130.0	80.6	70.4	82.8	136.7	65.1	81.1
Level of Service		F	F	D	F	F	F	F	F	F	F	E	F		
Approach Delay	Approach Delay, s/veh / LOS				4	F	162.	5	F	76.6	3	Е	90.6	5	F
Intersection Del	tersection Delay, s/veh / LOS				10000000000	11	5.2	(Toronto	CALL OF COMPANY	Children	of a long stream	the second second	F	ALC: NO.	
Multimodel Re-	aulte.		and the second	10.52	E D	C. State	ST.S.	IND	012	Several Sec	ALC:		net and	05	
Pedestrian LOS	Score	/108		24	EB	0	2.4	VVB	<u> </u>		NR	~		SB	~
Ricycle LOS So	ore /I C			3.4		0	3.4		0	2.9			3.1		
DICYCIE LUG 300	ULC LC			2.5	. dt	U	2.9		U	2.1		В	1.4		A

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Instance and the second	Contraction of	100	or olg	JIIaliz	eu III	ILE	ISect		test	ins	Su	mma	r <b>y</b>	ACTIVES	14 K 3/61	Eta Miller	CIDATE NORTH
General Inform	nation				a ar f	1.5%		ALC: NOT	ATTOCION OF	Inte		tion In	formati		ALC: NOT THE	l et l ete	CANE AND
Agency		Solaequi Engineers					-			Due	ersed		lo of	ion	- 1	410	
Analyst		MSH		Analy	aia Da	to	lon 2	2010		Dur	attor	1, N	10.25				
Jurisdiction		City of Repo		Time	SIS Da Doriod	le	Jan Z, A	2010		Are	a iy	pe	Othe	er			
Lirban Street				Analy			AIVI Pe	ак ног	11	PHI	-		10.90				+
Intersection		Lemmon & Military		File N	sis rea	ar		9		Ana	alysis	Period	1> /	:00			
Project Descrir	ation	Lemmon & Military	100	Flie N	ame	_	Lemi18	ax.xus	3							111	4
r Tojeci Descrip					1 4 5 6		1	200	1.1 27	200	The state	SALE ZI	15- 1+ 46 11	Conservation of	A STATE OF THE	14149	* * /*
Demand Inform	mation		9 1092 CA.	I	EB	3	No. O State	EUROSAUNO	W	B	1.2.2 1.00	ALCONTAN .	NB	CALL SOLUTION		SB	
Approach Move	ement			L	T	T	R	L	ТТ	1	R	L	ТТ	R	L	T	R
Demand (v), v	/eh/h			22	1			2	0		4	330	170	0 0	2	536	26
	P. C. S. P.		APR N			3 16	学れるい		State of	ALC: NO		the part	10.24時初	1945.974	(1) 得到加速		
Signal Informa	ation			_	1 5	2		24	1 2	2						2	
Cycle, s	65.0	Reference Phase	2	-	5		517	Π.	י≓יק	- Barris			1	7	P		4
Offiset, s	0	Reference Point	End	Green	6.0		2.0	27.0	15.	0	0.0	0.0	12474	- 5 -	1	3	
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0		0.0	4.0	4.0		0.0	0.0		5 4	1		*
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	NO-SCOTO	0.0	1.0	1.0	Completion of the	0.0	0.0		6	6	7	
Time of Descults					5334	75	195		and the	200	E.E.					ALC: NO	A DE A
Accienced Dhase	_			FBI	-	E	BT	WBI	-	WE	3T	NB	L	NBT	SB	L	SBT
Assigned Phase	e				_		1			8		5		2	1		6
Case Number						8.	.0			8.0	0	2.0		4.0	2.0	)	4.0
Change Duration						20	0.0		_	20.	.0	13.0	)	34.0	11.0	2	32.0
Max Allow Hoor	nange Period, ( Y+R c), s ax Allow Headway ( MAH ), s					5.	.0		-	5.0	)	0.0		5.0	5.0	)	5.0
	ax Allow Headway ( <i>MAH</i> ), s					3	.1		-	3.1	1	3.1		3.0	3.1		3.0
Green Extensio	Jeue Clearance Time $(g_s)$ , s					2.	9			2.2	2	8.3	-	3.9	2.1		9.7
Phase Call Prot	hability	(ye), s				0		-		0.0	)	0.4		1.6	0.0		1.5
Max Out Probal	bility			1		1.0				1.0	0	1.00	)	1.00	1.0	)	1.00
Max Out Toba	Shirty Share and the	CARE DIST STREET, STORE	WINANS	anter a	1.000	0.0	0	2911023		0.0	U Deta-Jun	0.28		0.00	0.0	3	0.00
Movement Gro	up Res	uits	THE COMP	and the second second	EB	Acto	I	PESIO	WB	No.	1.56	CONTRACTOR	NB	the state	A STREET, STRE	SB	eter meson
Approach Move	ment			L	Т	T	R	LI	Т	1	R	L	T	R		Т	R
Assigned Move	ment			7	4	1		3	8	1	18	5	2	12	1	6	16
Adjusted Flow F	Rate ( v	), veh/h			26	-			7	1		367	189	0	2	315	310
Adjusted Satura	ation Flo	w Rate ( s ), veh/h/lr	1		1378	1			1543			1689	1870	0	1781	1870	1838
Queue Service	Time ( g	1 s ), S			0.7	1			0.0	1		6.3	1.9	0.0	0.1	7.7	7.7
Cycle Queue Cl	earance	e Time (g c), s			0.9	1			0.2	T		6.3	1.9	0.0	0.1	7.7	7.7
Green Ratio (g,	/C)				0.23	T			0.23	1		0.20	0.45		0.09	0.42	0.42
Capacity (c), v	eh/h				426				430			675	1669		164	777	764
Volume-to-Capa	acity Rat	tio(X)			0.060				0.016	1		0.543	0.113	0.000	0.014	0.405	0.406
Back of Queue	( Q ), ft/l	In (50 th percentile)			7.3				1.8	T		61.7	17.5	0	0.8	72.2	71.1
Back of Queue	(Q), ve	h/ln ( 50 th percentile	e)		0,3				0.1			2,4	0.7	0.0	0.0	2.8	2.8
Queue Storage	Ratio (	RQ) (50 th percentil	le)		0.00				0.00	1		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (	d 1), s/	veh			19.6				19.3			23.3	10.5		26.8	13.4	13.4
Incremental Del	ay (d 2	), s/veh			0.0				0.0		_	0.5	0.0	0.0	0.0	0.1	0.1
Initial Queue De	nitial Queue Delay ( d ₃ ), s/veh				0.0				0.0			0.0	0.0	0.0	0.0	0.0	0.0
control Delay ( d ), s/veh					19.6				19.3			23.8	10.5		26.8	13.5	13.5
evel of Service (LOS)					В				В			С	В		С	В	В
Approach Delay, s/veh / LOS				19.6		В	1	19.3		В		19.3		В	13.5		В
intersection Dela	tersection Delay, s/veh / LOS				STATISTICS.	1000	16.3	A. Carton	ALC: NO.	diam'r.	-	WILLIAM AND			В		
Multimodal Pag	ultimodal Results					100	CALL STOR		a a	1100	No.					ALC: N	
Pedestrian LOS	Itimodal Results					0		0.0	VVB	~			NB	_		SB	
Bicycle LOS Sco	ore /1 O	S		2.9		U A		2.8		C	_	2.1		В	3.0		C
-,				0.0		A	1	0.5		A		0.9		A	1.0		A

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HCS7™ Streets Version 7.3

			Caller .	THE REAL			Sec.	SAL	Coul		- Cl	minai	y Na in	C. Martin	(19) (19)	1.1	ALL STREET
General Inform	nation		OK IN THE OWNER	Section 199			111			nters	sec	tion Inf	formati	on	and many series	14741	5 I.
Agency		Solaegui Engineers								Durat	ion	h	10.25	•		411	
Analyst		MSH	-	Analys	sis Dat	e Jan	2 2	018		Area	Tvn		IOthe	r	- : :		
Jurisdiction		City of Reno		Time F	Period	PM	Pea	k Hou	r I		TYP					"î.	***
Urban Street				Analys	sis Yea	r Fyis	tina	ik nou		Analy	eie	Period	11> 7	00			-
Intersection		Lemmon & Military		File Na	ame		i18r		/	analy	313	r chou	1	00			
Project Descrip	tion			The H		LCIVI	1101	57.743							- 4		P.C
	泉田 日 日			PAR UNA		10-77 - 10 2 - 10-77 - 10-77 2 - 10-77 - 10-77	in the second	12 10	I LO Y	27.5	ILLE ILLE	C. C. La	C THE		The States	NO.	States of
Demand Inform	nation	and the set of the set		T	EB	and one lines	1	Contra and	WB		Tris Par	- A A	NB	and all the second	-	SB	and and a second
Approach Move	ement			L	T	R	1	L	T	1	R	L	T	R	L	Т	R
Demand (v), v	eh/h			29	0		-	2	0		4	493	646	0	2	283	36
and the strengthere		AND SHALL THE	Al see				1	and the second	AND THE REAL	ALL L	100	Mar Sall and		N State	No. 10 M	NY THE S	
Signal Informa	tion		-	1	5			21	1	5						ale l	The seal
Cycle, s	65.0	Reference Phase	2	1	21	5	121	12	, H	C.				>	P		4
Offset, s	0	Reference Point	End	Green	6.0	6.0		23.0	15.0	) 0	0.0	0.0	0.0	in the			
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	0.0		4.0	14.0	0	0.0	0.0		SK	1	-	2
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	and and the second second	1.0	1.0	0	0.0	0.0		δ	6	7	8
The D H								De Ve	The state		De la como	and the second			2 - Real	田田市	
Timer Results				EBL		EBT	-	WBL	·	WBT	_	NB		NBT	SB	L	SBT
Assigned Phase	<del>)</del>					4	-		_	8	_	5		2	1		6
Case Number						8.0	-	-	-	8.0	_	2.0		4.0	2.0		4.0
Phase Duration	, S					20.0	-	_	_	20.0		17.0	)	34.0	11.0		28.0
Change Period,	x Allow Headway ( <i>MAH</i> ), s				_	5.0	-	-		5.0		0.0		5.0	5.0		5.0
Max Allow Head	ax Allow Headway ( <i>MAH</i> ), s Jeue Clearance Time ( g s ), s					3.1	-			3.1	_	3.1		3.0	3.1		3.0
Queue Clearan	eue Clearance Time ( $g_s$ ), s een Extension Time ( $g_e$ ), s					3.2	-			2.2		11.3	3	10.5	2.1		6.5
Bhase Cell Drok	een Extension Time ( $g_e$ ), s				_	0.0	-			0.0	_	0.8		2,3	0.0		2.3
Max Out Drahal	ability	distant of the second second				1.00	+			1.00		1.00	)	1.00	1.00		1.00
Max Out Frobal	Jiiity	Salasia en chigadore (en	1000	desentation of	States and	0.00	A.	CALIF. H. H.	Contraction of	0.00	Citra Citra	0.20	THE REAL PROPERTY	0.00	0.08	3	0.01
Movement Gro	up Res	ults		1	EB	258,850	a sure	- 0	WB		100		NB		N. Contraction	SB	A STATE OF
Approach Move	ment				Т	R	t	T	т	R	-	1	T	R	1		
Assigned Move	ment			7	4		+	3	8	18	2	5	2	12	1	6	16
Adjusted Flow F	Rate (v	), veh/h			32		1	-	7			548	718	0	2	179	175
Adjusted Satura	tion Flo	w Rate (s), veh/h/lr	1		1360		t		1543	-		1689	1870	0	1781	1870	1792
Queue Service	Time ( g	1s), S			1.0		1		0.0		-	9.3	8.5	0.0	0.1	4.5	4.5
Cycle Queue Cl	earance	Time (g c), s			1.2		Î		0.2			9.3	8.5	0.0	0.1	4.5	4.5
Green Ratio ( g	1C)				0.23	-	T		0.23		-	0.26	0.45		0.09	0.35	0.35
Capacity (c), v	eh/h			-	425		T		430			883	1669		164	662	634
Volume-to-Capa	city Rat	tio(X)			0.076		T		0.016		1	0.620	0.430	0.000	0.014	0.271	0.276
Back of Queue	(Q), ft/l	n (50 th percentile)			9.3	1	T		1.8			90	77.9	0	0.8	43.4	42.5
Back of Queue	(Q), ve	h/ln ( 50 th percentil	e)		0,4		T		0.1	-		3.5	3.1	0.0	0.0	1.7	1.7
Queue Storage	Ratio ( /	RQ) (50 th percenti	le)		0.00		T		0.00			0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (	d 1), s/	veh			19.7	1	1		19.3			21.2	12.3		26.8	15.0	15.0
Incremental Del	ay ( <i>d</i> 2 )	), s/veh			0.0		T		0.0		1	1.0	0.1	0.0	0.0	0.1	0.1
Initial Queue De	lay ( d s	a), s/veh			0.0		T		0.0			0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (	control Delay ( d ), s/veh				19.7		Γ		19.3			22.2	12.4		26.8	15.1	15.1
Level of Service	evel of Service (LOS)				В		Γ	T	В			С	В		С	В	В
Approach Delay	, s/veh /	LOS		19.7		В	Γ	19.3	1	В	1	16.6		В	15.2		В
Intersection Dela	ay, s/vel	h/LOS				1	6.4		- Carrier		1		- Indexed		В		
							191		-		acho						A Street
wuitimodal Res	Iltimodal Results				EB				WB				NB			SB	
Pedestrian LOS	Score /	105		2.9		C	-	2.8	-	С		2.1	_	В	3.0		С
Dicycle LUS Sco	ore / LO	5		0.0		А		0.5		А		1.5		В	0.8		A

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General Inform	nation	a contra l'anche a fai indi	C. WARK	241		Territoria de la			Inter	rsect	tion Inf	ormatio	on	Contraction of the	4.4.4.6	
Agency		Solaegui Engineers							Dura	ation	h	0.25			411	
Analyst		MSH		Analys	is Date	Jan 2	2018	-	Area	a Typ	e	Other				-
Jurisdiction		City of Reno		Time F	Period	AM Pe	ak Hou	r	PHE	:		0.90			ъ.Н	***
Urban Street				Analys	is Year	Existing	a + Pro	iect	Anal	lysis	Period	1> 7.	00			
Intersection		Lemmon & Military		File Na	me	LeMi18	aw xus	1001	- uricui	iyele	- oneu					
Project Descrip	tion		-	1.1.5		Lennie								1 7	1144	E.C
STATE AND			Selles .	A STAN	CALLAR .	State Ch	The state	12/10/10	The PT		ST IN	in the	Star 5		Contraction of the	
Demand Inform	nation				EB			W	3			NB			SB	
Approach Move	ement			L	T	R	L	T		R	L	T	R	L	T	R
Demand (v), v	eh/h			30	1		2	0		4	330	257	0	2	796	49
		Charles and the state		ADA ANY	- Class	1.11.4			and as		ALL ALL	Superior of	and a start	THE YOU		
Signal Informa	ation				5		24	8	5				8	+	1.12	
Cycle, s	65.0	Reference Phase	2	1	18	517	1	73	£				2	Y2	3	4
Offset, s	0	Reference Point	End	Green	6.0	2.0	27.0	15.	0	0.0	0.0		State 1	Real Property	The second	~
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0		0.0	0.0	_	5 4			Y
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	1.0	1.0	1000	0.0	0.0	140910020	6	6 Rolling Baller	7	8
Times Desults				EDI		TOT	MDI		MO	T	NIDI	1	NDT	0.01	Wins huter	ODT
Assisted Dhee	-			EBL	·   /	EBI	VVBL		VVB	51	NBL	-	NBI	SBL		SBI
Assigned Phase	e					4		-	8		5		2	1		6
Case Number						8.0	-		8.0	,	2.0		4.0	2.0		4.0
Change Duration	(V+D					5.0			20.0		13.0		54.0	11.0		32.0
Max Allow Hoo						5.0			5.0		0.0		5.0	5.0	9 <b>1</b>	5.0
Queue Clearan	ieue Clearance Time ( g s ), s					3.1			3.1		3.1		5.0	3.1		3.0
Green Extensio	ieue Clearance Time ( g s ), s een Extension Time ( g e ), s					0.0		-	2.2	-	0.0		2.5	2.1		23
Phase Call Pro	een Extension Time ( g ∉ ), s ase Call Probability					0.0		-	1.00	0	1.00		1.00	1.00		1.00
Max Out Proba	ase Call Probability x Out Probability			1		00			0.00	0	0.28		0.00	0.08		0.07
Max Out 1105a	Out Probability			ARTING	A STATES		新田子		0.00	03.22	0.20	ALL STAN	0.00	0.00	ALC S	0.07
Movement Gro	oup Res	sults			EB	-		WB			ALLESS P.P.	NB		Permit Par Val S	SB	
Approach Move	ement			L	т	R	L	Т		R	L	Т	R	L	Т	R
Assigned Move	ment			7	4		3	8	1	18	5	2	12	1	6	16
Adjusted Flow F	Rate ( v	), veh/h			34			7			367	286	0	2	475	464
Adjusted Satura	ation Flo	ow Rate ( s ), veh/h/li	n		1374			1543			1689	1870	0	1781	1870	1830
Queue Service	Time ( g	g s ), S			1.1			0.0			6.3	3.0	0.0	0.1	12.9	12.9
Cycle Queue C	learance	e Time (gc), s			1.3			0.2			6.3	3.0	0.0	0.1	12.9	12.9
Green Ratio (g	1/C)				0.23			0.23			0.20	0.45		0.09	0.42	0.42
Capacity (c), v	/eh/h				426			430			675	1669		164	777	760
Volume-to-Cap	acity Ra	atio (X)			0.081			0.016	3		0.543	0.171	0.000	0.014	0.611	0.611
Back of Queue	(Q), ft/	In (50 th percentile)			10			1.8	-		61.7	27.2	0	0.8	125.8	123.2
Back of Queue	(Q), ve	eh/In ( 50 th percenti	le)		0.4			0.1	_		2.4	1.1	0.0	0.0	5.0	4.9
Queue Storage	Ratio (	RQ) (50 th percent	tile)		0.00			0.00	-		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay	(d1), s.	/veh			19.7			19.3	_		23.3	10.8		26.8	14.9	14.9
Incremental De	lay (d 2	), s/veh			0.0			0.0	-		0.5	0.0	0.0	0.0	1.0	1.0
Initial Queue De	nitial Queue Delay ( <i>d</i> ₃ ), s/veh				0.0			0.0	-		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay ( d ), s/veh			-		19.7			19.3	-		23.8	10.8	_	26.8	15.9	15.9
Approach Date	Level of Service (LOS)			10 7	В	-	10.0	B	1	-	C	В		C	В	В
Approach Delay	Approach Delay, s/veh / LOS					8	19.3		В		18.1		В	15.9		В
miler section De	itersection Delay, s/veh / LOS				STATING	16.	9 1990 - 10	La La	(TABLE OF ALL	NO. STATE	S of Frank	15 BULSTIN	Ath City	D Galatination	ALCON L	ALCONT AL
Multimodal Re	sults	A REAL PROPERTY OF THE PARTY OF	a Subarial	Contraction of the	FB	- Andrews	A SHALL BE	WR	Carlo	1000	No of the	NB	and the second	CH SHOP	SB	
Pedestrian LOS	Score	/LOS		2.9	1	C	28	10	C	-	21		B	30		C
Bicycle LOS Sc	ore / LC	DS		0.0		A	0.5		A	-	10		A	1.3		A
						10/2 J			1355				2.2			10025

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HCS7 Signalized Inters	ection Results Summary	
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ation	Intersection Information	ل او ل

General Infor	mation			and the second se			200 9 Store	1	Interse	ction In	format	ion	100000000	ماہ ولی اور اور	
Agency		Solaegui Engineers	S		- Internet internet		-		Duratic	n h	0.25			41	
Analyst		MSH		Analy	sis Date	Jan 2.	2018	-	Area T	/ne	Othe				
Jurisdiction		City of Reno		Time	Period	PM Pe	ak Ho	ur	PHE	pe	0 00			i.	
Urban Street				Analy	sis Year	Existin	a + Pr	oiect	Analysi	s Perior	1 1> 7	.00			
Intersection		Lemmon & Military		File N	ame	LeMi1	8pw xu	IS	runaryo	or choc	11-1	.00			
Project Descrip	otion			1		Lennin	opnixa							111	* P *
Demand Infor	mation		ALC: NO.	1	FR		2755	10/0		3 6578	NIT OF		and the second second		JARN R.
Approach Mov	ement	and the second		1		I p	1			-	NE		-	SB	1
Demand (v)	/eh/h			53	0	R				L		R	L	T	R
		PRA COLERCEPT	THE PLAN	- 33	1 0	All Constants	2	0	4	493	3 91	0	2	442	50
Signal Informa	ation	AND ANALYSING THE TRANSPORTED BY THE	CLASS CONTRACT	The state of the s	TL	1	1.11	Constant of	R	100000000000000000000000000000000000000	AN PORT	Contraction of the		Excel Con	CREATES
Cycle, s	65.0	Reference Phase	2		24		1000						12		
Offset, s	0	Reference Point	End		17	NI YII	11	r	-T-		102	1	2	3	4
Uncoordinated	Yes	Simult. Gap E/W	On	Vellow	6.0	6.0	23.0	15.0	0.0	0.0		R.			A
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	1.0	1.0	0.0	0.0	-8	] 6	• 6	7	8
			TOIL SEAL	and the second			A State of State	1.1.5	COMPACT STREET	A CHARTER AND			The second second	a the set	State of
Timer Results	- Cart - Cart			EBL	- E	BT	WB	L	WBT	NB	L	NBT	SB	L	SBT
Assigned Phas	е				_	4			8	5		2	1		6
Case Number					8	3.0			8.0	2.0		4.0	2.0	)	4.0
Phase Duration	1, S				2	0.0			20.0	17.	0	34.0	11.	0	28.0
Change Period,	(Y+R)	c), S			4	5.0			5.0	0.0	)	5.0	5.0	)	5.0
Max Allow Head	(Allow Headway ( <i>MAH</i> ), s sue Clearance Time ( <i>g</i> s ), s				3	3.1			3.1	3.1		3.0	3.1		3.0
Queue Clearan	ce Time	(gs), s				4.3			2.2	11.3	3	15.5	2.1		9.4
Green Extensio	en Extension Time $(g_e)$ , s				0	0.1			0.1	0.8		3.4	0.0	>	3.5
Phase Call Pro	bability				1	.00			1.00	1.0	0	1.00	1.0	0	1.00
Max Out Proba	bility		190.5	ADISTIN TO	0	.00	A DEST	a Bootage	0.00	0.20	D	0.09	0.0	8	0.09
Movement Gro	up Res	ults	CALCULATION OF CALCUL	No. of Concession, Spin-	EB	and second	- 10 - 10	WB	" WEEK'L CT		NB	ST SOLO		SB	TPAC Star
Approach Move	ment			L	TI	R	L	Т	R	1	T	R	1		
Assigned Move	ment			7	4		3	8	18	5	2	12	1	6	16
Adjusted Flow F	Rate (v	), veh/h			59	-		7		548	1019	0	2	278	260
Adjusted Satura	ation Flo	w Rate ( s ), veh/h/lr	1		1360			1544		1689	1870	0	1781	1870	1800
Queue Service	Time ( g	7 s ), S			2.1			0.0		9.3	13.5	0.0	01	73	7.4
Cycle Queue Cl	earance	e Time (gc), s			2.3			0.2	1	9.3	13.5	0.0	0.1	7.3	74
Green Ratio (g,	/C)				0.23	1		0.23		0.26	0.45		0.09	0.35	0.35
Capacity ( c ), v	eh/h				425			430		883	1669		164	662	637
Volume-to-Capa	acity Rat	tio (X)			0.139			0.016		0.620	0.611	0.000	0.014	0.419	0.423
Back of Queue	( Q ), ft/l	In (50 th percentile)			17.4			1.8	1	90	125	0	0.8	714	69.5
Back of Queue	(Q), ve	h/In ( 50 th percentile	e)		0.7			0.1		3.5	4.9	0.0	0.0	28	27
Queue Storage	Ratio ( /	RQ) ( 50 th percentil	le)		0.00			0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (	d 1), s/	veh			20.1			19.3		21.2	13.7	0.00	26.8	15.9	16.0
Incremental Del	ay ( d 2	), s/veh			0.1			0.0		1.0	0.5	0.0	0.0	0.2	02
nitial Queue De	lay ( d s	a), s/veh			0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (	d), s/ve	h			20.2			19.3		22.2	14.2		26.8	16.1	16.1
_evel of Service	(LOS)				C			В		С	В		С	В	В
Approach Delay	s/veh /	LOS		20.2	(	2	19.3		В	17.0		В	16.1	T	В
ntersection Dela	ay, s/vel	h/LOS				16.9	9	- day					В	-	
Multimedal D	a find the		OF CAR		E Rower	The second second					A PARA		- Charles		
viulumodal Kes	Suits	100			EB			WB			NB			SB	
Biovolo LOS	Score /	105		2.9			2.8	_	С	2.1	_	В	3.0		С
Sicycle LUS Sco	ore / LO	3		0.0	I A	A	0.5		А	1.8		В	0.9		A

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THE PARTY		A Martin State Strength	The second		- Call			1976-199	CALENT	Store State	and the second	A Dien	SIL	Test Part	
General Inform	nation			10-1	- BARRING	and a second			Intersec	tion Infe	ormatio	on	1 2	4.4.4	- I.
Agency		Solaegui Engineers						1	Duration	, h	0.25			417	
Analyst		MSH		Analys	is Date	Jan 2.	2018		Area Tvr	)e	Other				
Jurisdiction		City of Reno		Time F	Period	AM Pe	ak Hou	r I	PHF		0.90			" <b>F</b> .	***
Urban Street				Analys	is Year	2028			Analysis	Period	1> 7.	00			
Intersection		Lemmon & Military		File Na	ame	LeMi28	Baw xus		andigolo	1 oned	-				
Project Descrip	tion	1											1 🖷	11441	• 6
	Part of	1. 1. 1. 1. ALC	SR. Carlo	1.	harr	S. Steam					The state	San Che	A States		- Carlore
Demand Inform	nation				EB		1	WE	3		NB			SB	
Approach Move	ement			L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), v	eh/h			49	1		2	0	4	599	421	0	4	1281	55
	Sales Sec		And the state	in the	Sidout !	The second			353536	121 5 -2	A LAND AND	Print	and the second	100	Star Star
Signal Informa	tion				6		21	1 2	8		l		-		
Cycle, s	70.0	Reference Phase	2		5	512	1 1		6			2	1	3	4
Offset, s	0	Reference Point	End	Green	6.0	4.0	30.0	15.0	0.0	0.0				S. 2 3	~
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0		5 4			2
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	1.0	1.0	0.0	0.0	Contraction of the	E .	6	7	5
- Andrew The state		and the second second				1					and the second	The state	S	Alle - I	1. 1.
Timer Results				EBL		EBT	WBI	-	WBT	NBL	-	NBT	SBL	-	SBT
Assigned Phase	e				_	4			8	5	_	2	1		6
Case Number						8.0			8.0	2.0	-	4.0	2.0		4.0
Phase Duration	, S				_	20.0			20.0	15.0		39.0	11.0		35.0
Change Period,	(Y+R)	c), S				5.0			5.0	0.0		5.0	5.0		5.0
Max Allow Head	Headway ( <i>MAH</i> ), s arance Time ( <i>g</i> <sub>s</sub> ), s				-	3.1		_	3.1	3.1	-	3.0	3.1	_	3.0
Queue Clearan	ce Time	Γime (g s), s me (g e), s				4.3			2.2	15.5		7.1	2.2		28.8
Green Extensio	n Time	$\operatorname{inte}(g_e), s$				0.0		_	0.1	0.0		4.9	0.0		0.0
Phase Call Prol	bability	7 e ), S				1.00			1.00	1.00		1.00	1.00		1.00
Max Out Proba	bility	Now show have been and a			Sections.	0.00	C.Factorer C.	Service March	0.00	1.00	DAVE: NO.	0.03	0.13	CAPITA DA MA	1.00
Movement Gro	un Res	ulte	Contra .	and the second	ER		ACC TO	W/R		COLUMN S	NR	a superior	CALIFORNIA CONTRACTOR	SB	C. C. PARTIN
Approach Move	ment	uits		1	Т	R		T	R		T	R		т	R
Assigned Move	ment			7	4		3	8	18	5	2	12	1	6	16
Adjusted Flow F	Rate ( v	) veh/h			56		0	7	10	666	468	0	4	746	738
Adjusted Satura	ation Flo	w Rate (s) veh/h/li	n		1367			1542		1689	1870	0	1781	1870	1842
Queue Service	Time ( (	7 s) S			21			0.0	-	13.5	51	0.0	0.2	26.6	26.8
Cycle Queue C	learance	e Time ( <i>a</i> c), s			23			0.2		13.5	5.1	0.0	0.2	26.6	26.8
Green Ratio ( a	/C)				0.21			0.21	1	0.21	0.49	0.0	0.09	0.43	0.43
Capacity (c), y	eh/h				395		-	399		724	1817		153	802	789
Volume-to-Cap	acity Ra	tio (X)			0.141			0.017		0.920	0.257	0.000	0.029	0.931	0.935
Back of Queue	(Q). ft/	(In ( 50 th percentile)			18.4			2.1	1	174.4	46.9	0	1.7	349.4	350.8
Back of Queue	(Q), ve	eh/In ( 50 th percenti	le)		0.7			0.1		6.7	1.8	0.0	0.1	13.8	13.8
Queue Storage	Ratio (	RQ) (50 th percent	ile)		0.00			0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (	(d1), s	/veh			22.5			21.7		26.9	10.6		29.3	19.0	19.1
Incremental De	lay (d 2	), s/veh		_	0.1			0.0		16.6	0.0	0.0	0.0	17.1	17.9
Initial Queue De	elay (d	3), s/veh			0.0			0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (	control Delay ( d 3 ), s/veh				22.6			21.7	1	43.5	10.6		29.4	36.1	37.0
Level of Service	Jelay ( d ), s/veh Service (LOS)				С	1		С	1	D	В		С	D	D
Approach Delay	, s/veh	/LOS		22.6		С	21.7		С	29.9		С	36.5	T	D
Intersection De	lay, s/ve	h / LOS				33	.4	-					0	h	
	ction Delay, siven 7 205			5		- SUME PO				製鋼會	STEP.	N.S.	The state	a state	
Multimodal Re	modal Results				EB	1		WB			NB	and the second second	Contraction of the	SB	COLUMN AND COLUMN
Pedestrian LOS	Score	/LOS		2.9		С	2.8		С	2.1		В	3.0		С
Bicycle LOS Sc	ore / LC	)S		0.0		A	0.5		А	1.4		А	1.7		В

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General Inform	nation				and the story h		1997.00000000000000000000000000000000000		Intersed	tion Inf	ormatio	on	1	at Justa b	
Agency		Solaegui Engineers							Duration	, h	0.25			417	
Analyst		MSH		Analys	is Date	Jan 2,	2018		Area Ty	be	Other	1			4
Jurisdiction		City of Reno		Time P	eriod	PM Pe	ak Hou	ir I	PHF		0.90		**	祥.	++ +
Urban Street				Analys	is Year	2028			Analysis	Period	1> 7:0	00			-
Intersection		Lemmon & Military		File Na	ime	LeMi28	Bpw.xus	3			J			55+6	
Project Descrip	tion													4144	- 1
		The second second	1000			Lat the		A FT B SH	is frain	22.4.5		STREET	and the state		A BUILD
Demand Inform	nation				EB			WE	3		NB			SB	
Approach Move	ement			Ĺ	Т	R	L	T	R	L	T	R	L	Т	R
Demand (v), v	eh/h			80	0		2	0	4	854	1527	0	4	709	98
		La start and a family in	Josi - La	1	ALS ALS			1949	100 110 1	E an an		The second		1 1	
Signal Informa	tion				5		2	2	Ş.			-	+-		-
Cycle, s	70.0	Reference Phase	2		5	512	1 1		67°		60	1	K2	3	4
Offset, s	0	Reference Point	End	Green	6.0	9.0	25.0	15.0	0.0	0.0	350			10.35	5
Uncoordinated	Yes	Simult. Gap E/W	On	Yellow	4.0	0.0	4.0	4.0	0.0	0.0		5 4	-		7
Force Mode	Fixed	Simult. Gap N/S	On	Red	1.0	0.0	1.0	1.0	0.0	0.0	Contraction of the	5	6	7	8
		and a second of the				11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				and the second	1	a de la care	Children of		And a t
Timer Results				EBL	_	EBT	WBL	-	WBT	NBI	-	NBT	SBL	-	SBT
Assigned Phase	e					4			8	5		2	1		6
Case Number					_	8.0			8.0	2.0	_	4.0	2.0		4.0
Phase Duration	, S					20.0			20.0	20.0		39.0	11.0		30.0
Change Period,	(Y+R a	c), S				5.0			5.0	0.0		5.0	5.0		5.0
Max Allow Head	ax Allow Headway ( <i>MAH</i> ), s leue Clearance Time ( g s ), s					3.1			3.1	3.1		3.0	3.1		3.0
Queue Clearan	eue Clearance Time ( $g_s$ ), s					5.9			2.2	21.5		31.9	2.2		16.6
Green Extensio	n Extension Time $(g \circ )$ , s					0.1			0.1	0.0	_	1.6	0.0		4.0
Phase Call Prol	nsion Time ( g ⊧ ), s Probability					1.00			1.00	1.00		1.00	1.00		1.00
Max Out Probal	bility	and the second			Safe in Free	0.00	A DAY N AL	-	0.00	1.00	an order and some	1.00	0.13		0.74
Movement Gra	up Boo	ulto	C. Cau and	1- 11- C.	ED	A COLUMN		1A/D		Nostinger and	ND	1000		CD	CALL DEST
Approach Move	mont	uits			T	D		T	I B		T	в		<u>эв</u>	в
Assigned Move	mont			7	1	R	2	0	10	5	2	12	4	C C	16
Adjusted Flow F	Rate ( v	) veh/h	-		80		3	7	10	040	1607	0	1	450	129
Adjusted Flow F	tion Elo	w Rate ( s ) veh/h/l	n		1350			1543		1690	1970	0	4	409	1796
					3.6			0.0		10.5	20.0	0.0	0.2	14.6	14.6
Cycle Queue C	learance	$a$ Time $(a_{a})$ s			3.0			0.0		10.5	20.0	0.0	0.2	14.6	14.6
Green Ratio ( a	(C)	5 mile (g t), 6			0.21			0.2	1	0.29	0.49	0.0	0.2	0.36	0.36
Capacity (c) y	eh/h				304		-	300	1	965	1817		153	668	638
Volume-to-Cap	acity Ra	tio (X)			0.226			0.017	-	0.983	0.934	0.000	0.029	0.687	0.687
Back of Queue	(Q), ft/	In (50 th percentile)			30.3			2.1	1	271 1	331	0.000	17	156.9	150.4
Back of Queue	(Q), ve	eh/In ( 50 th percenti	le)		1.2			0.1	-	10.4	13.0	0.0	0.1	62	5.9
Queue Storage	Ratio (	RQ) (50 th percent	ile)		0.00			0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (	$d_1$ , s	/veh			23.1			21.7		24.8	16.9	0.00	29.3	19.2	19.2
Incremental Del	av (d2	). s/veh			0.1			0.0	1	24.8	9.3	0.0	0.0	2.5	2.6
Initial Queue De	elav (d)	a), s/veh			0.0			0.0	1	0.0	0.0	0.0	0.0	0.0	0.0
Control Delav (	d), s/ve	eh			23.2			21.7		49.6	26.3	5,5	29.4	21.6	217
Level of Service	evel of Service (LOS)				С			C		D	C		C	C	C
Approach Delay	, s/veh	/LOS		23.2	T	C	21.7	Ī	С	34.7	T	С	21.7	T	C
Intersection Del	ay, s/ve	h/LOS				31.	2						0		
San All and the state	icisculor belay, sven reos				States 1	Bar	HIR SE	ALC: N	A Martin	Nor and Andrew	1.342		(1)法律	and sen	ALC ALC
Multimodal Res	ultimodal Results					T	and an an an and a state	WB	and an and a second sec	-	NB	and the second second	and the second	SB	A COLOR
Pedestrian LOS	Score	LOS		2.9		C	2.8		С	2.1		В	3.0	1	С
Bicycle LOS Sc	ore / LO	S		0.1		A	0.5		А	2.7		С	1.2		Α

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General Information		Site Information	
Analyst	MSH	Intersection	Lemmon & Arkansas
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	1/2/2018	East/West Street	Arkansas Street
Analysis Year	2018	North/South Street	Lemmon Drive
Time Analyzed	AM Existing	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			

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Major Street: North-South

Approach		Eastb	ound		1	West	bound		1	North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U		Т	R	1		Тт	D
Priority		10	11	12		7	8	9	111	1	2	3	411		5	6
Number of Lanes	-	0	0	0		0	1	0	0	0	1	0	40		1	0
Configuration	-						LR			Ū		TR	0			
Volume, V (veh/h)						19		0			63	5		1	248	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked										1						
Percent Grade (%)						(	)								I	
Right Turn Channelized		N	0			N	lo			N	10			N	lo	
Median Type/Storage				Undi	vided											
Critical and Follow-up H	eadway	ys											In sec.			
Base Critical Headway (sec)								<u> </u>								
Critical Headway (sec)				-												
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)													-			
Delay, Queue Length, an	d Level	of Se	rvice													
Flow Rate, v (veh/h)	TT						21							1		
Capacity, c (veh/h)							654							1526		
v/c Ratio							0.03							0.00		-
95% Queue Length, Q <sub>95</sub> (veh)							0.1							0.0		-
Control Delay (s/veh)							10.7							7.4		
Level of Service, LOS			-				В							A		
Approach Delay (s/veh)					-	10	.7							0.	0	
Approach LOS						P			10.000							

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General Information		Site Information	
Analyst	MSH	Intersection	Lemmon & Arkansas
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	1/2/2018	East/West Street	Arkansas Street
Analysis Year	2018	North/South Street	Lemmon Drive
Time Analyzed	PM Existing	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



Major Street: North-South

Vehicle Volumes and Ad	justme	nts														
Approach		Eastb	ound			West	bound			North	bound			South	bound	
Movement	υ	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority		10	11	12		7	8	9	10	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						10		1		-	305	27		1	147	
Percent Heavy Vehicles (%)						2		2			1			2		
Proportion Time Blocked																
Percent Grade (%)							D									
Right Turn Channelized		Ν	lo			N	lo			1	٩o			1	١o	
Median Type/Storage				Undi	vided											
Critical and Follow-up H	eadwa	ys														
Base Critical Headway (sec)	T															
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																
Delay, Queue Length, an	d Leve	l of Se	ervice										4.5			5.5
Flow Rate, v (veh/h)	1			1	1		12		Ι		1			1		
Capacity, c (veh/h)							535		1	-				1197		
v/c Ratio							0.02							0.00		
95% Queue Length, Q <sub>95</sub> (veh)							0.1							0.0		
Control Delay (s/veh)							11.9							8.0		
Level of Service, LOS							В							A		
Approach Delay (s/veh)		Annual states of				11	1.9							C	.1	
Approach LOS	1				1		3		1				1			

	HC37 100-00	ау зтор-соптют керот	
<b>General Information</b>		Site Information	
Analyst	MSH	Intersection	Lemmon & Arkansas
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	1/2/2018	East/West Street	Arkansas Street
Analysis Year	2018	North/South Street	Lemmon Drive
Time Analyzed	AM Existing + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



Vehicle Volumes and Ad	justme	nts				-										
Approach	1	Eastb	ound		T	West	bound		T	North	bound		T	South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority		10	11	12	1	7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration						1	LR				1	TR	1	LT		
Volume, V (veh/h)						19		0			158	5		1	531	
Percent Heavy Vehicles (%)						2		2					1	2		
Proportion Time Blocked											1		1			
Percent Grade (%)						(	0			-				1	1	
Right Turn Channelized		N	0			Ν	lo			1	١o	-		N	10	
Median Type/Storage		and an interest the		Undi	vided						-					
Critical and Follow-up H	eadway	ys					1.1				197		*****	18.3		
Base Critical Headway (sec)	1			1				-					-	1		-
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																
Delay, Queue Length, an	d Level	of Se	rvice							1			129		121	
Flow Rate, v (veh/h)	1		-				21	-						1		2010-0-02
Capacity, c (veh/h)							377							1398		
v/c Ratio							0.06							0.00		
95% Queue Length, Q <sub>95</sub> (veh)							0.2							0.0		
Control Delay (s/veh)							15.1							7.6		
Level of Service, LOS							С							A		
Approach Delay (s/veh)						15	.1			-			-	0.	0	
Approach LOS						0							11 - 25 -	-		

# HCS7 Two-Way Stop-Control Report

General Information   Site Information     Analyst   MSH   Intersection   Le     Agency/Co.   Solaegui Engineers   Jurisdiction   M     Date Performed   1/2/2018   East/West Street   A     Analysis Year   2018   North/South Street   Le     Time Analyzed   PM Existing + Project   Peak Hour Factor   0			
General Information		Site Information	
Analyst	MSH	Intersection	Lemmon & Arkansas
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	1/2/2018	East/West Street	Arkansas Street
Analysis Year	2018	North/South Street	Lemmon Drive
Time Analyzed	PM Existing + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



Vehicle Volumes and Ad	ljustme	nts														
Approach		Eastb	ound			West	oound			North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority		10	11	12		7	8	9	10	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						10		1			600	27		1	320	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized		N	0			N	lo			1	٥V			r	٩٥	
Median Type/Storage				Undi	vided											
Critical and Follow-up H	leadwa	ys										-				
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)									1				1			
Follow-Up Headway (sec)													1			
Delay, Queue Length, ar	nd Leve	l of Se	ervice								10.00		9			- 2
Flow Rate, v (veh/h)							12		1					1		
Capacity, c (veh/h)							273		1					911		
v/c Ratio							0.04		1					0.00		
95% Queue Length, Q <sub>95</sub> (veh)							0.1							0.0		
Control Delay (s/veh)							18.8							9.0		
Level of Service, LOS							С							A		
Approach Delay (s/veh)						18	3.8							C	0.0	
Approach LOS						(	c									

General Information		Site Information	
Analyst	MSH	Intersection	Lemmon & Arkansas
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	1/2/2018	East/West Street	Arkansas Street
Analysis Year	2028	North/South Street	Lemmon Drive
Time Analyzed	АМ	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			elana a construction and a construction of the

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venicle volumes and Ad	justme	nts														
Approach		Eastb	ound			West	bound			North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	T	R
Priority		10	11	12		7	8	9	10	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR	1	LT	1	
Volume, V (veh/h)						19		0			202	5		1	590	
Percent Heavy Vehicles (%)						2		2			1			2		
Proportion Time Blocked																
Percent Grade (%)					1		0	100	1							
Right Turn Channelized		N	0			Ν	lo			٦	No			N	lo	
Median Type/Storage	1			Undi	vided											
Critical and Follow-up H	eadway	/s										- 64	100	-		SIL
Base Critical Headway (sec)					[									[		
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																
Delay, Queue Length, an	d Level	of Se	ervice								-					
Flow Rate, v (veh/h)		1					21	_		-			[	1		
Capacity, c (veh/h)							323			1				1343		-
v/c Ratio							0.06							0.00		
95% Queue Length, Q <sub>95</sub> (veh)							0.2							0.0		
Control Delay (s/veh)							16.9							7.7		
Level of Service, LOS		-					С						-	A		
Approach Delay (s/veh)						16	.9						-	0	0	
Approach LOS											-	-				

<b>General Information</b>		Site Information	
Analyst	MSH	Intersection	Lemmon & Arkansas
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	1/2/2018	East/West Street	Arkansas Street
Analysis Year	2028	North/South Street	Lemmon Drive
Time Analyzed	PM	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25



Vehicle Volumes and Ad	ljustme	nts														
Approach		Eastb	ound			West	bound		T	North	nbound	-	Γ	South	bound	
Movement	U	L	Т	R	U	L	T	R	U	L	T	R	U	L	Т	R
Priority		10	11	12		7	8	9	10	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR				1	TR		LT		
Volume, V (veh/h)						10		1		_	726	27		1	419	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)						(	)									
Right Turn Channelized		N	0			N	lo			٢	lo			Ν	10	
Median Type/Storage				Undi	vided					-						
Critical and Follow-up H	leadway	adways														
Base Critical Headway (sec)																
Critical Headway (sec)								-								
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)														1200		
Delay, Queue Length, an	d Level	of Se	rvice				12.5		-							
Flow Rate, v (veh/h)		1					12							1		
Capacity, c (veh/h)							196							810		-
v/c Ratio							0.06					-		0.00		
95% Queue Length, Q <sub>95</sub> (veh)							0.2							0.0		
Control Delay (s/veh)							24.5							9.5		
Level of Service, LOS							С							A		
Approach Delay (s/veh)						24	5				L. L.			0.	0	-
Approach LOS	1					C										

General Information		Site Information	
Analyst	MSH	Intersection	Lemmon & Nectar
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	1/2/2018	East/West Street	Nectar Street
Analysis Year	2018	North/South Street	Lemmon Drive
Time Analyzed	AM Existing	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



Major Street North-South

Approach		Eastb	ound			West	ound			North	bound			South	bound	
Movement	U	L,	Т	R	U	L	Т	R	υ	L	Т	R	U	L	Т	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						29		1			61	2		1	220	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)							D									
Right Turn Channelized		N	lo			N	lo			١	٩o			٨	10	
Median Type/Storage				Undi	ivided											
Critical and Follow-up H	leadwa	ys								ť 1						
Base Critical Headway (sec)											Ι					
Critical Headway (sec)																
Base Follow-Up Headway (sec)									1							
Follow-Up Headway (sec)																
Delay, Queue Length, ar	nd Leve	l of Se	ervice													
Flow Rate, v (veh/h)				1			33							1		
Capacity, c (veh/h)							690							1532		
v/c Ratio							0.05							0.00		
95% Queue Length, Q <sub>95</sub> (veh)	T						0.2		-				-	0.0		
Control Delay (s/veh)						1	10.5		1					7.4		
Level of Service, LOS						1	В							A		
Approach Delay (s/veh)				And the other states		1	0.5		1					C	0.0	
Approach LOS							В								11	

<b>General Information</b>		Site Information	
Analyst	MSH	Intersection	Lemmon & Nectar
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	1/2/2018	East/West Street	Nectar Street
Analysis Year	2018	North/South Street	Lemmon Drive
Time Analyzed	PM Existing	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



Major Street: North-South

Approach		Eastb	ound			West	bound			North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	Ł	Т	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						25		3			259	47		3	123	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized		N	0			N	10			1	٩o			N	10	
Median Type/Storage				Undi	vided											
Critical and Follow-up H	leadway	ys														
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																
Delay, Queue Length, an	d Level	of Se	ervice													
Flow Rate, v (veh/h)							30							3		
Capacity, c (veh/h)							580							1226		
v/c Ratio							0.05							0.00		
95% Queue Length, Q <sub>95</sub> (veh)							0.2							0.0		
Control Delay (s/veh)							11.5							7.9		
Level of Service, LOS							В							A		
Approach Delay (s/veh)						11	1.5							0	2	
Approach LOS		and the second second				1	В							-	-	

General Information		Site Information	
Analyst	MSH	Intersection	Lemmon & Nectar
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	1/2/2018	East/West Street	Nectar Street
Analysis Year	2018	North/South Street	Lemmon Drive
Time Analyzed	AM Existing + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



Vehicle Volumes and Ad	justme	nts								117					1.61	
Approach	T	Eastb	ound		1	West	bound		T	North	nbound		T	South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority		10	11	12		7	8	9	10	1	2	3	40	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR	-	LT		
Volume, V (veh/h)						185		3			104	54		2	347	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)						(	)									
Right Turn Channelized		N	0			N	lo			٩	٧o			N	10	
Median Type/Storage		and the second second		Undi	vided					-						
Critical and Follow-up H	eadway	ys														
Base Critical Headway (sec)													-	[		
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)								-								
Delay, Queue Length, an	d Level	of Se	rvice	- 2								1813				
Flow Rate, v (veh/h)							204							2		
Capacity, c (veh/h)							516							1404		
v/c Ratio							0.40							0.00		
95% Queue Length, Q <sub>95</sub> (veh)							1.9							0.0		
Control Delay (s/veh)							16,5							7.6		
Level of Service, LOS							С							A		
Approach Delay (s/veh)	1					16.	.5							0.	.1	
Approach LOS			And in case of the second			6		_			-	1.11/2		-		-

	The second second	ay stop control report	
<b>General Information</b>		Site Information	
Analyst	MSH	Intersection	Lemmon & Nectar
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	1/2/2018	East/West Street	Nectar Street
Analysis Year	2018	North/South Street	Lemmon Drive
Time Analyzed	PM Existing + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



Vehicle Volumes and Ad	justme	nts														
Approach	T	Eastb	ound		T	West	bound		Γ	North	bound		r	South	bound	
Movement	U	L	Т	R	U	L	T	R	U	L.	Т	R	U	L	Т	R
Priority		10	11	12	1	7	8	9	10	1	2	3	40	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration						1	LR		1		1	TR		LT	-	
Volume, V (veh/h)						120		5	1		392	209		5	201	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked									-							
Percent Grade (%)	-					(	)				1					
Right Turn Channelized		N	o			N	ю			٦	NO		-	P	lo	
Median Type/Storage				Undi	vided			ALC: NOT A			-					
Critical and Follow-up H	eadway	/s		-		12.17										
Base Critical Headway (sec)	TT						-				1					
Critical Headway (sec)																
Base Follow-Up Headway (sec)							-									
Follow-Up Headway (sec)												-				
Delay, Queue Length, an	d Level	of Se	rvice					1.0								
Flow Rate, v (veh/h)	TT						135							5		
Capacity, c (veh/h)							372							933		
v/c Ratio							0.36						-	0.01		
95% Queue Length, Q <sub>95</sub> (veh)							1.6							0.0		
Control Delay (s/veh)							20.1							8.9		
Level of Service, LOS	1 1						С							Δ		
Approach Delay (s/veh)						20	.1								3	
Approach LOS	1					C				-				0.		

	Site Information	
MSH	Intersection	Lemmon & Nectar
Solaegui Engineers	Jurisdiction	Washoe County
1/2/2018	East/West Street	Nectar Street
2028	North/South Street	Lemmon Drive
AM	Peak Hour Factor	0.92
North-South	Analysis Time Period (hrs)	0.25
	MSH Solaegui Engineers 1/2/2018 2028 AM North-South	MSH Intersection   Solaegui Engineers Jurisdiction   1/2/2018 East/West Street   2028 North/South Street   AM Peak Hour Factor   North-South Analysis Time Period (hrs)



Major Street: North-South

Vehicle Volumes and Ad	justme	nts				-		1.1	1	1						
Approach	1	Eastb	ound		T	West	bound		T	North	bound		-	South	bound	
Movement	U	L	T	R	U	L	T	R	U	L	Т	R	υ	L	Т	R
Priority		10	11	12		7	8	9	10	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration					1		LR		1	-	1	TR		LT		
Volume, V (veh/h)						185		3			148	54		2	405	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked	1					1										
Percent Grade (%)					-	(	)				1			1		
Right Turn Channelized		N	0			N	lo			N	No			Ν	lo	
Median Type/Storage				Undi	vided											
Critical and Follow-up H	eadway	ys					13				1917					
Base Critical Headway (sec)	1													1		
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)			and the second se							-						
Delay, Queue Length, an	d Level	of Se	rvice								0.01		-			
Flow Rate, v (veh/h)	TT						204			-				2		_
Capacity, c (veh/h)							446							1348		
v/c Ratio							0.46						-	0.00		-
95% Queue Length, Q <sub>95</sub> (veh)							2.4							0.0		
Control Delay (s/veh)							19.7							7.7		-
Level of Service, LOS							С			-				A		
Approach Delay (s/veh)						19	.7				l			0	0	
Approach LOS	1	ALC: NO.			1000 C 1000									0,		

<b>General Information</b>		Site Information	
Analyst	MSH	Intersection	Lemmon & Nectar
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	1/2/2018	East/West Street	Nectar Street
Analysis Year	2028	North/South Street	Lemmon Drive
Time Analyzed	PM	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



Vehicle Volumes and Ad	justme	nts														
Approach		Eastb	ound			West	oound			North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	T	R
Priority		10	11	12		7	8	9	10	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						120		5			518	209		5	300	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)						(	2									
Right Turn Channelized		N	ю			N	lo			1	No			٢	No	
Median Type/Storage				Undi	vided											
Critical and Follow-up H	leadwa	ys														
Base Critical Headway (sec)									1							
Critical Headway (sec)											1					
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																
Delay, Queue Length, an	d Leve	l of Se	ervice													
Flow Rate, v (veh/h)							135		Γ					5		
Capacity, c (veh/h)							268		1					830		
v/c Ratio							0.50				1			0.01		
95% Queue Length, Q <sub>95</sub> (veh)							2.6							0.0		
Control Delay (s/veh)							31.4							9.4		
Level of Service, LOS							D							A		
Approach Delay (s/veh)						31	.4							C	).2	
Approach LOS	T					<b>_</b>	2		1							

General Information		Site Information	
Analyst	MSH	Intersection	Lemmon & Chickadee
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	1/2/2018	East/West Street	Chickadee Drive
Analysis Year	2018	North/South Street	Lemmon Drive
Time Analyzed	AM Existing	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



Approach		Eastb	ound			West	bound			North	bound			South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)				1		15		2			59	3		1	206	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized		N	lo			N	lo			١	NO			١	٩٥	
Median Type/Storage				Und	vided				1							
Critical and Follow-up H	eadwa	ys														
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)				1												
Delay, Queue Length, an	d Leve	l of Se	ervice					-		E UI						
Flow Rate, v (veh/h)	1			1	1	T	18						1	1		
Capacity, c (veh/h)							722					1		1533		
v/c Ratio	1			1			0.02				1	1		0.00		
95% Queue Length, Q <sub>95</sub> (veh)	1						0.1							0.0		
Control Delay (s/veh)				1			10.1							7.3		
Level of Service, LOS							В							A		
Approach Delay (s/veh)						1	0.1							(	0.0	
Approach LOS			0.000				В		1				T			

General Information		Site Information	
Analyst	MSH	Intersection	Lemmon & Chickadee
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	1/2/2018	East/West Street	Chickadee Drive
Analysis Year	2018	North/South Street	Lemmon Drive
Time Analyzed	PM Existing	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



Major Street: North-South

Vehicle Volumes and Ad	justme	nts											i se			
Approach	T	Eastb	ound		T	West	bound		Γ	North	bound		1	South	bound	
Movement	U	L	τ	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority		10	11	12	1	7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes	1	0	0	0	1	0	1	0	0	0	1	0	0	0	1	0
Configuration					1	1	LR					TR		LT		
Volume, V (veh/h)						12		4			250	12		7	114	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)					-		0									
Right Turn Channelized		N	0			٨	٩٥			1	No			N	10	
Median Type/Storage				Undi	ivided											
Critical and Follow-up H	eadwa	ys				- 4		9.00								1
Base Critical Headway (sec)	1			Ι	T	1	Γ	1	1		Ι		1			
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)				1												
Delay, Queue Length, an	d Leve	l of Se	ervice			-					-				5.0	
Flow Rate, v (veh/h)	1			1	1	[	17	-	Ι		1	Γ	1	8	[	
Capacity, c (veh/h)	1					Ì	621							1276		
v/c Ratio					1		0.03		-		1	1		0.01		
95% Queue Length, Q <sub>95</sub> (veh)							0.1							0.0		
Control Delay (s/veh)					1		11.0							7.8		
Level of Service, LOS							В							A		
Approach Delay (s/veh)						1.	1.0				A			0	5	
Approach LOS							B	-	1						11.000-111	

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<b>General Information</b>		Site Information	
Analyst	MSH	Intersection	Lemmon & Prado Ranch
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	1/2/2018	East/West Street	Prado Ranch Boulevard
Analysis Year	2018	North/South Street	Lemmon Drive
Time Analyzed	AM Existing + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25



Vehicle Volumes and Ad	justme	nts														
Approach		Eastb	ound		1	Westł	pound			North	ibound		Ι	South	bound	
Movement	U	L	Т	R	U	L	Т	R	U	L,	τ	R	U	L	Т	R
Priority		10	11	12		7	8	9	10	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR				1	TR		LT		
Volume, V (veh/h)						142		6			61	46		2	207	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)						(	0								-	
Right Turn Channelized		N	lo			N	10			1	NO			1	No	
Median Type/Storage				Undi	ivided											
Critical and Follow-up H	eadwa	ys														
Base Critical Headway (sec)						Τ										
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)															Í	
Delay, Queue Length, an	d Leve	l of Se	ervice	•								1	-			
Flow Rate, v (veh/h)				Ι			161				Γ	1	Τ	2		
Capacity, c (veh/h)							681							1472		
v/c Ratio							0.24							0.00		
95% Queue Length, Q <sub>95</sub> (veh)							0.9							0.0		
Control Delay (s/veh)							11.9							7.4		
Level of Service, LOS							В							A		
Approach Delay (s/veh)						11	1.9			And the second second				C	J.1	
Approach LOS						E	3		1				1			

# HCS7 Two-Way Stop-Control Report

General Information		Site Information	
Analyst	MSH	Intersection	Lemmon & Prado Ranch
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	1/2/2018	East/West Street	Prado Ranch Boulevard
Analysis Year	2018	North/South Street	Lemmon Drive
Time Analyzed	PM Existing + Project	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



Vehicle Volumes and Ad	justme	nts															
Approach		Eastb	ound			West	bound			North	bound			South	bound		
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	T	R	
Priority		10	11	12		7	8	9	10	1	2	3	4U	4	5	6	
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0	
Configuration							LR					TR		LT			
Volume, V (veh/h)						90		6			252	145		11	116		
Percent Heavy Vehicles (%)						2		2						2			
Proportion Time Blocked																	
Percent Grade (%)							0										
Right Turn Channelized		N	lo			N	10			1	No			٢	٩o		
Median Type/Storage				Undi	vided												
Critical and Follow-up H	leadwa	ys															
Base Critical Headway (sec)																	
Critical Headway (sec)																	
Base Follow-Up Headway (sec)																	
Follow-Up Headway (sec)																	
Delay, Queue Length, ar	nd Leve	l of Se	ervice		-												
Flow Rate, v (veh/h)					1	1	105				Ι	Ι		12			
Capacity, c (veh/h)						T	531					1		1127			
v/c Ratio				1			0.20				1	1		0.01			
95% Queue Length, Q₃₅ (veh)							0.7							0.0			
Control Delay (s/veh)							13.4							8.2			
Level of Service, LOS							В							A			
Approach Delay (s/veh)						13	3,4							C	0,8		
Approach LOS							B				-						

General Information		Site Information	
Analyst	MSH	Intersection	Lemmon & Prado Ranch
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	1/2/2018	East/West Street	Prado Ranch Boulevard
Analysis Year	2028	North/South Street	Lemmon Drive
Time Analyzed	AM	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25



Major Street: North-South

Vehicle Volumes and Ad	ljustme	nts														
Approach		Eastb	ound			West	oound			North	bound		[	South	bound	
Movement	U	L	T	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						142		6			105	46	-	2	265	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)						(	C									
Right Turn Channelized		N	lo			N	lo			1	No			٢	٩٥	
Median Type/Storage				Undi	vided											
Critical and Follow-up H	leadwa	ys														
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																
Delay, Queue Length, ar	nd Leve	l of Se	ervice													
Flow Rate, v (veh/h)				I			161						[	2		
Capacity, c (veh/h)							590							1413		
v/c Ratio							0.27				1		-	0.00		
95% Queue Length, Q₃₅ (veh)							1.1							0.0		
Control Delay (s/veh)							13.4				1			7.6		
Level of Service, LOS							В				1000			A		
Approach Delay (s/veh)						13	3.4							С	0.1	
Approach LOS						F	3				112/0112					

# HCS7 Two-Way Stop-Control Report

<b>General Information</b>		Site Information	
Analyst	MSH	Intersection	Lemmon & Prado Ranch
Agency/Co.	Solaegui Engineers	Jurisdiction	Washoe County
Date Performed	1/2/2018	East/West Street	Prado Ranch Boulevard
Analysis Year	2028	North/South Street	Lemmon Drive
Time Analyzed	PM	Peak Hour Factor	0.92
Intersection Orientation	North-South	Analysis Time Period (hrs)	0.25
Project Description			



Vehicle Volumes and Ad	justme	nts														
Approach		Eastb	ound			West	bound			North	bound			South	bound	
Movement	U	L.	Т	R	U	L	Т	R	U	L	Т	R	U	L	Т	R
Priority		10	11	12		7	8	9	10	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						90		6			378	145		11	215	
Percent Heavy Vehicles (%)						2		2						2		
Proportion Time Blocked																
Percent Grade (%)							0									
Right Turn Channelized		N	o			N	lo			٢	10			Ν	10	
Median Type/Storage				Undi	vided											
Critical and Follow-up H	leadway	ys	-													
Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																
Delay, Queue Length, an	nd Leve	l of Se	ervice						212						12	
Flow Rate, v (veh/h)							105				1		-	12		
Capacity, c (veh/h)							384							1003		
v/c Ratio							0.27				1			0.01		
95% Queue Length, Q <sub>95</sub> (veh)							1.1			1				0.0		
Control Delay (s/veh)							17.8							8.6		
Level of Service, LOS							С							A		
Approach Delay (s/veh)						17	7.8							0	.5	
Approach LOS	1					(	-		1							

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TO: Pam Parenti

DATE:

January 31, 2017

THRU: Scott Estes 535

FROM: Brooke Long 7

RE: NVIG Annexation/Discovery, TMWA WO# 15-4763 (Revised)

### SUMMARY:

The proposed project includes a large development in Lemmon Valley, Nevada including residential and commercial development.

- The overall project consists of several areas along Lemmon Valley Drive.
- TMWA can provide water service to the overall project.
- The entire project lies outside TMWA's service territory and will require annexation prior to a water service agreement.

The primary purpose of this Annexation/Discovery is to identify the major water facility improvements to serve the NVIG development. In addition to the off-site improvements, high level planning of the on-site infrastructure to support the development was evaluated and presented in this document. The planning level cost opinion of the identified major backbone infrastructure improvements for the project is \$11,932,392.

Review of conceptual site plans or tentative maps by TMWA and/or agents of TMWA shall not constitute an application for service, nor implies a commitment by TMWA for planning, design or construction of the water facilities necessary for service. The extent of required off-site and onsite water infrastructure improvements will be determined by TMWA upon receiving a specific development proposal or complete application for service and upon review and approval of a water facilities plan by the local Health Authority. Because the NAC 445A Water System regulations are subject to interpretation, TMWA and/or agents of TMWA cannot guarantee that a subsequent water facility plan will be approved by the Health Authority or that a timely review and approval of the Project will be made. The Applicant should carefully consider the financial risk associated with committing resources to their Project prior to receiving all required approvals. After submittal of a complete Application for Service, the required facilities, the cost of these facilities, which could be significant, and associated fees will be estimated and will be included as part of the Water Service Agreement necessary for the Project. All fees must be paid to TMWA prior to water being delivered to the Project. NVIG Annexation/Discovery (Revised) Work Order 15-4763 Page 2 January 31, 2017

#### PURPOSE:

The purpose of this Discovery is to identify a planning level water service plan and an opinion of cost for the off-site facilities required to serve the proposed NVIG Development in Lemmon Valley Nevada, Nevada.

#### LOCATION:

The NVIG project is located in Lemmon Valley, Nevada (see Figure 1). The entire project is located outside the Truckee Meadows Water Authority's (TMWA) retail service territory and will require annexation by TMWA prior to a water service agreement. The Project will be subject to TMWA's Area 10 facility charges.

Table 1. Project Parcel APNS and Acrea	age	Acr	and	Ns	A	Parcel	ject	Pro	1.	ble	T
--	-----	-----	-----	----	---	--------	------	-----	----	-----	---

APNs	TOTAL ACREAGE
080-721-02 thru 08	
080-723-01 thru 03	
080-730-11 thru 17	
089-030-01 thru 09	
080-281-01	1580
080-461-04, 27, 30	
080-671-55 thru 57	
568-041-05	
080-722-0	

#### DISCUSSION:

The total proposed Project includes 3,316 single family residential units, 528 multi-family residential units and 6 warehouse buildings totaling 3,201,740 SF.

Supply to the entire project can be met from the Fish Springs Ranch (FSR) supply via TMWA's 24" high pressure main in Lemmon Drive. In the event that the FSR supply is interrupted, flow from TMWA's Raleigh Heights pressure zone can be used to provide a backup supply for the proposed NVIG project. This can be accomplished by opening the 18-inch normally closed valve located at Lemmon Dr and N Virginia St, allowing Raleigh Heights Tank Zone water to flow into the 24-inch Lemmon Dr transmission main.

For discussion purposes, the Project's water service plan was divided into six project areas shown in Figure 1.



NVIG Annexation/Discovery (Revised) Work Order 15-4763

#### NVIG Project, Area 1

Location: NVIG Area 1 is immediately west of Lemmon Dr, bordered to the north by Lear Drive and to the east by Lemmon Drive. The proposed NVIG Area 1 consists of 160 sfr units and 264 MFR units. In addition, Area 1 contains 62.1 acres of open space.

#### Demands:

The estimated NVIG Area 1 demand is 151.6 gpm (see Table 2).

## Table 2. Estimated NVIG Area 1 Demands.

Area						Deman	d (gpm)	
	Name	A	rea	Average Lot Size (sf)	Units	MDD	ADD	Usage Type
1	Village 1	31.8	Acres	5,195	160	112.0	42.9	sfr
1	Village 1A	12.7	Acres	÷	264	39.6	15.2	mfr
1	Village 1	62.1	Acres	-	0	0	0	Open Space
			Totals		424	151.6	58.1	

#### Project Storage:

The estimated storage volume required for NVIG Area 1 is 116,387 gallons. The storage volume is based on the project max day demand as follows:

Operating Storage Volume (15% of MDD)= 32,746 gallons Emergency Storage Volume (1 ADD)= 83,641 gallons Total NVIG Area 1 Storage Volume: = 116,387 gallons

#### Project Pressures:

NVIG Area 1 topography is relatively level ranging in elevation from approximately 4918' to 4920'. Area 1 pressures will be on the order of 80-85 psi.

#### Dead Ends and Looping:

Nevada Administrative Code section 445A.6712 requires systems to be designed, to the extent possible, to eliminate dead ends (greater than 400-500 LF). As planned, Area 1 meets these conditions.

#### Project Fire Flow:

Fire flow requirements are established by the local fire authority. The maximum Area 1 fire flow is assumed to be 3,000 gpm for 3 hours (540,000 gallons) for the multi-family residential portion of the development. TMWA has adequate storage to accommodate the project.

## Major Water System Improvements and Cost Opinion

The major water system improvements to serve Area 1 and a planning level cost opinion are listed in Table 3 and shown in Figure 2.

## Table 3. Area 1 Major Water System Improvements and Associated Costs

NVIG Area 1							
Description	Quantity	Unit	Unit Cost	Total Cost			
Area 10 Facility Charge	151.6	MDD, gpm	\$5,057	\$766,641			
Tie in to 8" stub (off high pressure main) and install a SCADA controlled PRS at Patrician Dr and Lemmon Dr.	1	L.S.	\$175,000	\$175,000			
Remove 10" main within Area 1 from Compton St to Lemmon Drive. A dedicated replacement main is not required, rather Project mains with an equivalent capacity, can be used. (see Figure 2).	1	L.S.	\$30,000	\$30,000			
Tie-in to the 12" Lemmon main (part of 10" main relocation)	1	L.S.	\$30,000	\$30,000			
8" main to Patrician Dr (Looping)	300	L.F.	\$144	\$43,200			
			Sub Total	\$1,044,841			

MDD = Maximum Day Demand, L.F. = Linear Feet, L.S. = Lump Sum



### NVIG Project, Area 2

Location: NVIG Area 2 is east of Lemmon Dr bordered to the north by Arkansas Drive. The proposed NVIG Area 2 consists of 6 warehouses and 264 MFR units (Village 1B).

#### Demands:

The total estimated NVIG Area 2 demand is 62.0 gpm. Demand details are shown in Table 4.

Area					Deman		
	Name	Are	ea	Units	MDD	ADD	Usage Type
2	Bldng 1	458,560	ft^2	1	3.2	2.7	Ind/Com
2	Bldng 2	512,560	ft^2	1	3.6	3.1	Ind/Com
2	Bldng 3	512,580	ft^2	1	3.6	3.1	Ind/Com
2	Bldng 4	487,180	ft^2	1	3.4	2.9	Ind/Com
2	Bldng 5	487,180	ft^2	1	3.4	2.9	Ind/Com
2	Bldng 6	743,680	ft^2	1	5.2	4.4	Ind/Com
2	Village 1B	12.5	Acres	264	39.6	15.2	mfr
			Total	270	62.0	34.3	

### Table 4. Estimated NVIG Area 2 Demands.

#### Project Storage:

The estimated storage volume required for NVIG Area 1 is 62,810 gallons. The storage volume is based on the project max day demand as follows:

Operating Storage Volume (15% of MDD)= 13,392 gallons Emergency Storage Volume (1 ADD)= 49,418 gallons Total NVIG Area 2 Storage Volume: = 62,810 gallons

#### Project Pressures:

Area 2 lies within TMWA's Lemmon Valley 1 pressure zone. NVIG Area 2 service elevations range from approximately 4919' to 4967'. Area 2 pressures range from 65-90 psi, due to elevation and demand variations.

#### Dead Ends and Looping:

Nevada Administrative Code section 445A.6712 requires systems to be designed, to the extent possible, to eliminate dead ends (greater than 400-500 LF). As planned, Area 2 meets these conditions.

### Project Fire Flow:

Fire flow requirements are established by the local fire authority. The maximum Area 2 fire flow is assumed to be 4,000 gpm for 4 hours (960,000 gallons). This fire flow can be achieved with the proposed plan.

## Major Water Facility Improvements Required:

Major water facility improvements and an opinion of cost are listed in Table 5 and shown on Figure 3.

## Table 5. Area 2, Major Water Facility Improvements and Associated Costs

NVIG Area 2							
Description	Quantity	Unit	Unit Cost	Total Cost			
Area 10 Facility Charge	62.0	MDD, gpm	\$5,057	\$313,534			
Tap or cut in a tee to the 24" high pressure main and 12" stub to project (Arkansas and Lemmon)	1	L.S.	\$50,000	\$50,000			
SCADA controlled pressure reducing station near Arkansas and Lemmon Dr. (260 PSI to 80 psi)	1	L.S.	\$150,000	\$150,000			
Tie-in to existing 8" and 8" stub-out to property	1	L.S.	\$50,000	\$50,000			
8" main to Patrician Dr (Looping)	300	L.F.	\$144	\$43,200			
Tie-in to the 12" Lemmon main (part of 10" main relocation)	1	L.S.	\$30,000	\$30,000			
			Sub Total	\$636,734			

MDD = Maximum Day Demand, L.F. = Linear Feet, L.S. = Lump Sum



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NVIG Annexation/Discovery (Revised) Work Order 15-4763

### NVIG Project, Areas 3 and 5

No water service was planned for Area 3 or Area 5. If water service is desired for the proposed park, the existing 8" main aligned on the west side of Lemmon Drive can be tapped.

#### Location:

NVIG Area 3 consists of 37.5 acres, split by Lemmon Dr, and is bordered to the north and south by Nectar St and Arkansas Drive, respectively (see Figure 1).

NVIG Area 5 consists of 194.6 acres, bordered by Swan Lake to the West and Lemmon Drive to the east.

#### Demands:

The total estimated NVIG Area 3 and 5 demand is 0 gpm (see Table 6).

### Table 6. Estimated NVIG Area 3 and 5 Demands.

Area					Demand (gpm)			
	Name	Ar	ea	Average Lot Size (sf)	Units	MDD	ADD	Usage Type
3	-	37.5	Acres	-	0	-	-	Open Space
5	<u>-</u>	188.8	Acres	-	0	-	(4)	Open Space
5	-	5.8	Acres	-	0	-	(H)	Park
			Total		0	0.0	0.0	
NVIG Annexation/Discovery (Revised) Work Order 15-4763 Page 11 January 31, 2017

#### NVIG Project, Areas 4 and 6

NVIG areas 4 and 6 are adjacent with shared water infrastructure.

#### Location:

Area 4 is east of Lemmon Dr, bordered to the north by Chickadee, south by Nectar Street and east by Chesapeake (Figure 1).

Area 6 is located immediately north of area 4.

## Water Supply:

Supply to NVIG areas 4 and 6 can be met from the Fish Springs Ranch high pressure supply main in Matterhorn Blvd. Two supply points are planned including one at the northwest corner of NVIG Area 6 and the other at Matterhorn Blvd and Pepper Way (see Figure 4). The proposed tie-in at Pepper Way can be made to an existing 10" flanged outlet. There is no stubout at the second connection location. The tie-in at this location will require a 30"x12" TEE or a tapping sleeve capable of withstanding the main pressures of 250 psi.

#### Demands:

The total estimated maximum day demands for NVIG Areas 4 and 6 are 529.3 gpm and 1661.2 gpm, respectively. Demand details are shown in Tables 7 and 8.

						Deman	d (gpm)	
Area	Name	А	rea	Average Lot Size (sf)	Units	MDD	ADD	Usage Type
4	Village 1	33.9	Acres	4,725	142	85.2	32.6	sfr
4	Village 2	29.8	Acres	6,300	125	87.5	33.5	sfr
4	Village 3	34.3	Acres	5,250	144	100.8	38.6	sfr
4	Village 4	33	Acres	5,775	139	97.3	37.3	sfr
4	Village 5	25.5	Acres	5,775	107	74.9	28.7	sfr
4	Buffer Lots	26.3	Acres	15,000	76	83.6	32.0	
			Total		733	529.3	202.8	

### Table 7. Estimated NVIG Area 4 Demands.

NVIG Annexation/Discovery (Revised) Work Order 15-4763

-1

						Den		
Area	Village	Size	Units	Average Lot Size (sf)	Units	MDD (gpm)	ADD (gpm)	Usage Type
6	14	29.3	Acres	5,250	123	86.1	33.0	sfr
6	15	30.8	Acres	5,775	129	90.3	34.6	sfr
6	16	30.2	Acres	4,725	127	76.2	29.2	sfr
6	17	25.7	Acres	4,725	108	64.8	24.8	sfr
6	18	36.4	Acres	5,250	153	107.1	41.0	sfr
6	6	42.1	Acres	5,250	177	123.9	47.5	sfr
6	7	29.7	Acres	4,725	125	75.0	28.7	sfr
6	8	23.3	Acres	5,250 5,775	98	68.6	26.3	sfr
6	9	29.3	Acres		5,775	123	86.1	33.0
6	19	31	Acres	4,725	130	78.0	29.9	sfr
6	20	31.1	Acres	4,725	131	78.6	30.1	sfr
6	21	28.7	Acres	5,775	120	84.0	32.2	sfr
6	22	24.5	Acres	5,775	103	72.1	27.6	sfr
-	-	10.7	Acres	-	0	-	-	School
6	10	44.6	Acres	5,775	187	130.9	50.2	sfr
6	11	34.3	Acres	6,300	144	100.8	38.6	sfr
6	12	51.3	Acres	6,300	215	150.5	57.7	sfr
6	13	38.5	Acres	6,300	162	113.4	43.4	sfr
6	Buffer Lots	23.5	Acres	15,000	68	74.8	28.7	sfr
			Total	107400	2423	1661.2	636.5	

## Table 8. Estimated NVIG Area 6 Demands.

### Project Storage:

The estimated storage volume required for NVIG Areas 4 and 6 is 1,681,700 gallons. The storage volume is based on the project max day demand as follows:

Operating Storage Volume (15% of MDD)= 473,148 gallons Emergency Storage Volume (1 ADD)= 1,208,552 gallons Total NVIG Area 4 and 6 Storage Volume: = 1,681,700 gallons

## Project Pressures:

Two pressure zones are required to serve the elevation range of Areas 4 and 6 and maintain a service pressure range of 80 psi to 45 psi. Service elevations range from approximately 4916' to 5075'.

## Dead Ends and Looping:

Nevada Administrative Code section 445A.6712 requires systems to be designed, to the extent possible, to eliminate dead ends (greater than 400-500 LF).

## Project Fire Flow:

Fire flow requirements are established by the local fire authority. The maximum area fire flow is assumed to be 1500 gpm for 2 hours (180,000 gallons). This fire flow can be achieved with the proposed plan.

### Major Water Facility Improvements Required:

The major improvements required for water service to NVIG areas 4 and 6 are listed in Table 8 and shown on Figure 4.

The major off-site project improvements to serve the NVIG Areas 4 and 6, and associated costs, are listed in Table 9.

Table 9. Are	as 4 and 6	. Maior Water	Facility Improvements	and Associated Costs
--------------	------------	---------------	-----------------------	----------------------

NVIG Areas 4 and 6									
Description	Quantity	Unit	Unit Cost	Total Cost					
Area 10 Facility Charge, reduced*	831.0	MDD, gpm	\$3,575	\$2,970,825					
Area 10 Facility Charge, non-reduced*	1,359.5	MDD, gpm	\$5,057	\$6,874,992					
INSTALL 30"x12" TEE (PROJECT SUPPLY) AND STUB TO PROJECT	1	L.S.	\$50,000	\$50,000					
CONNECT TO EXISTING 10" FLANGED OUTLET OFF 30" MAIN AT MATTERHORN AND PEPPER AND STUB TO PROJECT (PROJECT SUPPLY)	1	L.S.	\$15,000	\$15,000					
ON-SITE PRESSURE REDUCING STATIONS	2	L.S.	\$70,000	\$140,000					
OFF-SITE PRESSURE REDUCING STATIONS	2	L.S.	\$100,000	\$200,000					
			Sub Total	\$10,250,817					
			Total	\$11,932,392					

MDD = Maximum Day Demand, L.F. = Linear Feet, L.S. = Lump Sum

\*TMWA's Area 10 Water Facility Charge (WFC) is \$5057 per gpm of maximum day demand (MDD). However, there is a reduced/modified TMWA Area 10 WFC for development served directly from the terminal tank (Fish Springs Ranch supply) of \$3,575 per GPM of MDD. This reduced charge is limited to 831 gpm of MDD and will be applied on a first come first served basis.



## **Project Summary:**

The total project demands, required storage and major water system improvements and planning level costs are summarized in Tables 10 through 12.

## Table 10. Total Project Demands

						Deman		
Area	Name	Ar	ea	Average Lot Size (sf)	Units	MDD	ADD	Usage Type
1	Village 1	31.8	Acres	5,195	160	112.0	42.9	sfr
1	Village 1A	12.7	Acres	-	264	39.6	15.2	mfr
1	Village 1	62.1	Acres	-	0	0	0	Open Space
2	Bidng 1	458,560	ft^2		1	3.2	2.7	Ind/Com
2	Bldng 2	512,560	ft^2	-	1	3.6	3.1	Ind/Com Ind/Com
2	Bidng 3	512,580	ft^2	-	1	3.6	3.1	
2	Bldng 4	487,180	ft^2	-	1	3.4	2.9	Ind/Com
2	Bldng 5	487,180	ft^2	-	1	3.4	2.9	Ind/Com
2	Bldng 6	743,680	ft^2	~	1	5.2	4.4	Ind/Com
2	Village 1B	12.5	Acres	-	264	39.6	15.2	mfr
3	-	37.5	Acres	-	0	-	-	Open Space
4	Village 1	33.9	Acres	4,725	142	85.2	32.6	sfr
4	Village 2	29.8	Acres	6,300	125	87.5	33.5	sfr
4	Village 3	34.3	Acres	5,250	144	100.8	38.6	sfr
4	Village 4	illage 4 33 Acres		5,775	139	97.3	37.3	sfr
4	Village 5	25.5	Acres	5,725	107	74.9	28.7	sfr
4	Buffer Lots	26.3	Acres	15,000	76	83.6	32.0	sfr
5	-	188.8	Acres	-	0	2	12	Open Space
5	-	5.8	Acres	<u>2</u>	0	-	-	Park
6	14	29.3	Acres	5,250	123	86.1	33.0	sfr sfr sfr sfr
6	15	30.8	Acres	5,775	129	90.3	34.6	
6	16	30.2	Acres	4,725	127	76.2	29.2	
6	17	25.7	Acres	4,725	108	64.8	24.8	
6	18	36.4	Acres	5.250	153	107.1	41.0	sfr
6	6	42.1	Acres	5,250	177	123.9	47.5	sfr
6	7	29.7	Acres	4,725	125	75.0	28.7	sfr
6	8	23.3	Acres	5,250	98	68.6	26.3	sfr
6	9	29.3	Acres	5,775	123	86.1	33.0	sfr
6	19	31	Acres	4,725	130	78.0	29.9	sfr
6	20	31.1	Acres	4,725	131	78.6	30.1	sfr
6	21	28.7	Acres	5,775	120	84.0	32.2	sfr
6	22	24.5	Acres	5.775	103	72.1	27.6	sfr
		10.7	Acres	-	0	-	-	School
6	10	44.6	Acres	5,775	187	130.9	50.2	sfr
6	11	34.3	Acres	6,300	144	100.8	38.6	sfr
6	12	51.3	Acres	6,300	215	150.5	57.7	sfr
6	13	38.5	Acres	6,300	162	113.4	43.4	sfr
6	Buffer Lots	23.5	Acres	15.000	68	74.8	28.7	sfr
-	currer cots	2010	Total	1 20,000	2950	2404.1	921.7	

	NVIG Area 1			
Description	Quantity	Unit	Unit Cost	Total Cost
Area 10 Facility Charge	151.6	MDD, gpm	\$5,057	\$766,641
Tie in to 8" stub (off high pressure main) and install a SCADA controlled PRS at Patrician Dr and Lemmon Dr.	1	L.S.	\$175,000	\$175,000
Remove 10" main within Area 1 from Compton St to Lemmon Drive. A dedicated replacement main is not required, rather Project mains with an equivalent capacity, can be used. (see Figure 2).	1	L.S.	\$30,000	\$30,000
Tie-in to the 12" Lemmon main (part of 10" main relocation)	1	L.S.	\$30,000	\$30,000
8" main to Patrician Dr (Looping)	300	L.F.	\$144	\$43,200
		*	Sub Total	\$1,044,841
	NVIG Area 2			
Description	Quantity	Unit	Unit Cost	Total Cost
Area 10 Facility Charge	62.0	MDD, gpm	\$5,057	\$313,534
Tap or cut in a tee to the 24" high pressure main and 12" stub to project (Arkansas and Lemmon)	1	L.S.	\$50,000	\$50,000
SCADA controlled pressure reducing station near Arkansas and Lemmon Dr. (260 PSI to 80 psi)	1	L.S.	\$150,000	\$150,000
Tie-in to existing 8" and 8" stub-out to property	1	L.S.	\$50,000	\$50,000
8" main to Patrician Dr (Looping)	300	L.F.	\$144	\$43,200
Tie-in to the 12" Lemmon main (part of 10" main relocation)	1	L.S.	\$30,000	\$30,000
			Sub Total	\$636,734
N	VIG Areas 4 and	6		
Description	Quantity	Unit	Unit Cost	Total Cost
Area 10 Facility Charge, reduced*	831.0	MDD, gpm	\$3,575	\$2,970,825
Area 10 Facility Charge, non-reduced*	1,359.5	MDD, gpm	\$5,057	\$6,874,992
INSTALL 30"x12" TEE (PROJECT SUPPLY) AND STUB TO PROJECT	1	L.S.	\$50,000	\$50,000
CONNECT TO EXISTING 10" FLANGED OUTLET OFF 30" MAIN AT MATTERHORN AND PEPPER AND STUB TO PROJECT (PROJECT SUPPLY)	1	L.S.	\$15,000	\$15,000
ON-SITE PRESSURE REDUCING STATIONS	2	L.S.	\$70,000	\$140,000
OFF-SITE PRESSURE REDUCING STATIONS	2	L.S.	\$100,000	\$200,000
			Sub Total	\$10,250,817
			Total	\$11.932.392

#### Table 11. Major Project Water Facility Improvements

\*TMWA's Area 10 Water Facility Charge (WFC) is \$5057 per gpm of maximum day demand (MDD). However, there is a reduced/modified TMWA Area 10 WFC for development served directly from the terminal tank (Fish Springs Ranch supply) of \$3,575 per GPM of MDD. This reduced charge is limited to 831 gpm of MDD and will be applied on a first come first served basis. In general, the entire NVIG project is directly served from TMWA's Terminal Tank.

Area	Maximum Day Demand	Average Day Demand	Operating Storage	Emergency Storage	Total Storage Required
1	151.6	58.1	32,746	83,641	116,387
2	62.0	34.3	13,392	49,418	62,810
3	0	0	0	0	0
4	529.3	202.8	114,329	292,028	406,356
5	0	0	0	0	0
6	1661.2	636.5	358,819	916,524	1,275,343
Totals	2,404.1	931.7	519,286	1,341,611	1,860,896

## Table 12. Project Water Storage Requirements

TMWA's Fish Springs Tank 1 has 1 MG of available distribution storage. An additional 2.5 MG tank is planned for year 2022.

### PROJECT ASSUMPTIONS:

- 1. The applicant shall be responsible for all application, review, inspection, storage, treatment, permits, easements, and other fees pertinent to the Project as adopted by the TMWA at the time of execution of a water service agreement.
- 2. The cost opinions contained herein do not include new business fees, cost of water rights and related fees, or contribution to the water meter retrofit fund.
- 3. Demand calculations, and fees based on demands, are estimates; actual fees will be determined at the time of application for service.
- 4. The assumed fire flow requirements for this project are as follows:
  - 1,500 gpm in single family residential areas.
  - 2,500 gpm for 2 hours in MFR areas.
  - 4,000 gpm for 4 hours in commercial areas.
- 5. Project pressure criteria are:
  - a. Maximum day pressure of at least 45 pounds per square inch (psi) at the ground surface elevation at the service connection with tank level at top of fire storage,
  - b. Peak hour pressure of at least 40 psi at building pad elevation with tank level at top of emergency storage,
  - c. Maximum day plus fire flow pressure of at least 20 psi at center of street elevation with tank level at bottom of fire storage, and
  - d. TMWA does not calculate pressures for multi-story buildings. Confirmation that pressure will be adequate for upper stories is the responsibility of the Applicant.
- 6. A site grading plan with elevations was not provided. Elevations used for this discovery were from the existing Washoe County topographic information.
- 7. Facility requirements for the Project are based on the site topography, maximum day demand, and fire flow requirements. Changes in these may affect facility requirements.
- 8. Easements, permits and all pertinent Agency approvals are obtained for the design and construction of the water infrastructure necessary to serve the proposed Project.

NVIG Annexation/Discovery (Revised) Work Order 15-4763

- 9. All cost opinions are preliminary and subject to change. The costs presented in this study are planning level estimates based on the information available. Actual costs will be determined at the time of application for service. Cost opinions do not include on-site improvements made by the applicant.
- 10. This discovery is based on the current status of TMWA's system. Future development may alter the conclusions of this discovery. Capacity in TMWA's system is available on a first-come, first-served basis, and commitment to provide service is not established until a contract for service is executed and all fees are paid.
- 11. Water resources for the project will be obtained from the Vidler Water Company's Fish Spring's Ranch. Although the Fish Springs Ranch water rights are held by Vidler, TMWA owns the importation water infrastructure, originating at the Fish Springs Ranch and terminating in Lemmon Valley.
- 12. The costs of the Vidler Water Resource are not included in this Annexation/Discovery.
- 13. No water demands were included for the open space areas, public facilities or parks.
- 14. Project maximum day demands were calculated using the following equations:

Single-Family Units: Domestic Maximum Day Usage

Y = 0.009\*√x

Y = *maximum* day demand in gpm x = lot size in square feet

Add irrigation for common areas as needed

Multi-Family Units: Domestic Maximum Day Usage

0.15 gpm per unit

Add irrigation for common areas as needed

Commercial/Industrial: Domestic Maximum Day Usage

Multiply water rights demand (in acre-feet) by 1.17

Add irrigation for common areas as needed

Potable Irrigation: Maximum Day Usage

Multiply water rights demand (in acre-feet) by 0.38

15. TMWA plans to reevaluate the maximum day demand equations for all customer usage types within the next 12 months, as part of a Water Facility Plan Update.

Quality. Delivered.



1355 Capital Blvd. • P.O. Box 30013 • Reno, NV 89520-3013 (1) 775.834.8080 • (1) 775.834.8003

Date: Revised January 4, 2017 To: Pam Parenti From: David Nelson

RE: 15-4763, NVIG D2 & Annexation, Residential & Industrial (APN 080-281-01, 080-461-04, 080-461-27, 080-461-30, etc.)

The New Business/Water Resource team will answer the following assumptions on each new discovery:

- Is the property within Truckee Meadows Water Authority's water service territory?
- Does the property have Truckee River water rights appurtenant to the property, groundwater or resource credits associated with the property?
  - If yes, what is the status of the water right: Agricultural or Municipal and Domestic use?
- Estimated water demand for residential and or commercial projects.
- Any special conditions, or issues, that are a concern to TMWA or the customer.

The following information is provided to complete the Discovery as requested:

- These subject parcels (APN (APN 080-281-01, 080-461-04, 080-461-27, 080-461-30, etc.) are not within Truckee Meadows Water Authority's (TMWA's) service territory. An annexation is required.
- There are no resource credits or Truckee River decreed water rights appurtenant to these properties. The developer will be required to follow TMWA's current rules, specifically Rule 7, and pay all fees for water rights needed in order to obtain a will serve commitment letter.
- Based on the information provided by the applicant this project "NVIG" is estimated to require a domestic demand of **1196.13 acre feet (AF)**. Landscaping, park, and school plans were not provided to TMWA; therefore, an additional demand could not be determined. Please see the attached demand calculation sheet for the **estimated** demand and water resource fees. Once final plans are submitted a more accurate demand will be calculated. *Note: Water rights held or banked by the applicant must be dedicated to a project before any rule 7 water rights are purchased from TMWA. TMWA's resources are limited in this area and are first come first serve. If applicant dedicates surface water for this project additional fees and dedications will apply.*
- Any existing right of ways and public easements would need to be reviewed, and if needed the property owner will need to grant TMWA the proper easements and/or land dedications to provide water service to the subject properties. Property owner will be required, at its sole expense, to provide TMWA with a current preliminary title report for all subject properties. Owner will represent and warrant such property offered for dedication or easements to TMWA shall be free and clear of all liens and encumbrances. Owner is solely responsible for obtaining all appropriate permits, licenses, construction easements, subordination agreements, consents from lenders, and other necessary rights from all necessary parties to dedicate property or easements with title acceptable to TMWA.

TRUCKEE MEADOWS WATER

#### WATER RIGHTS AND METER FUND CONTRIBUTION CALCULATION WORKSHEET FOR MULTI-TENANT/COMMERCIAL APPLICATIONS

							Demand (Acre Feet)									
1	Existing demand	(current usage) a	t Service Proj	perty			0.00									
2	Number of un	its	5	28	_x.12 (Apartments)	63.36										
3	Warehouse flo	oor space:	3,201,7	740	_ x 0.000006 per sq.ft.	19.21										
4	Number of Lo	ots (SFR)	3,	316	x .0.34 avg. per. lot	1113.56										
5	Landscaping:		Turf		sq ft x 3.41/ 43,560	TBD										
6	Drip					TBD										
7	Other calculat	ed demand				<u>TBD</u>										
8	New or addition	al demand at Ser	vice Property	(lines	2+3+4+5+6)		<u>1196.13</u>									
9	Total Demand a	t Service Proper	ty (lines 1+8	)			1196.13									
10	Less: Prior de	emand commitme	ents at service	proper	ty	0.00										
11	Less: Other re	source credits: o	0.00													
12	Total Credits (	lines 10+11)		<u>0.00</u>												
13	Subtotal: Require	d resource dedica		1196.13												
14	Factor amount (0		0.00													
15	No return flow re		<u>0.00</u>													
16	TOTAL RESOL	IRCES REQUIE	RED (lines 13	+14+1	5)		<u>1196.13</u>									
17	Price of Water Ri	ights per AF	\$7,	500	Г			\$	TBD							
18	Will Serve Comn	nitment Letter Pre	eparation Fee	(\$100	per letter)			\$		100						
19	Due Diligence Fe	e (\$150.00 per pa	arcel)					\$	TBD							
20	Document Prepar	ation Fees (\$100	.00 per docun	nent)				\$	TBD							
21	Meter Contribution	on (\$1,830 x 119	6.13 acre feet	of den	nand)			\$	<u>TBD</u>							
22	TOTAL FEES D	OUE (lines 17+18	8+19+20+21)					\$		<u>100</u>						
	Project:	NVIG D2 and /	Annexation													
	Applicant:	NVIG, LLC -	Quote date:	Revised 1/4/20	)17											
	Phone:	775-815-8425	Tech contact:	David 834-802	21											
	APN:	Project No:	15-4763													
	Remarks:	Fees quotes are	e valid only v	vithin	15 calendar days of Quote	Date. Esitmate	only displays d	ema	nd.							
		The 1196.13 ac	ere feet may 1	result i	n the assessment of facilit	y fees pursuant to	TMWA's Rul	es a	nd Rates	s						
		This estimate d	lisplays wate	r dem	and off information receiv	ed from applican	t. At time of p	roje	ct submi	ittal						
		a more exact d	lemand will	be calc	ulated and resources for c	ledication will be	a more exact demand will be calculated and resources for dedication will be reviewed for approval.									

# PRADO RANCH NORTH TENTATIVE MAP TITLE SHEET

## OWNER:

NORTH VALLEYS INVESTMENT GROUP, LLC C/0 LENNAR 10345 PROFFESIONAL CIRCLE, SUITE 100 RENO, NV 89521-3100

## DEVELOPER:

LANSING COMPANIES 12671 HIGH BLUFF DRIVE, SUITE 150 SAN DIEGO, CA 92130

## BASIS OF BEARINGS

NEVADA STATE PLANE COORDINATE SYSTEM, WEST ZONE, NORTH AMERICAN DATUM OF 1983/1994, HIGH ACCURACY REFERENCE NETWORK (NAD 83/94-HARN), AS DETERMINED USING REAL TIME KINEMATIC (RTK) GPS OBSERVATIONS WITH CORRECTIONS TRANSMITTED BY THE NORTHERN NEVADA COOPERATIVE REAL TIME NETWORK GPS (NNCRN GPS). THE BEARING BETWEEN GPS REFERENCE STATION "RSTEAD" - N22SM01037 AND "SSB2" -S52SM10000 IS TAKEN AS SOUTH 86°59'47" EAST. ALL DIMENSIONS SHOWN ARE GROUND DISTANCES. COMBINED GRID-TO-GROUND FACTOR = 1.000197939.

## **BASIS OF ELEVATION**

THE BASIS OF ELEVATION IS BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1983 (NAVD 88) AS TAKEN FROM CITY OF RENO BENCHMARK 379, WITH A PUBLISHED ELEVATION OF 5110.785 FT. BENCHMARK 379 IS DESCRIBED AS BEING A USC AND GS CAP - APPROX. 800 FT N OF INTERS. OF US 395 AND STEAD BLVD -50 FT S'LY OF overhead school signal - w of stead blvd and 25 FT W'LY OF BW - 4" X 4" WOOD POST.





SITE PLAN NOT TO SCALE

## SITE INFORMATION:

SITE PLAN STATISTICS: TOTAL NUMBER OF LOTS = 506 OVERALL AREA = 154.5± AC LOT AREA = 102.5± AC ROADWAY AREA = 34.5± AC COMMON AREA/OPEN SPACE =  $17.5 \pm AC$ LAND USE = MDS 4 ZONING = MDS 4

PROJECT DENSITY: GROSS DENSITY = 3.28± DU/AC NET DENSITY = 4.94± DU/AC

LOT SUMMARY: MINIMUM LOT SIZE = 5,500 S.F. MAXIMUM LOT SIZE = 24,060 S.F. AVERAGE LOT SIZE = 8,825 S.F.

ASSESSOR PARCEL NUMBERS: 080-723-01, 080-723-02, 080-723-03, 080-721-04

## ENGINEERS STATEMENT:

TODD W. GAMMILL, P.E. #13693

I, TODD W. GAMMILL, DO HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED BY ME OR UNDER MY SUPERVISION AND WAS COMPLETED ON THE 16th DAY OF APRIL, 2018.



Sheet Index

SHT No.	DWGID	DRAWING DESCRIPTION
1	T-1	TITLE SHEET
2	LB-1	PRELIMINARY LOT AND BLOCK PLAN
3	LB-2	PRELIMINARY LOT AND BLOCK PL/AN
4	LB-3	PRELIMINARY LOT AND BLOCK PL/AN
5	LB-4	PRELIMINARY LOT AND BLOCK PLAN
6	LB-5	PRELIMINARY LOT AND BLOCK PL/AN
7	U-1	PRELIMINARY UTILITY PLAN
8	U-2	PRELIMINARY UTILITY PLAN
9	U-3	PRELIMINARY UTILITY PLAN
10	U-4	PRELIMINARY UTILITY PLAN
11	U-5	PRELIMINARY UTILITY PLAN
12	G-1	PRELIMINARY GRADING PLAN
13	G-2	PRELIMINARY GRADING PLAN
14	G-3	PRELIMINARY GRADING PLAN
15	G-4	PRELIMINARY GRADING PLAN
16	G-5	PRELIMINARY GRADING PLAN
17	G-6	PRELIMINARY GRADING PLAN
18	CS-1	PRELIMINARY CROSS SECTIONS
19	L-1	PRELIMINARY LANDSCAPE PLAN



1361 Corporate Blvd





TLE RANCH DRIVE (COLLEGO) = COLLEGO = COLLEG	R=15.00       L=13.82         L=23.34       R=52.00         L=26.57       L=26.57         14998 SF       07         12768 SF       12768 SF	227 22560 SF
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EXISTING T **464** 22480 SF **465** 15351 SF =62.52  $R=555.00 \\ L=88.70 \\ R=555.00 \\ L=10.17$ **463** 22537 SF 466 15000 SF **467** 15036 SF **468** 15103 SF 469 **462** 15009 SF R=13.50 85.00-L=23.80 R=15.00 389 7252 SF L=23.56 356 10403 SF R=15.00 L=23.26 **390** 8539 SF  $\begin{array}{c|c} - \begin{array}{c} L = 60.88 \\ R = 747.00 \end{array} \begin{array}{c} L = 46.89 \\ R = 747.00 \end{array} \begin{array}{c} 20.91 \end{array}$ 100.00 83.41 461 15000 SF 357 6000 SF 388 6000 SF R=13.50\_\_ L=16.85 470 81 6612 SF 81 471 81 7251 SF 81 472 14292 SF **391** 7132 SF 387 6000 SF 358 5900 SF 69.23 R=179.00 39.68 L=19.58 **392** 6125 SF 386 6000 SF \_R=221.00 L=24.18 359 6315 SF **399** 12492 SF 400 10885 SF 18 393 6000 SF 385 360 6320 SF 6000 SF - 52.00 R=5 01 **401** 12143 SF 0 -8.13 **398** 13887 SF 56.55 **394** 6149 SF SIL 9.00. 361 STAB 384 8911 SF 6294 SF 221.00 62.15  $\begin{array}{c} R = 16.50 \\ L = 42.72 \\ L = 31.19 \\ R = 101.00 \\ R = 101.00 \end{array}$ 130.49 362 6101 SF **395** 8535 SF R=16.50\_\_\_ L=42.49 9.00 R=221.00 L=68.27 **397** 11588 SF 383 13407 SF GREEN ORCHARD DRIVE 363 10561 SF **396** 8408 SF 218 134.61 R=1349.00 L=9.00 375 5 6147 SF R=15.00 L=23.56 100.32 382 51 A 12503 - -364 6244 SF 105.1 R=15.00\_\_\_\_ L=23.56 \ 376 ∖€ 6155 SF \_R=521.00 L=30.04 377 48:22 -104.60 **365** 7632 SF - 20.00 6280 SF 378 √⊗ 6000 SF 60.00 1379 15 6000 SF 374 6050 SF R=15.00 590 380 R=179.00 L=17.91 373 6303 SF 200 60.00 372 SN R=279.00 6000 SF L=16.09 381 6395 SF **454** 6737 SF 23.411 12 371 6000 SiF 26.34 366 9320 SF 3 \_\_R=15.00 L=23.35 10! 370 6000 SF RIDGED LASSO LANE AT9 53.95 R=1594.00 453 6674 SF **369** 6000 SF 212 \_R=321.00 L=18.51 150 - C20 - C20 - C20 **368** 6191 SF 60.00 452 6879 SF 367 8290 SF R=221.00 60.00 12 412 6021 SF 413 5983 SF L=14.77 1/25 11 123 R=15.00 L=23.35 ~10! 414 18 6000 SF 451 6672 SF 415 18 6000 SF 15,23 .23 .23 .23 16 15 6000 SF 124 √S 6147 SF 450 6733 SF - 34.15 417 √8 6000 SF \ **423** \\$ 6014 SF R=15.00 R=179.00 159.81.23 122 18 6000 SF L=23.35 **449** 7433 SF \ 421 \S 6000 SF 18 60.00 -R=1583. **418** 7801 SF 1P 4.95 420 3 6000 SF 60.00 TITE 10150 **419** 11223 SF **448** 7280 SF 64.04 R=15.00 60.00 12239 154.12 L=23.37 62.54 440 R=59.00 - -447 R=101.00\_ 7694 SF L=18.35 8571 SF VT 71.00 -60.00 441 √5 6600 SF RE 442 √5 6600 SF 55.43 15 6600 SF 444 7704 SF **446** 11382 SF COMMON AREA G 445 11007 SF













UTILITY PLAN BUILDING RELATIONSHIPS ONE PROJECT AT A TIME 1361 Corporate Blvd Reno, NV 89502





# NORTH VALLEYS INVESTMENT **GROUP LLC**

# LEGEND:

100 YEAR FLOOD LIMIT LINE

- 1. CUT AREAS: VOLUME REPLACEMENT AREA, CHANNELS AND A
- PORTION OF STREET J 2. FILL AREAS: REMAINDER OF THE SITE
- 3. DISTURBED AREAS: APPROXIMATELY 225 ACRES WILL BE DISTURBED 4. APPROXIMATE CUT AND FILL
- APPROXIMATE CUT: 35,000 CY ON-SITE, 246,000 CY FROM VOLUME REPLACEMENT AREA APPROXIMATE FILL: 1,070,000 CY
  - EXPORT NEEDED: NONE IMPORT NEEDED: 789,000 CY
- 5. ALL AREAS DISTURBED AND LEFT UNDEVELOPED FOR A PERIOD OF MORE THAN THIRTY (30) DAYS SHALL BE STABILIZED BY THE APPLICATION OF DUST PALLIATIVE
- 6. IF IT IS DETERMINED THAT RAISING THE ELEVATION OF ANY PORTION OF LEMMON DRIVE DIRECTLY ADJACENT TO THE PROPOSED PROJECT IS NECESSARY, THEN LANSING-ARCUS WILL WORK WITH WASHOE COUNTY TO DETERMINE A MUTUALLY AGREEABLE ELEVATION TO SATISFY ANY POTENTIAL REQUIREMENTS SET FORTH BY THE ENGINEERING AND CAPITAL PROJECTS DIVISION.
- 7. GRADING OF THE SITE IS UNABLE TO GENERATE THE NECESSARY CUT REQUIRED TO OFFSET FILL REQUIREMENTS. THEREFORE, THE SITE WILL REQUIRE IMPORTATION OF THE REQUIRED EXCESS FILL FROM OTHER PROPERTIES OWNED/CONTROLLED BY THE DEVELOPER TO COMPLETE ONSITE GRADING.







# LEGEND:

100 YEAR FLOOD LIMIT LINE

TENTATIVE MAP

GRADING PLAN

- 1. CUT AREAS: VOLUME REPLACEMENT AREA, CHANNELS AND A PORTION OF STREET J
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FG=29.2

# LEGEND:

100 YEAR FLOOD LIMIT LINE

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2' MAX HEIGHT RETAINING WALL

PROJECT BOUNDARY (TYP)

458

LIMITS OF GRADING

(TYP.)

## LEGEND:

100 YEAR FLOOD LIMIT LINE

# NORTH VALLEYS INVESTMENT **GROUP LLC**

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4925

# LEGEND:

100 YEAR FLOOD LIMIT LINE

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# PRADO RANCH NORTH TENTATIVE MAP PRELIMINARY CROSS SECTIONS







1361 Corporate Blvd Reno, NV 89502

SHEET



<u>≯8</u>





≥ 88

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CS-10F19

PRELIMINARY CROSS SECTIONS PRADO RANCH NORTH





# LANDSCAPE LEGEND/REQUIREMENTS



REQUIRED YARDS ADJOINING STREETS - ALL REQUIRED FRONT, REAR, AND SIDE YARDS WHICH ADJOIN A PUBLIC STREET SHALL BE LANDSCAPED AND SHALL INCLUDE AT LEAST ONE (1) TREE FOR EVERY FIFTY (50) LINEAR FEET OF STREET FRONTAGE, OR FRACTION THEREOF.



SUBDIVISION PERIMETERS - NEW RESIDENTIAL SUBDIVISION, REGARDLESS OF THE NUMBER OF DWELLING UNITS PER PARCEL, SHALL PROVIDE AT LEAST ONE (1) TREE FOR EVERY FIFTY (50) LINEAR FEET OF PERIMETER FRONTAGE ADJOINING AN ARTERIAL OR COLLECTOR IDENTIFIED IN THE WASHOE COUNTY COMPREHENSIVE PLAN STREETS AND HIGHWAYS SYSTEM PLAN MAP.

COMMON AREA LANDSCAPE

NOTE: THE COMPOSITION OF TREES SHALL REPRESENT A MIXTURE OF DECIDUOUS AND CONIFEROUS VARIETIES AS FOLLOWS:

- AT LEAST ONE-HALF (1/2) OF ALL EVERGREEN TREES SHALL BE AT LEAST SEVEN (7) FEET IN HEIGHT, AND THE REMAINDER MUST BE AT LEAST FIVE (5) FEET IN HEIGHT AT THE TIME OF PLANTING.
- AT LEAST ONE-HALF (1/2) OF THE REQUIRED NUMBER OF DECIDUOUS TREES SHALL BE AT LEAST TWO (2) INCH CALIPER PER AMERICAN NURSERY STANDARDS AT THE TIME OF PLANTING. THE REMAINING NUMBER OF REQUIRED DECIDUOUS TREES SHALL BE AT LEAST ONE (1) INCH CALIPER AT THE TIME OF PLANTING.
- ALL PLANTING AND IRRIGATION SHALL BE INSTALLED PER LOCAL GOVERNING CODES.
- FINAL PLANT SELECTION AND LAYOUT WILL BE BASED ON SOUND HORTICULTURAL PRACTICES RELATING TO MICRO-CLIMATE, SOIL, AND WATER REGIMES. ALL TREES WILL BE STAKED SO AS TO REMAIN UPRIGHT AND PLUMB FOLLOWING INSTALLATION. PLANT SIZE AND QUALITY AT TIME OF PLANTING WILL BE PER CURRENT EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1).
- ALL PLANTER BEDS WILL RECEIVE 3" MINIMUM DEPTH OF MULCH WITH WEED CONTROL.
- ALL LANDSCAPING WILL BE AUTOMATICALLY IRRIGATED UNLESS NOTED OTHERWISE ON THE PLAN. CONTAINER PLANTINGS WILL BE DRIP IRRIGATED. A REDUCED-PRESSURE-TYPE BACKFLOW PREVENTER WILL BE PROVIDED ON THE IRRIGATION SYSTEM AS REQUIRED PER CODE.