Planning Commission Staff Report

Meeting Date: May 1, 2018 **Agenda Item: 8C**

TENTATIVE SUBDIVISION MAP CASE NUMBER: WTM18-004 (Lemmon Drive Estates)

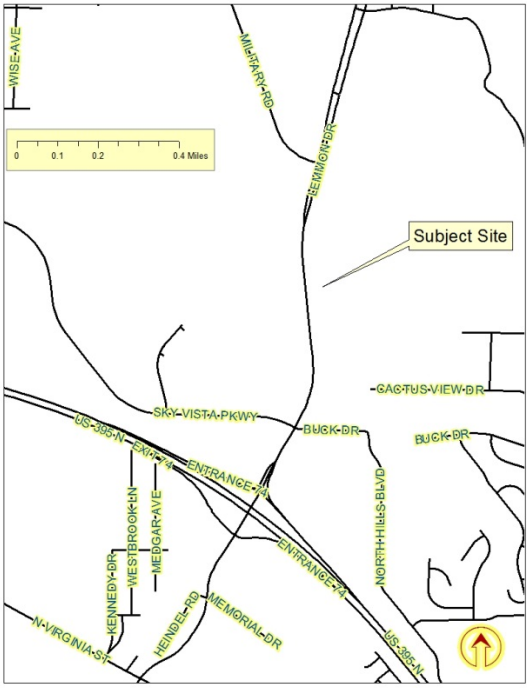
BRIEF SUMMARY OF REQUEST: 98-lot single-family residential, common open space subdivision.

STAFF PLANNER:	Planner's Name:	Roger Pelham, MPA, Senior Planner
	Phone Number:	775.328.3622
	E-mail:	rpelham@washoecounty.us

CASE DESCRIPTION

For possible action, hearing, and discussion to approve a tentative subdivision map for a 98-lot single-family residential, common open space subdivision. Lot sizes are proposed to range from a minimum size of 5,218 square feet (± .12 acres) to a maximum size of 10,811 square feet (± .25 acres) with an average size of 6,011 square feet (± .14 acres). Front yard setbacks are proposed to be reduced from a minimum of from 20 feet to a minimum of 10 feet adjacent to a public street or common driveway, and maintain 20 feet in front of each garage. Rear yard setbacks are proposed to be reduced from a minimum of 20 feet to a minimum of 10 feet. Side yard setbacks are proposed to be reduced from a minimum of 8 feet to a minimum of 5 feet. Required lot widths are proposed to be reduced from a minimum of 80 feet to a minimum of 75 feet.

Applicant:	Lakes at Lemmon Valley, LLC
Property Owner:	Lakes at Lemmon Valley, LLC
Location:	On the east side of Lemmon Drive, approximately 700 feet south of its intersection with Military Road
APN:	552-210-18
Parcel Size:	± 33.97 acres
Master Plan Category:	Suburban Residential (SR)
Regulatory Zone:	Medium Density Suburban (MDS, 3 dwellings per acre)
Area Plan:	North Valleys
Citizen Advisory Board:	North Valleys
Development Code:	Authorized in: Article 608, Tentative Subdivision Maps; Article 408, Common Open Space Development and Article 424, Hillside Development
Commission District:	5 – Commissioner Herman
Section/Township/Range:	Section 09, T20N, R19E, MDM, Washoe County, NV



STAFF RECOMMENDATION

APPROVE **APPROVE WITH CONDITIONS** **DENY**

POSSIBLE MOTION

I move that after giving reasoned consideration to the information contained in the staff report and information received during the public hearing, the Washoe County Planning Commission approve Tentative Subdivision Map Case Number WTM18-004 for Lakes at Lemmon Valley, LLC, having made all ten findings in accordance with Washoe County Development Code Section 110.608.25

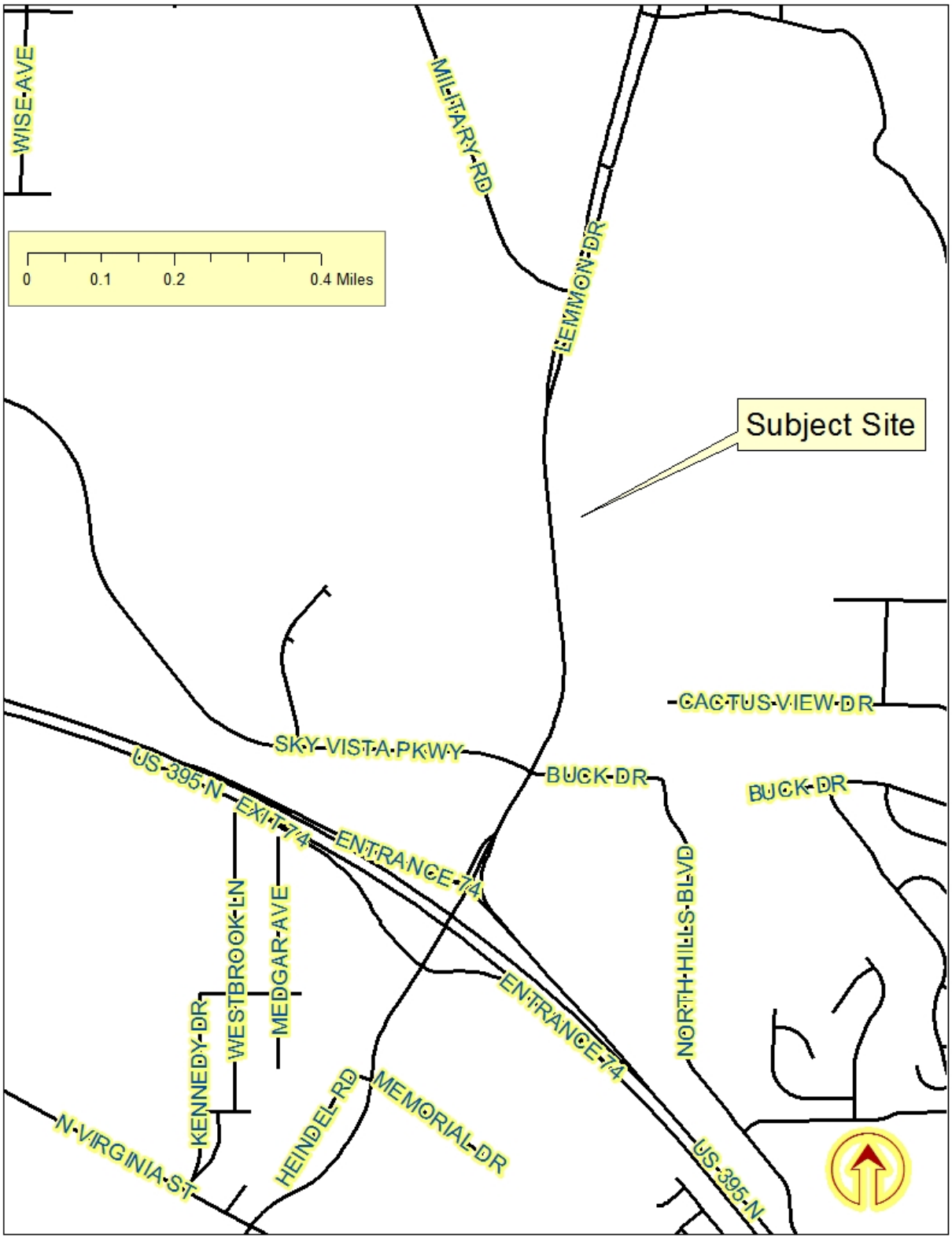
(Motion with Findings on Page 14)

Staff Report Contents

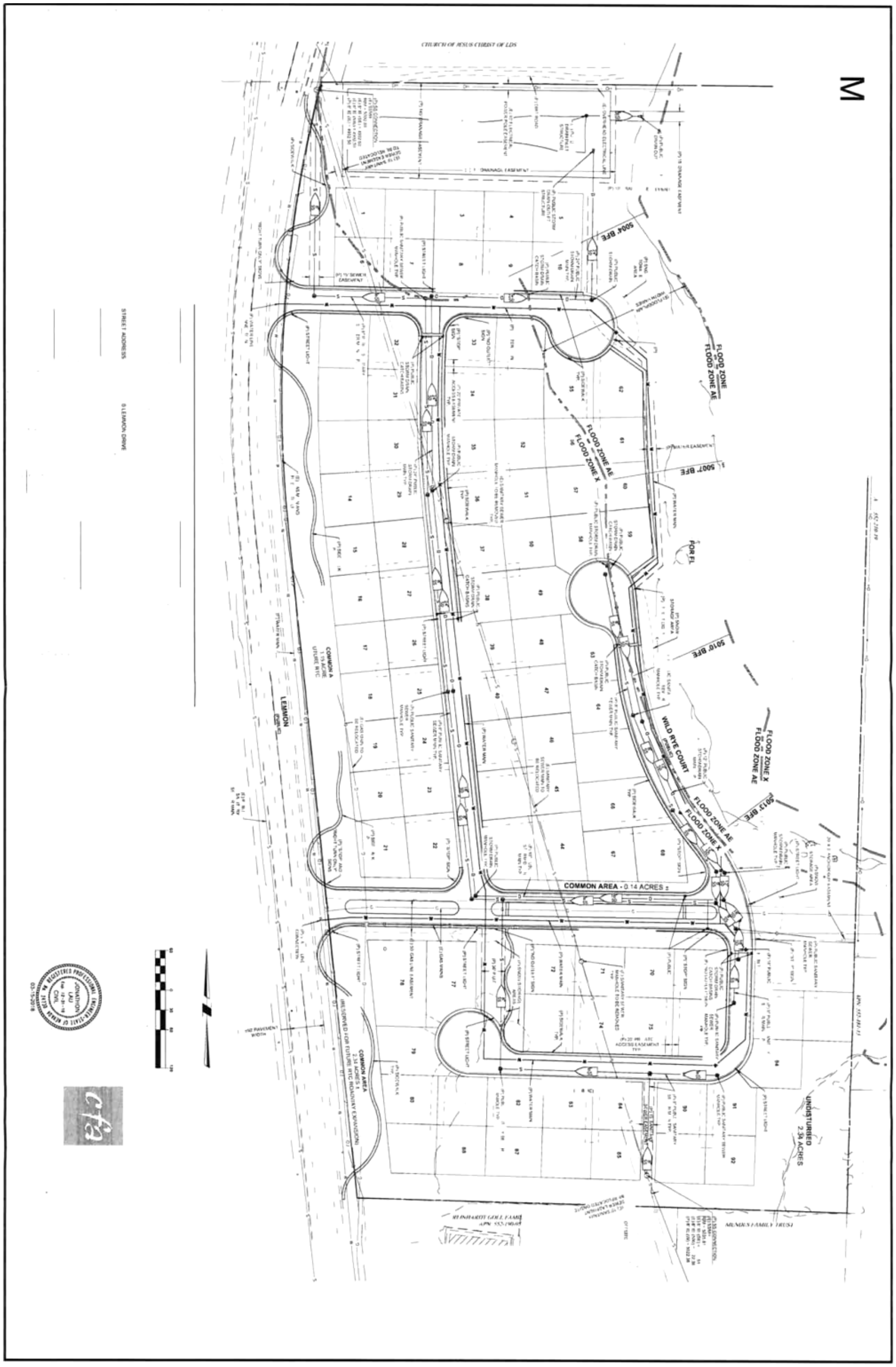
Exhibits Contents

Please note: The technical reports submitted with the project application are very lengthy. To review the complete project application with the technical reports, contact the planning Division for a paper or email copy or go the following web link to view those reports under WTM18-004.

https://www.washoecounty.us/csd/planning_and_development/applications/current-applications.php



Vicinity Map


CHURCH OF JESUS CHRIST OF LDS
FLOOD ZONE X
FLOOD ZONE AE
WILD RYE COURT
COMMON AREA - 0.14 ACRES ±
UNDISTURBED
2.38 ACRES
LEMMON DRIVE
cfa

Site Plan

Tentative Subdivision Map Explanation

The purpose of a Tentative Subdivision Map is:

- To allow the creation of saleable lots;
- To implement the Washoe County Master Plan, including the Area Plans, and any specific plans adopted by the County;
- To establish reasonable standards of design and reasonable procedures for subdivision and re-subdivision in order to further the orderly layout and use of land and insure proper legal descriptions and monumenting of subdivided land; and;
- To safeguard the public health, safety and general welfare by establishing minimum standards of design and development for any subdivision platted in the unincorporated area of Washoe County.

If the Planning Commission grants an approval of the Tentative Subdivision Map, that approval is subject to Conditions of Approval. Conditions of Approval are requirements that need to be completed during different stages of the proposed project. Those stages are typically:

- Prior to recordation of a final map.
- Prior to obtaining a final inspection and/or a certificate of occupancy on a structure.
- Prior to the issuance of a business license or other permits/licenses.
- Some Conditions of Approval are referred to as "Operational Conditions." These conditions must be continually complied with for the life of the project.

The Conditions of Approval for Tentative Subdivision Map Case Number WTM18-004 are attached to this staff report and will be included with the Action Order, if the Tentative Subdivision Map is approved by the Washoe County Planning Commission.

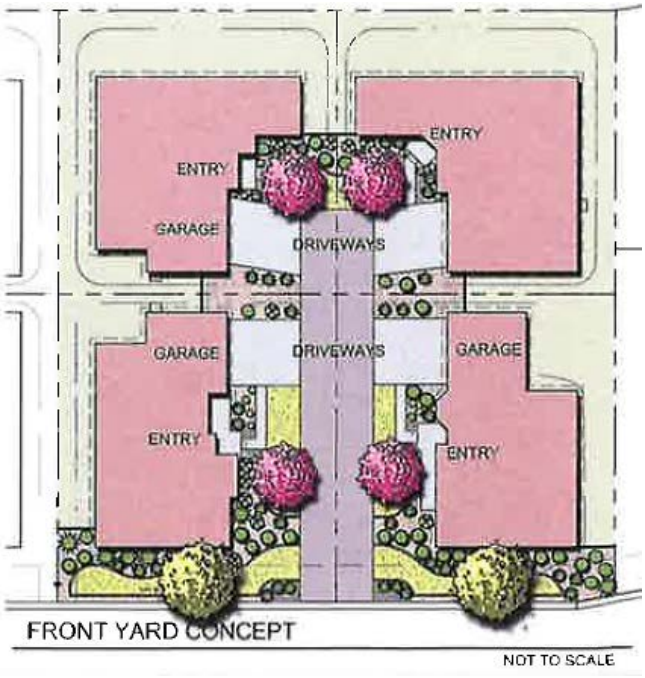
The subject property has a regulatory zone of Medium Density Suburban (MDS). The total number of residences allowed, based upon the existing zoning is 101. The applicant is requesting to create 98 residential lots. This is permissible based upon the approval of a Tentative Subdivision Map by Washoe County and compliance with all generally applicable provisions of the Development Code.

Article 408, Common Open Space Development, allows general development standards to be varied with the approval of a tentative subdivision map. In this case, front yard setbacks are proposed to be reduced from a minimum of from 20 feet to a minimum of 10 feet adjacent to a public street or common driveway, and maintain 20 feet in front of each garage. Rear yard setbacks are proposed are proposed to be reduced from a minimum of 20 feet to a minimum of 10 feet. Side yard setbacks are proposed to be reduced from a minimum of 8 feet to a minimum of 5 feet. Required lot widths are proposed to be reduced from a minimum of 80 feet to a minimum of 75 feet.

Project Evaluation

The applicant has requested approval of a Tentative Subdivision Map to create a 98-lot single-family residential, common open space subdivision. Lot sizes are proposed to range from a minimum size of 5,218 square feet (± .12 acres) to a maximum size of 10,811 square feet (± .25 acres) with an average size of 6,011 square feet (± .14 acres). Most of the homes are proposed to be designed in four-pack clusters that share one common driveway. However, it is anticipated

that there will be two-pack, three-pack and single access home designs as well. The project area includes approximately 33.97 acres of area that has a regulatory zone of Medium Density Suburban (MDS) which allows three dwellings to the acre. Approximately 12 acres of the site will be used as common open space and will include steep slopes and drainage improvements. The common areas and drainage improvements are proposed to be maintained by a Home Owners Association (HOA) that will be established by the developer.



The proposed configuration of the subdivision seeks to create minimal disturbance of steep slopes. Because more than 20 percent of the site includes slopes that are 15 percent or greater this proposed subdivision is subject to Hillside Development standards as required by Article 424 of the Washoe County Development Code.

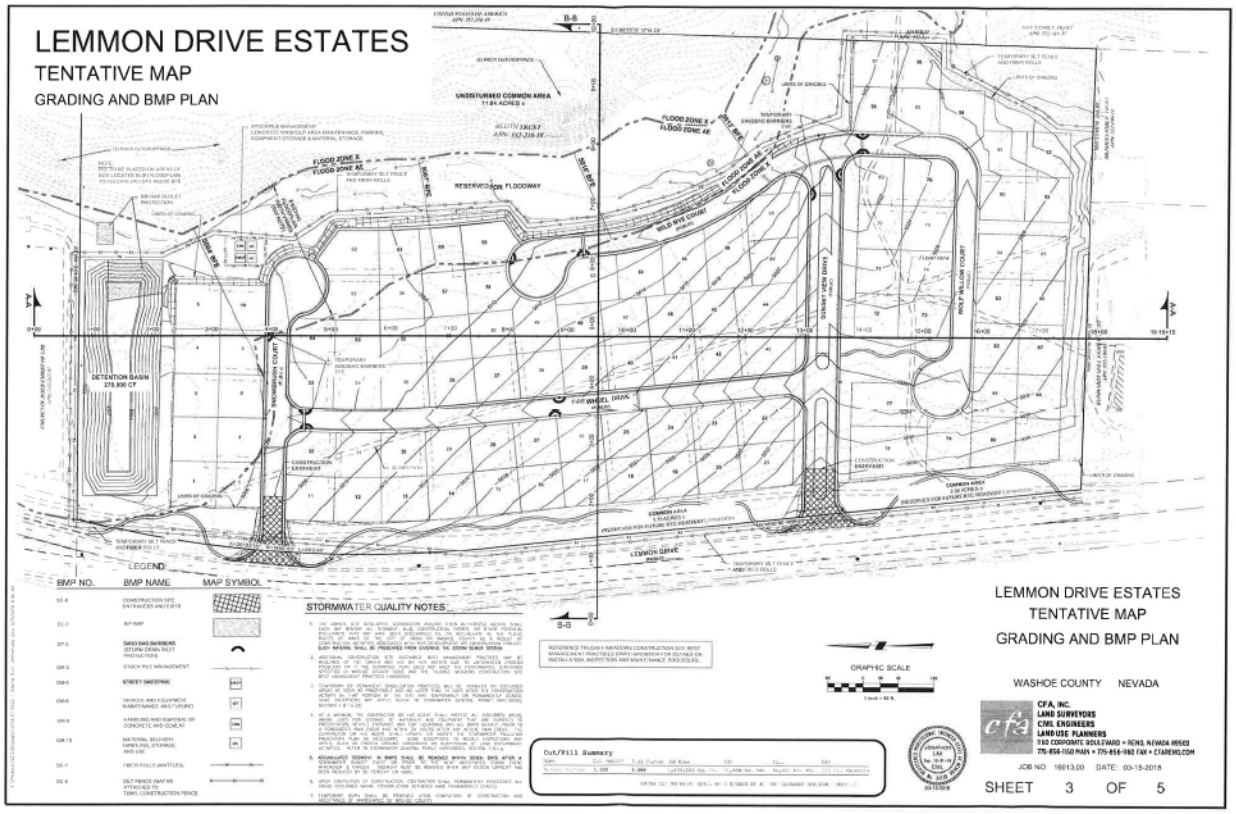
Among the requirements of Article 424 is the requirement for a site analysis, map of the developable area of the project site and a slope map. Those maps and analysis are included with the application materials (see Exhibit G to this report). The analysis indicates that development is proposed to take place on the suitable areas and is proposed to leave most of the steep hillsides in a native condition.

Additionally, Article 424 requires that any portion of a hillside development which has been deemed unsuitable for development must be designated as permanent open space and the uses shall be limited to paths, trails, outdoor recreation, utilities and drainage improvements. The land is also required to be offered for dedication. However, it is unlikely that the County will accept the dedication at this time. The proposed subdivision application materials comply with these requirements.

Article 424 also requires standards for the locations of dwellings, including clustering, placing dwellings on the natural slope and preserving the hillside. Likewise, there are standards for parking, building envelopes, fences, preservation of natural features, open space and trail easements, grading must mimic the natural contour of the land and all areas are required to be revegetated. The proposed subdivision application materials, along with the proposed conditions of approval (see Exhibit A to this report) will ensure that the development complies with these requirements. In keeping with Article 424, the subdivision has been designed to maximize the preservation of the steeper slopes while clustering the development on the more gently sloped portion of the property. The design of the proposed subdivision also complies with the generally applicable standards for fire protection and for street design.

The proposed configuration of the subdivision also seeks to create common open space. For this reason the project is subject to Common Open Space Development standards as required by Article 408 of the Washoe County Development Code. As previously stated, among the provisions of Article 408 is the requirement for a site analysis and map of the developable area of the project site. The proposed subdivision application materials comply with these requirements and the proposed configuration of the subdivision seeks to create minimal disturbance of steep slopes, and to maintain the existing drainage way. Conditions of approval are required by Article 408 to provide for on-going maintenance of the common open space area by the HOA. These conditions have been included in the recommended conditions of approval (see Exhibit A to this report).

Article 438, Grading, includes many standards regarding the proposed changes to the landform that are applicable to this project. The proposed subdivision application materials show general compliance with the applicable standards. The application materials also indicate that all proposed slopes are 3 horizontal to 1 vertical (3H:1V) or flatter, which is compliant with the provisions of Article 438. The total amount of grading is proposed to be approximately 41,500 cubic yards, and is proposed to balance on site to a large extent. About 500 cubic yards of earthen material may be exported to an approved location. Because the grading plans for the project have been submitted and reviewed as part of the tentative subdivision map application, a separate Special Use Permit for grading is not required.



Article 420, Storm Drainage Standards, provides standards for managing storm-water on projects like the proposed tentative subdivision map. The County Engineer is primarily responsible for ensuring compliance with these standards. The Lemmon Valley area has experienced substantial flooding within the last year. The proposed subdivision application materials indicate that any additional runoff created by the new development, will be captured in a detention basin on the subject site. At the North Valleys Citizen Advisory Board the Applicant's representative indicated that the proposed detention basin is twice the minimum size required. The application materials indicate that the necessary volume of retention for a 100-year, 10-day storm event is 113,347 cubic feet of water. The proposed basin will hold 270,000 cubic feet of water. The plans for this subdivision have been reviewed by the County Engineer who has recommended approval, subject to conditions of approval to ensure that storm-water runoff is appropriately mitigated. Storm-water runoff will continue to flow across the site after development, as it does in the pre-development condition, however, the increased run off volume of 113,347 cubic feet of water will be retained, along with an additional 156,653 cubic feet of water. For this reason staff is of the opinion that the requirements of Article 420 have been appropriately addressed.

Article 422, Water and Sewer Resource Requirements, provides standards for provision of water and sewer to new subdivisions. The County Engineer is primarily responsible for ensuring compliance with sewer requirements. The County Engineer has reviewed the plans for tis development and has recommended approval with conditions. Those conditions of approval have been included in the recommendation attached to this report. Effluent treatment may take place at the Lemmon Valley or Stead treatment plant, infrastructure improvements will be necessary and the conditions of approval have been crafted to ensure capacity is available. The proposed subdivision application materials indicate that the necessary services are available and will be extended to serve the new dwellings. Water will be provided by the Truckee Meadows Water Authority (TMWA) to the new dwellings. Again, service will be

extended to the new dwellings and all applicable provisions requiring dedication of water rights will be required to be complied with, prior to approval of new dwellings.

The proposed configuration of the lots and grading of the land within the subdivision is also subject to the requirements of the North Valleys Area Plan. Among the applicable provisions are requirements for the grading to: minimize disruption to natural topography; utilize natural contours and slopes; complement the natural characteristics of the landscape; and preserve existing vegetation and ground coverage to minimize erosion and minimize cuts and fills. The proposed subdivision application materials show general compliance with these requirements.

The North Valleys Area Plan includes several design features that are required to be included in subdivisions in the "Lemmon Valley Suburban Character Management Area." These policies require that the applicant shall: provide for perimeter parcel sizes that match the existing residential parcels; limit all dwellings to a single story located on the perimeter when adjacent to or across a street from existing residential development; vary setbacks and driveway design; construct no more than 25% of the total residential units in the same architectural elevation; limit the use of block, concrete, or similar material to posts, pillars and similar uses for fence construction; minimize the use of street lighting; establish landscape designs that emphasize the use of native vegetation, with non-native and atypical vegetation integrated sparingly into any landscaped area. These provisions have been included in the recommended conditions of approval (see Exhibit A to this report). One tree in the front yard of each dwelling and additional street trees are required and homebuilders must offer at least two separate xeriscape options. Appropriate recommended conditions of approval have been included. These standards are also included in the CC&Rs (Conditions, Covenants and Restrictions) for this development.

The proposed subdivision is adjacent to Silver State Kennels on the southern property line. The kennel has been in operation for approximately 45 years. The owners of the kennel have expressed concern regarding complaints from residents that may be adjacent to the kennel regarding noise from barking dogs. The owners of the kennel have spoken with the Applicant's representative and both indicated a willingness to work together to achieve mitigation of that concern. Conditions of approval have been included to require the applicant to construct a berm and sound wall along the southern property line as well as include sound-attenuating features in homes adjacent to that property line. Disclosures to all future home-buyers are also required. Staff believes that the concerns will have been appropriately mitigated with the conditions of approval as recommended.

Fire services will be provided by the Truckee Meadows Fire Protection District (TMFPD). The nearest fire station is located on Silver Lake Boulevard approximately two miles from the development site. Fire hydrants will be required to meet minimum location and fire flow requirements. TMFPD will review proposed landscaping and fencing materials pursuant to Fire Codes. Any developments on the property shall meet the requirements of Washoe County Code Chapter 60.

The subdivision request conforms to all generally and specifically applicable provisions of the Development Code, Master Plan and Area Plan. For this reason staff recommends approval of the subdivision, with the conditions of approval included as Exhibit A.

North Valleys Citizen Advisory Board (NVCAB)

The proposed project was presented by the applicant's representative, David Snelgrove, at the regularly scheduled North Valleys Citizen Advisory Board meeting on April 9, 2018. The attached CAB minutes (Exhibit B) reflect the discussion by the CAB and public present at that

meeting, in opposition to approval of the project based upon storm water run-off and impacts to roads, sewer capacity and traffic flow.

It was generally expressed that additional development should not be allowed until the impacts associated with flooding in the Lemmon Valley Areas have been addressed.

The CAB took action to not recommend approval of the project with a vote of five in favor and none opposed.

Reviewing Agencies

Those agencies that provided substantive comments and conditions include:

- Washoe County Planning and Building Division addressed construction hours, buffering and compliance with grading and Development Code provisions.

Contact: Roger Pelham, 775.328.3622, rpelham@washoecounty.us

- Washoe County Public Works and Engineering Division addressed drainage, street connections, standards for sewer and water connections, as well as general standards and conditions for tentative subdivision maps.

Contacts: Clara Lawson, PE, PTOE, Licensed Engineer, 775.328.3603 and Leo R. Vesely, PE, CFM, 775.328.2313 and Timothy Simpson, P.E., 775.954.4648

- Truckee Meadows Fire Protection District noted that compliance with the 2012 International Fire Code, Chapter 60 of the Washoe County Code, the 2010 WUI code and all applicable NFPA codes is required.

Contact: Lisa Beaver, 775.326.6000

- Nevada Department of Environmental Protection provided comments indicating that the project will be served by Washoe County sewer services and that an intent-to-serve letter is required prior to final map review.

Contact: Patrick Mohn, 775.687.9419, pmohn@ndep.nv.gov

- Washoe County Planning and Building Division (Water Rights) noted that the proposed project does not have water rights at this time and must acquire them and that the project must be annexed into the service territory for the Truckee Meadows Water Authority.

Contact: Vahid Behmaram, 775.328.3600, vbehmaram@washoecounty.us

Staff Comment on Required Findings

Washoe County Code Section 110.608.25 of Article 608, *Tentative Subdivision Maps*, requires that all of the following findings be made to the satisfaction of the Washoe County Planning Commission before granting approval of the abandonment request. Staff has completed an analysis of the application and has determined that the proposal is in compliance with the required findings as follows.

1) Plan Consistency. That the proposed map is consistent with the Master Plan and any specific plan.

Staff Comment: The proposed map is consistent with all goals and policies of the Master Plan including the residential density and lot design required by the Master Plan and the North Valley Area Plan. There are no specific plans associated with this property.

2) Design or Improvement. That the design or improvement of the proposed subdivision is consistent with the Master Plan and any specific plan.

Staff Comment: As detailed in this report all applicable design features that are required to be included in subdivisions in the "Lemmon Valley Suburban Character Management Area" have been included in the application submittal.

3) Type of Development. That the site is physically suited for the type of development proposed.

Staff Comment: The number of dwellings and configuration of the proposed subdivision is consistent with the requirements of the master plan; impacts associated with the proposed subdivision will be appropriately mitigated, based upon the imposition of appropriate conditions of approval as included at Exhibit A to this report. For this reason it is the opinion of staff that the site is physically suited for the type of development proposed.

4) Availability of Services. That the subdivision will meet the requirements of Article 702, Adequate Public Facilities Management System.

Staff Comment: The proposed subdivision will meet the requirements of Article 702, Adequate Public Facilities Management System, as sanitary sewer service will be provided to all new dwellings and there is sufficient capacity in the sewage system to accommodate the sewage created.

5) Fish or Wildlife. That neither the design of the subdivision nor any proposed improvements is likely to cause substantial environmental damage, or substantial and avoidable injury to any endangered plant, wildlife or their habitat.

Staff Comment: Neither the design of the proposed subdivision nor any proposed improvements is likely to cause substantial environmental damage, or substantial and avoidable injury to any endangered plant, wildlife or their habitat, because the proposed subdivision is located adjacent to existing development of a similar pattern and sufficient open space is being preserved within and around the development.

6) Public Health. That the design of the subdivision or type of improvement is not likely to cause significant public health problems.

Staff Comment: Community water service and community sewer service will be provided to all proposed dwellings. The proposed subdivision application was provided to the Washoe County Health District, and no recommendations for denial were received. Therefore staff has determined that the design of the subdivision or type of improvement is not likely to cause significant public health problems.

7) Easements. That the design of the subdivision or the type of improvements will not conflict with easements acquired by the public at large for access through, or use of property within, the proposed subdivision.

Staff Comment: Walking trails and emergency access have been included in the proposed subdivision application materials. Therefore staff has determined that the design of the subdivision or the type of improvements will not conflict with easements

acquired by the public at large for access through, or use of property within, the proposed subdivision.

8) Access. That the design of the subdivision provides any necessary access to surrounding, adjacent lands and provides appropriate secondary access for emergency vehicles.

Staff Comment: Walking trails, emergency access and public roadways have been included in the proposed subdivision application materials. Therefore staff has determined that the design of the subdivision provides any necessary access to surrounding, adjacent lands and provides appropriate secondary access for emergency vehicles.

9) Dedications. That any land or improvements to be dedicated to the County is consistent with the Master Plan.

Staff Comment: The open space associated with this proposed subdivision will remain in the ownership of the proposed Home Owners Association (HOA). Infrastructure improvements built to County standards may be accepted by the appropriate agencies. For this reason staff has determined that any land or improvements to be dedicated to the County is consistent with the Master Plan.

10) Energy. That the design of the subdivision provides, to the extent feasible, for future passive or natural heating or cooling opportunities in the subdivision.

Staff Comment: To the extent feasible, the design of the subdivision provides for future passive or natural heating or cooling opportunities.

Recommendation

Those agencies which reviewed the application recommended conditions in support of approval of the project. Therefore, after a thorough analysis and review, Tentative Subdivision Map Case Number WTM18-004 is being recommended for approval with conditions. Staff offers the following motion for the Board's consideration.

Motion

I move that, after giving reasoned consideration to the information contained in the staff report and information received during the public hearing, the Washoe County Planning Commission approve Tentative Subdivision Map Case Number WTM18-004 for Lakes at Lemmon Valley, LLC, having made all ten findings in accordance with Washoe County Code Section 110.608.25:

1) Plan Consistency. That the proposed map is consistent with the Master Plan and any specific plan;

2) Design or Improvement. That the design or improvement of the proposed subdivision is consistent with the Master Plan and any specific plan;

3) Type of Development. That the site is physically suited for the type of development proposed;

4) Availability of Services. That the subdivision will meet the requirements of Article 702, Adequate Public Facilities Management System;

5) Fish or Wildlife. That neither the design of the subdivision nor any proposed improvements is likely to cause substantial environmental damage, or substantial and avoidable injury to any endangered plant, wildlife or their habitat;

6) Public Health. That the design of the subdivision or type of improvement is not likely to cause significant public health problems;

7) Easements. That the design of the subdivision or the type of improvements will not conflict with easements acquired by the public at large for access through, or use of property within, the proposed subdivision;

8) Access. That the design of the subdivision provides any necessary access to surrounding, adjacent lands and provides appropriate secondary access for emergency vehicles;

9) Dedications. That any land or improvements to be dedicated to the County is consistent with the Master Plan; and

10) Energy. That the design of the subdivision provides, to the extent feasible, for future passive or natural heating or cooling opportunities in the subdivision.

Appeal Process

Planning Commission action will be effective 10 calendar days after the written decision is filed with the Secretary to the Planning Commission, unless the action is appealed to the Washoe County Board of County Commissioners, in which case the outcome of the appeal shall be determined by the Washoe County Board of County Commissioners. Any appeal must be filed in writing with the Planning and Building Division within 10 calendar days from the date the written decision is filed with the Secretary to the Planning Commission and mailed to the applicant.

xc: Applicant: Lakes at Lemmon Valley, LLC, Attn: Chuck Bluth, 4655 Longley Lane, Reno, NV 89502

Property Owner: Lakes at Lemmon Valley, LLC, Attn: Chuck Bluth, 4655 Longley Lane, Reno, NV 89502

Representatives: CFA, Inc., Attn: Dave Snelgrove, 1150 Corporate Boulevard, Reno, NV 89502

Exhibit A
Conditions of Approval

Tentative Subdivision Map Case Number WTM18-004

The project approved under Tentative Subdivision Map Case Number WTM18-004 shall be carried out in accordance with the Conditions of Approval granted by the Planning Commission on May 1, 2018. Conditions of Approval are requirements placed on a permit or development by each reviewing agency. These Conditions of Approval may require submittal of documents, applications, fees, inspections, amendments to plans, and more. These conditions do not relieve the applicant of the obligation to obtain any other approvals and licenses from relevant authorities required under any other act.

Unless otherwise specified, all conditions related to the approval of this Tentative Subdivision Map shall be met or financial assurance must be provided to satisfy the conditions of approval prior to issuance of a grading or building permit. The agency responsible for determining compliance with a specific condition shall determine whether the condition must be fully completed or whether the applicant shall be offered the option of providing financial assurance. All agreements, easements, or other documentation required by these conditions shall have a copy filed with the County Engineer and the Planning and Building Division.

Compliance with the conditions of approval related to this Tentative Subdivision Map is the responsibility of the applicant, his/her successor in interest, and all owners, assignees, and occupants of the property and their successors in interest. Failure to comply with any of the conditions imposed in the approval of the Tentative Subdivision Map may result in the institution of revocation procedures.

Washoe County reserves the right to review and revise the conditions of approval related to this Tentative Subdivision Map should it be determined that a subsequent license or permit issued by Washoe County violates the intent of this approval.

For the purpose of conditions imposed by Washoe County, "may" is permissive and "shall" or "must" is mandatory.

Conditions of Approval are usually complied with at different stages of the proposed project. Those stages are typically:

- Prior to recordation of a final map.
- Prior to obtaining a final inspection and/or a certificate of occupancy.
- Prior to the issuance of a business license or other permits/licenses.
- Some "Conditions of Approval" are referred to as "Operational Conditions." These conditions must be continually complied with for the life of the project.

The Washoe County Commission oversees many of the reviewing agencies/departments with the exception of the following agencies:

- **The DISTRICT BOARD OF HEALTH, through the Washoe County Health District, has jurisdiction over all public health matters in the Health District.**

Any conditions set by the Health District must be appealed to the District Board of Health.

STANDARD CONSIDERATIONS FOR SUBDIVISIONS
Nevada Revised Statutes 278.349

Pursuant to NRS 278.349, when contemplating action on a tentative subdivision map, the governing body, or the planning commission if it is authorized to take final action on a tentative map, shall consider:

(a) Environmental and health laws and regulations concerning water and air pollution, the disposal of solid waste, facilities to supply water, community or public sewage disposal and, where applicable, individual systems for sewage disposal;

(b) The availability of water which meets applicable health standards and is sufficient for the reasonably foreseeable needs of the subdivision;

(c) The availability and accessibility of utilities;

(d) The availability and accessibility of public services such as schools, police and fire protection, transportation, recreation and parks;

(e) Conformity with the zoning ordinances and master plan, except that if any existing zoning ordinance is inconsistent with the master plan, the zoning ordinance takes precedence;

(f) General conformity with the governing body's master plan of streets and highways;

(g) The effect of the proposed subdivision on existing public streets and the need for new streets and highways to serve the subdivision;

(h) Physical characteristics of the land such as floodplain, slope and soil;

(i) The recommendations and comments of those entities reviewing the tentative map pursuant to NRS 278.330 and 278.335; and

(j) The availability and accessibility of fire protection, including, but not limited to, the availability and accessibility of water and services for the prevention and containment of fires, including fires in wild lands.

THE FOLLOWING ARE CONDITIONS OF APPROVAL REQUIRED BY THE REVIEWING AGENCIES. EACH CONDITION MUST BE MET TO THE SATISFACTION OF THE ISSUING AGENCY.

Washoe County Planning and Building Division

1. The following conditions are requirements of the Planning and Building Division, which shall be responsible for determining compliance with these conditions.

Contact Names – Roger Pelham, 775.328.3622, rpelham@washoeocunty.us and Vahid Behmaram, (775) 328-3600, vbehmaram@washoecounty.us

a. The applicant shall demonstrate substantial conformance to the plans approved as part of this special use permit.

b. The subdivision shall specifically be in substantial conformance with the provisions of Washoe County Development Code Article 604, Design Requirements, Article 608, Tentative Subdivision Maps, Article 424 Hillside Development, Article 406, Common Open Space Development, Article 438, Grading as well as all other generally applicable provisions of Washoe County Code.

c. Final maps and final construction drawings shall comply with all applicable statutes, ordinances, rules, regulations and policies in effect at the time of submittal of the tentative map or, if requested by the developer and approved by the applicable agency, those in effect at the time of approval of the final map.

d. In accordance with NRS 278.360, the sub-divider shall present to Washoe County a final map, prepared in accordance with the tentative map, for the entire area for which a tentative map has been approved, or one of a series of final maps, each covering a portion of the approved tentative map, within four years after the date of approval of the tentative map or within one year of the date of approval for subsequent final maps. On subsequent final maps, that date may be extended by two years if the extension request is received prior to the expiration date.

e. Final maps shall be in substantial compliance with all plans and documents submitted with and made part of this tentative map request, as may be amended by action of the final approving authority.

f. All final maps shall contain the applicable portions of the following jurat:

Jurat for FIRST FINAL MAP

THE TENTATIVE MAP FOR WTM18-004 (Lemmon Drive Estates) WAS APPROVED BY THE WASHOE COUNTY PLANNING COMMISSION ON MAY 1, 2018.

THIS FINAL MAP, <subdivision name and unit/phase #>, MEETS ALL APPLICABLE STATUTES, ORDINANCES AND CODE PROVISIONS; IS IN SUBSTANTIAL CONFORMANCE WITH THE TENTATIVE MAP; AND ALL CONDITIONS HAVE BEEN MET.

[Omit the following paragraph if this is the first and last (only) final map.]

THE NEXT FINAL MAP FOR WTM18-004 (Lemmon Drive Estates) MUST BE APPROVED AND ACCEPTED FOR RECORDATION BY THE PLANNING AND BUILDING DIRECTOR ON OR BEFORE THE EXPIRATION DATE, THE _____ DAY OF _____, 20____, OR AN EXTENSION OF

TIME FOR THE TENTATIVE MAP MUST BE APPROVED BY THE WASHOE COUNTY PLANNING COMMISSION ON OR BEFORE SAID DATE.

THIS FINAL MAP IS APPROVED AND ACCEPTED FOR RECORDATION THIS ____ DAY OF _____, 20____ BY THE WASHOE COUNTY PLANNING AND BUILDING DIRECTOR. THE OFFER OF DEDICATION FOR <*streets, sewers*> IS REJECTED AT THIS TIME, BUT WILL REMAIN OPEN IN ACCORDANCE WITH NRS CHAPTER 278.

_____
MOJRA HAUENSTEIN, DIRECTOR,
PLANNING AND BUILDING DIVISION

Jurat for ALL SUBSEQUENT FINAL MAPS

THE TENTATIVE MAP for WTM18-004 (Lemmon Drive Estates) was APPROVED <*denied*> BY THE WASHOE COUNTY PLANNING COMMISSION ON <*date*>. [If the TM had been appealed to the BCC --- Add:] THE WASHOE COUNTY COMMISSION APPROVED THE TENTATIVE MAP ON APPEAL ON <*date*>.

THE FIRST FINAL MAP FOR THIS TENTATIVE MAP WAS APPROVED AND ACCEPTED FOR RECORDATION ON <*date of Planning and Building Director's signature on first final map*>. [Omit the following if second map.] THE MOST RECENTLY RECORDED FINAL MAP, <*subdivision name and prior unit/phase #*> FOR THIS TENTATIVE MAP WAS APPROVED AND ACCEPTED FOR RECORDATION ON <*date of Planning and Building Director's signature on most recent final map> [If an extension has been granted after that date – add the following]*: A TWO YEAR EXTENSION OF TIME FOR THE TENTATIVE MAP WAS APPROVED BY THE WASHOE COUNTY PLANNING COMMISSION ON <*date of last Planning Commission action to extend the tentative map*>.

THIS FINAL MAP, <subdivision name and unit/phase #>, MEETS ALL APPLICABLE STATUTES, ORDINANCES AND CODE PROVISIONS; IS IN SUBSTANTIAL CONFORMANCE WITH THE TENTATIVE MAP; AND ALL CONDITIONS HAVE BEEN MET.

[Omit the following paragraph if this is the last final map.]

THE NEXT FINAL MAP FOR WTM18-004 (Lemmon Drive Estates) MUST BE APPROVED AND ACCEPTED FOR RECORDATION BY THE PLANNING AND BUILDING

DIRECTOR ON OR BEFORE THE EXPIRATION DATE, THE _____ DAY OF _____, 20____, <*add two years to the current expiration date unless that date is more than two years away*> OR AN EXTENSION OF TIME FOR THE TENTATIVE MAP MUST BE APPROVED BY THE WASHOE COUNTY PLANNING COMMISSION ON OR BEFORE SAID DATE.

<*Insert Merger and Re-subdivision option as applicable*>

THIS FINAL MAP IS APPROVED AND ACCEPTED FOR RECORDATION THIS ____ DAY OF _____, 20____ BY THE WASHOE COUNTY PLANNING AND BUILDING DIRECTOR. THE OFFER OF DEDICATION FOR <*streets, sewers*> IS REJECTED AT THIS TIME, BUT WILL REMAIN OPEN IN ACCORDANCE WITH NRS CHAPTER 278.

_____
MOJRA HAUENSTEIN, DIRECTOR,
PLANNING AND BUILDING DIVISION

g. A note shall be placed on all grading plans and construction drawings stating:

NOTE

Should any cairn or grave of a Native American be discovered during site development, work shall temporarily be halted at the specific site and the Sheriff's Office as well as the State Historic Preservation Office of the Department of Conservation and Natural Resources shall be immediately notified per NRS 383.170.

h. The final map shall designate faults that have been active during the Holocene epoch of geological time, and the final map shall contain the following note:

NOTE

No habitable structures shall be located on a fault that has been active during the Holocene epoch of geological time.

i. The developer and all successors shall direct any potential purchaser of the site to meet with the Planning and Building Division to review conditions of approval prior to the final sale of the site. Any subsequent purchasers of the site shall notify the Planning and Building Division of the name, address, telephone number and contact person of the new purchaser within thirty (30) days of the final sale.

j. Lot standards for this development shall include: Minimum Lot Dimension: 75 feet; Front Yard Setbacks: 10 feet adjacent to a public street or common driveway, and 20 feet in front of each garage; Side Yard Setback: 5 feet; Rear Yard Setback: 10 feet. Minimum lot width shall be 75 feet.

k. Failure to comply with all conditions of approval shall render this approval null and void.

l. Grading shall comply with all applicable provisions of Article 438, of the Washoe County Development Code. Specifically, no slopes shall be greater than 10 feet in elevation. Retaining walls may be required. All retaining walls shall be stained with a permanent desert varnish product to mimic the color of the surrounding undisturbed hillside.

m. At least one tree shall be installed with irrigation on each residential lot. Trees and irrigation shall be shown on each building permit application for a dwelling.

n. Street trees shall be installed as shown in the application materials. All landscaping shall be maintained in accordance with the provisions found in Section 110.412.75, Maintenance. A three-year maintenance plan shall be submitted by a licensed landscape architect registered in the State of Nevada to the Planning and Building Division, prior to a Certificate of Occupancy. The plan shall be wet-stamped.

o. The applicant shall construct an earthen berm with a sound-attenuating wall along the southern property line of the subject site. The berm shall be at least 4 feet in height. The wall shall be at least 6 feet in height. The wall shall be of durable materials acceptable to the Director of Planning and Building. The colors shall be muted and blend with the surrounding area. The area between the sound-attenuating wall and the dwellings shall be landscaped and shall include evergreen trees.

p. Limit all dwellings to a single story located on the perimeter when adjacent to or across a street from residential development in existence as of the final adoption of this plan.

q. New residential parcels shall not front on existing streets.

r. Vary setbacks and driveway design.

s. Construct no more than 25% of the total residential units in the same architectural elevation.

t. Limit the use of block, concrete, or similar material to posts, pillars and similar uses when constructing fences and / or walls. These materials are not to be used for panel or wall sections. Plans for the maintenance of perimeter fences will be submitted with tentative map applications.

u. Minimize the use of street lighting. Any lighting proposed must show how it is consistent with current best practice “dark-sky” standards. Exterior lighting fixtures mounted on the homes or units shall be no higher than the line of the first story eave or, where no eave exists, no higher than 15 feet above finished grade. Lights shall be shielded to prevent light spillage onto adjacent properties or streets.

v. Establish landscape designs that emphasize the use of native vegetation, with non-native and atypical vegetation integrated sparingly into any landscaped area. Homebuilders must offer at least two separate xeriscape options.

w. Conditions, covenants, and restrictions (CC&Rs), including any supplemental CC&Rs, shall be submitted to Planning and Building staff for review and subsequent forwarding to the District Attorney for review and approval. The final CC&Rs shall be signed and notarized by the owner(s) and submitted to Planning and Building with the recordation fee prior to the recordation of the final map. The CC&Rs shall require all phases and units of the subdivision approved under this tentative map to be subject to the same CC&Rs. Washoe County shall be made a party to the applicable provisions of the CC&Rs to the satisfaction of the District Attorney's Office. Said CC&Rs shall specifically address the potential for liens against the properties and the individual property owners' responsibilities for the funding of maintenance, replacement, and perpetuation of the following items, at a minimum:

1. Maintenance of public access easements, common areas, and common open spaces. Provisions shall be made to monitor and maintain, for a period of three (3) years regardless of ownership, a maintenance plan for the common open space area. The maintenance plan for the common open space area shall, as a minimum, address the following:

    a. Vegetation management;

    b. Watershed management;

    c. Debris and litter removal;

    d. Fire access and suppression; and

    e. Maintenance of public access and/or maintenance of limitations to public access.

2. All drainage facilities and roadways not maintained by Washoe County shall be privately maintained and perpetually funded by the homeowners association.

3. All open space identified as common area on the final map shall be privately maintained and perpetually funded by the homeowners association. The deed to the open space and common area shall reflect perpetual dedication for that purpose. The maintenance of the common areas and related improvements shall be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.

4. The project and adjacent to undeveloped land shall maintain a fire fuel break of a minimum 30 feet in width until such time as the adjacent land is developed.

5. Locating habitable structures on potentially active (Holocene) fault lines, whether noted on the recorded map or disclosed during site preparation, is prohibited.

6. All outdoor lighting on buildings and streets within the subdivision shall be down-shielded.

7. No motorized vehicles shall be allowed on the platted common area.

8. Washoe County will not assume responsibility for maintenance of the private street system of the development nor will Washoe County accept the streets for dedication to Washoe County unless the streets meet those Washoe County standards in effect at the time of offer for dedication.

9. Mandatory solid waste collection.

10. Fence material (if any), height, and location limitations, and re-fencing standards. Replacement fence must be compatible in materials, finish and location of existing fence.

11. At least one tree shall be installed with irrigation on each residential lot. Trees and irrigation shall be shown on each building permit application for a dwelling.

12. Street trees shall be installed as shown in the application materials. All landscaping shall be maintained in accordance with the provisions found in Section 110.412.75, Maintenance. A three-year maintenance plan shall be submitted by a licensed landscape architect registered in the State of Nevada to the Planning and Building Division, prior to a Certificate of Occupancy. The plan shall be wet-stamped.

13. When adjacent to or across a street from residential development in existence as of the final adoption of this plan, provide a minimum 30-foot wide open-space buffer, containing a minimum 8-foot wide decomposed granite trail, on the perimeter AND maintain a minimum parcel size of 15,000 square feet for any parcel located on the perimeter; OR, provide for perimeter parcel sizes that match the existing residential parcels.

14. Limit all dwellings to a single story located on the perimeter when adjacent to or across a street from residential development in existence as of the final adoption of this plan.

15. Provide a statement regarding how the proposed design responds to the community input received during the tentative map review process must be made available to staff and the Planning Commission.

16. In regulatory zones LDS 1; LDS 2; MDS 3 and MDS 4, new residential parcels shall not front on existing streets.

17. Vary setbacks and driveway design.

18. Construct no more than 25% of the total residential units in the same architectural elevation.

19. Limit the use of block, concrete, or similar material to posts, pillars and similar uses. These materials are not to be used for panel or wall

sections. Plans for the maintenance of perimeter fences will be submitted with tentative map applications.

20. Minimize the use of street lighting. Any lighting proposed must show how it is consistent with current best practice "dark-sky" standards. Exterior lighting fixtures mounted on the homes or units shall be no higher than the line of the first story eave or, where no eave exists, no higher than 15 feet above finished grade. Lights shall be shielded to prevent light spillage onto adjacent properties or streets.

21. Establish landscape designs that emphasize the use of native vegetation, with non-native and atypical vegetation integrated sparingly into any landscaped area. Homebuilders must offer at least two separate xeriscape options.

22. Evergreen planting in the common area at the south end of the proposed subdivision along the length of the wall, adjacent to the existing kennel shall be maintained with an average spacing of one tree every 25 feet in staggered rows with the intention of creating a year-round landscaped screen. All trees shall be at least six feet in height at the time of planting. Permanent irrigation shall be provided to each tree. All trees shall be maintained in a healthy condition. Any dead trees shall be replaced for the life of the subdivision.

x. The common open space owned by the homeowners association shall be noted on the final map as "common open space" and the related deed of conveyance shall specifically provide for the preservation of the common open space in perpetuity. The deed to the open space and common area shall reflect perpetual dedication for that purpose. The deed shall be presented with the CC&Rs for review by Planning and Building staff and the District Attorney.

y. Construction activities shall be limited to the hours between 7AM and 6PM on Mondays, Tuesdays, Wednesdays, Thursdays, Fridays and Saturdays. Construction activities shall be limited to the hours between 8AM and 5PM on Sundays.

z. Address numbers shall be clearly marked on each dwelling and on the curb in front of each dwelling.

aa. The applicant shall attach a copy of this action order to all subsequent submittals to Washoe County, including final maps and construction permits.

bb. The developer shall include sound-attenuating windows and wall materials in all south-facing walls on parcels numbered 85 through 89 and 92 and 93. (Those parcels that are proposed to be located adjacent to the existing kennel.)

cc. The applicant shall disclose to all homebuyers that the adjacent kennel is a permitted use which has been in operation since the 1970's and that noise from barking dogs is understood and accepted by the homebuyers.

dd. The applicant shall include a note on all final maps that the adjacent kennel is a permitted use which has been in operation since the 1970's and that noise from barking dogs is understood and accepted by any homebuyer.

ee. The following note shall be included on all title documents and shall be included in all subsequent sales of all lots within the subdivision:

NOTE

The adjacent kennel (to the south of the subdivision) is a permitted use which has been in operation since the 1970's. Noise from barking dogs is understood and accepted by the homebuyers.

ff. The applicant shall construct a wall along the south property line beginning 20 feet east of the right-of-way for Lemmon Drive and extending east to a point 20 feet east of the edge of proposed parcel number 92. The wall shall be six feet in height. The wall shall be constructed of masonry or other sound-attenuating material that is acceptable to the Director of Planning and Building. The wall shall be neutral, earth-tone in color.

gg. In addition to all landscaping shown in the application, the applicant shall install evergreen trees in the common area at the south end of the proposed subdivision along the length of the wall required in condition # 1ff, above. Evergreen planting shall be provided with an average spacing of one tree every 25 feet in staggered rows with the intention of creating a year-round landscaped screen. All trees shall be at least six feet in height at the time of planting. Permanent irrigation shall be provided to each tree. All trees shall be maintained in a healthy condition. Any dead trees shall be replaced for the life of the subdivision.

Washoe County Engineering and Capital Projects

2. The following conditions are requirements of the Engineering Division, which shall be responsible for determining compliance with these conditions.

Contact Names – Clara Lawson, PE, PTOE, Licensed Engineer, 775.328.3603 and Leo R. Vesely, PE, CFM, 775.328.2313 and Timothy Simpson, P.E., 775.954.4648

a. Final maps and final construction drawings shall comply with all applicable statutes, ordinances, rules, regulations, and policies in effect at the time of submittal of the tentative map or, if requested by the developer and approved by the applicable agency, those in effect at the time of approval of the final map.

b. Prior to acceptance of public improvements and release of any financial assurances, the developer shall furnish to the water and sewer provider(s) and Engineering and Capital Projects Division a complete set of reproducible as-built construction drawings in an approved digital format, prepared by a civil engineer registered in the State of Nevada.

c. The developer shall be required to participate in any applicable General Improvement District or Special Assessment District formed by Washoe County.

The applicable County Department shall be responsible for determining compliance with this condition.

d. The developer shall provide written approval from the U.S. Postal Service concerning the installation and type of mail delivery facilities. The system, other than individual mailboxes, must be shown on the project construction plans and installed as part of the onsite improvements.

e. A complete set of construction improvement drawings, including an onsite grading plan, shall be submitted to the County Engineer for approval prior to finalization of any portion of the tentative map. Grading shall comply with best management practices (BMP's) and shall include detailed plans for grading and drainage on each lot, erosion control (including BMP locations and installation details), slope stabilization and mosquito abatement. Placement or disposal of any excavated material shall be indicated on the grading plan.

f. All open space shall be identified as common open space on the final map. A note on the final map shall indicate that all common open space shall be privately maintained and perpetually funded by the Homeowners Association. The maintenance of the common open space shall also be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.

g. Any existing easements or utilities that conflict with the development shall be relocated, quitclaimed, and/or abandoned, as appropriate.

h. Any easement documents recorded for the project shall include an exhibit map that shows the location and limits of the easement in relationship to the project.

i. All existing overhead utility lines shall be placed underground, except electric transmission lines greater than 100 kilovolts, which can remain above ground.

j. With each affected final map, provide written approval from NV Energy for any improvements located within their easement or under their facilities.

k. Appropriate easements shall be granted for any existing or new utilities, with each affected final map. This includes, but is not limited, to electrical lines, water lines, and drainage maintenance access.

l. Appropriate easements shall be granted to perpetuate/relocate existing access roads and easements.

m. A 10 foot Public Utilities Easement and a 10 foot easement for traffic control signage, plowed snow storage and sidewalks shall be granted adjacent to all rights-of-way.

n. A design level geotechnical investigation with fault study shall be provided with the submittal of each final map.

o. Cut slopes, fill slopes, and berms shall be setback from parcel lines and access easements in accordance with Washoe County Code Article 438.

p. Slope easements shall be provided for areas of cut or fill that fall outside of the subdivision boundary.

q. The conditional approval of this tentative map shall not be construed as final approval of the drainage facilities shown on the tentative map. Final approval of the drainage facilities will occur during the final map review and will be based upon the final hydrology report.

r. Prior to finalization of the first final map, a master hydrology/hydraulic report and a master storm drainage plan shall be submitted to the County Engineer for approval.

s. Prior to finalization of any portion of the tentative map, a final, detailed hydrology/hydraulic report for that unit shall be submitted to the County Engineer. All storm drainage improvements necessary to serve the project shall be designed and constructed to County standards and specifications and/or financial assurances in an appropriate form and amount shall be provided.

t. Any increase in peak stormwater runoff flow rate resulting from the development and based on the 5 year and 100 storm(s) shall be detained onsite.

u. The 100-year floodplain boundaries and flood elevations shall appear on each final map. If the floodplain boundary has been conditionally changed by a Federal Emergency Management Agency (FEMA) Conditional Letter of Map Amendment or Conditional Letter of Map Revision, the date of that letter and a note to that effect shall appear on the final map. All grading and construction in these areas shall be in conformance with the Washoe County Code Article 416.

v. Prior to placement of any fill material within a FEMA Special Flood Hazard Area, an approved Conditional Letter of Map Revision (CLOMR) shall be obtained from FEMA.

w. An approved Letter of Map Revision (LOMR) shall be obtained from FEMA prior to issuance of a Certificate of Occupancy for any structures within the Special Flood Hazard Area.

x. Standard reinforced concrete headwalls or other approved alternatives shall be placed on the inlet and outlet of all drainage structures, and grouted rock riprap shall be used to prevent erosion at the inlets and outlets of all culverts to the satisfaction of the Engineering and Capital Projects Division.

y. The developer shall provide pretreatment for petrochemicals and silt for all storm drainage leaving the site to the satisfaction of the Engineering and Capital Projects Division.

z. The Truckee Meadows Regional Stormwater Quality Management Program Construction Permit Submittal Checklist and Inspection Fee shall be submitted with each final map.

aa. In medians with irrigated landscaping adjacent to the curb, a subdrain system shall be installed a minimum of one foot behind the back face of curb to intercept

drainage from the landscaping. The system shall be tied to the storm drain system or an acceptable alternative drainage system.

bb. Drainage swales that drain more than two lots are not allowed to flow over the curb into the street; these flows shall be intercepted by an acceptable storm drain inlet and routed into the storm drain system.

cc. A note on the final map shall indicate that all drainage facilities not maintained by Washoe County shall be privately maintained and perpetually funded by a homeowners association. As an alternative to a homeowners association, the developer may request the establishment of a County Utility Service Area under which fees would be paid for maintenance of the proposed storm drainage detention facility. The fee amount will be based on the additional service above that normally provided by the County to maintain new stormwater facilities dedicated by the developer (i.e., curb and gutter, drop inlets and piping). The County Engineer shall determine compliance with this condition. The maintenance and funding of these drainage facilities shall also be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.

dd. The maximum permissible flow velocity (that which does not cause scour) shall be determined for all proposed channels and open ditches. The determination shall be based on a geotechnical analysis of the channel soil, proposed channel lining and channel cross section, and it shall be in accordance with acceptable engineering publications/calculations. Appropriate linings shall be provided for all proposed channels and open ditches such that the 100-year flows do not exceed the maximum permissible flow velocity.

ee. Prior to issuance of a grading permit or finalization of the first final map, a wetlands delineation must be approved by the United States Army Corps of Engineers (COE). A copy of the wetlands delineation and the COE approval shall be submitted to the County Engineer.

ff. Prior to issuance of a grading permit or approval of the affected final map, the developer shall obtain a permit from the COE for any work within the wetlands/waters of the U.S., or a letter from the COE indicating that a permit is not required. A copy of the permit/letter shall be submitted to the County Engineer.

gg. Maintenance access and drainage easements shall be provided for all existing and proposed drainage facilities. All drainage facilities located within Common Area shall be constructed with an adjoining minimum 12’ wide gravel access road. Maintenance access road shall be provided to the bottom of proposed detention basins as well as over County owned and maintained storm drainage facilities.

hh. Drainage easements shall be provided for all storm runoff that crosses more than one lot.

ii. The project shall mitigate the increased stormwater volume produced from the development based on the 100 year–10 day storm event. Alternatives for mitigation include excavation of material within or adjacent to the existing flood

zone creating additional effective flood volume or other means subject to approval by the County Engineer.

jj. Prior to the finalization of the first final map, a maintenance and operation plan for the maintenance of the project's detention/retention basins and Volume Replacement Area shall be developed in accordance with the Washoe County Code Article 421.

kk. A note shall be added to the final map and similar language contained with the project CC&R's stating that owners of parcels created by final map within this development shall not protest the formation of a Storm Water Utility District, Flood Control District, Special Assessment District or other funding mechanism which is approved and created for the purpose of storm water and/or flood water management.

ll. Offsite drainage and common area drainage draining onto residential lots shall be perpetuated around the residential lots, and drainage facilities capable of passing a 100-year storm shall be constructed with the subdivision improvements to perpetuate the storm water runoff to improved or natural drainage facilities. The maintenance of these drainage facilities shall be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.

mm. All roadway improvements necessary to serve the project shall be designed and constructed to County standards and specifications and/or financial assurances in an appropriate form and amount shall be provided.

nn. An Occupancy Permit shall be obtained from the City of Reno for all construction within the Lemmon Drive right-of-way, and a copy of said permit shall be submitted to the County Engineer prior to finalization of the affected final map.

oo. The applicant shall dedicate any additional right-of-way, as needed, to the City of Reno for Lemmon Drive to accommodate the planned widening from 4 lanes to 6 lanes as stated in the 2040 RTC Regional Transportation Plan.

pp. Street names shall be reviewed and approved by the Regional Street Naming Coordinator.

qq. Proposed landscaping and/or fencing along street rights-of-way and within median islands shall be designed to meet American Association of State Highway and Transportation Officials (AASHTO) sight distances and safety guidelines. No tree shall overhang the curb line of any public street.

rr. A note on each affected final map shall state that no direct access from individual lots shall be allowed onto Lemmon Drive. This note shall also be included in the CC&Rs to the satisfaction of the District Attorney's Office.

ss. For any utilities placed in existing County streets, the streets shall be repaired to the satisfaction of the County Engineer. At a minimum, this will require full depth removal and replacement of asphalt for half the street width, or replacement of non-woven pavement reinforcing fabric with a 2" asphalt overlay for half the street width. Type II slurry seal is required for the entire street width with either

option. Full width street improvements may be required if the proposed utility location is too close to the centerline of the existing street.

tt. Streetlights shall be constructed to Washoe County standards at locations to be determined at the final design stage.

uu. AASHTO clear zones shall be determined for all streets adjacent to retaining walls or slopes steeper than 3:1. If a recoverable or traversable clear zone cannot be provided, an analysis to determine if barriers are warranted shall be submitted for approval.

vv. All retaining walls that are adjacent to, provide support for or retain soil from the County right-of-way shall be constructed of reinforced masonry block or reinforced concrete and designed by an engineer licensed in the State of Nevada.

ww. All retaining walls that are within the slope failure wedge from Washoe County right-of-way shall be constructed of reinforced masonry block or reinforced concrete and designed by an engineer licensed in the State of Nevada. Retaining walls shall not be located within Washoe County right-of-way. The maintenance of the retaining walls shall be by Homeowners Association and the CCR's shall clearly identify the HOA's maintenance responsibilities of retaining walls.

xx. No retaining walls that retain soil from the County right-of-way shall be located within a plowed snow storage easement.

yy. Sidewalks shall be constructed on both sides of the street and shall meet ADA requirements.

zz. Curb and gutter shall be standard Type I per Washoe County standard details.

aaa. Prior to recordation of the final map, an environmental study that confirms no hazardous materials exist in the property to be dedicated to Washoe County.

bbb. Appropriate transitions shall be provided between the existing and proposed improvements at all proposed street connections. This may include removal of existing pavement.

ccc. Any streetlights that do not meet Washoe County standards shall be placed outside Washoe County right-of-way. These streetlights shall be private, and the CC&R's shall indicate operation and maintenance of the streetlights shall be the responsibility of the Homeowners Association. The County Engineer and the District Attorney's Office shall determine compliance with this condition.

ddd. Adequate snow storage easements shall be identified on the final plat.

eee. The conditions, covenants and restrictions (CC&Rs) shall prominently note to the satisfaction of the District Attorney's Office and the County Engineer that Washoe County will not assume responsibility for maintenance of the development's median islands.

fff. Signing, striping and traffic control improvements shall comply with American Association of State Highway and Transportation Officials Design guidelines, the Manual of Uniform Traffic Control Devices and Washoe County requirements and where applicable Nevada Department of Transportation requirements.

ggg. Access from Lemmon Drive to Sunset View Drive and Snowbrush Court shall be constructed as right-in/right-out only.

hhh. The proposed project should modify the channelizing island on the west side of Lemmon Drive at the Lemmon Drive/Military Road intersection to provide enough space for large passenger vehicles to make northbound to southbound U-turns.

iii. A deceleration lane shall be constructed on Lemmon Drive at the intersection of Sunset View Drive to the satisfaction of the City of Reno.

jjj. The applicant shall conform to all conditions imposed by intergovernmental agreements required to provide sewer service to the subject project, and, if required, be a party to any such agreements.

kkk. All fees shall be paid or deferred in accordance with Washoe County Ordinance prior to the approval of each final map.

lll. Improvement plans shall be submitted and approved by the Engineering and Capital Projects Division prior to approval of the final map. They shall be in compliance with Washoe County Design Standards and be designed by a Professional Engineer licensed to practice in the State of Nevada.

mmm. The applicant shall submit an electronic copy of the street and lot layout for each final map at initial submittal time. The files must be in a format acceptable to Washoe County.

nnn. The applicant shall construct and/or provide the financial assurance for the construction of any on-site and off-site sanitary sewer collection systems prior to signature on each final map. The financial assurance must be in a form and amount acceptable to the Engineering and Capital Projects Division.

ooo. Approved improvement plans shall be used for the construction of on-site and off-site sanitary sewer collection system. The Engineering and Capital Projects Division will be responsible to inspect the construction of the sanitary sewer collection system.

ppp. The sanitary sewer collection system must be offered for dedication to Washoe County along with the recordation of each final map.

qqq. Easements and real property for all sanitary sewer collection systems and appurtenances shall be in accordance with Washoe County Design Standards and offered for dedication to Washoe County along with the recordation of each final map.

rrr. A master sanitary sewer report for the entire tentative map shall be prepared and submitted by the applicant's engineer at the time of the initial submittal for the first final map which addresses:

i. the estimated sewage flows generated by this project,

ii. projected sewage flows from potential or existing development within tributary areas,

iii. the impact on capacity of existing infrastructure,

iv. slope of pipe, invert elevation and rim elevation for all manholes,

v. proposed collection line sizes, on-site and off-site alignment, and half-full velocities.

sss. No Certificate of Occupancy will be issued until all the sewer collection facilities necessary to serve each final map have been completed, accepted and engineer prepared as-built drawings are delivered to the utility. As-built drawings must be in a format acceptable to Washoe County.

ttt. No permanent structures (including rockery or retaining walls, building's, etc.) shall be allowed within or upon any County maintained utility easement.

uuu. A minimum 30-foot sanitary sewer and access easement shall be dedicated to Washoe County over any facilities not located in a dedicated right of way.

vvv. A minimum 12-foot wide all weather sanitary sewer access road shall be constructed to facilitate access to off-site sanitary sewer manholes.

www. The existing sewer main to be realigned shall be abandoned to the satisfaction of the County Engineer.

xxx. The developer will be responsible to fund the design and construction of major infrastructure such as pump structures, controls, telemetry and appurtenances, lift stations, force mains, sewer mains, interceptor and wastewater treatment facilities necessary to accommodate the project. However, the actual design will be the responsibility of the Engineering and Capital Projects Division. Prior to initiation of design the Developer shall pay the estimated design costs to Washoe County. The Engineering and Capital Projects Division may either provide such design in-house, or select an outside consultant. When an outside consultant is to be selected, the Engineering and Capital Projects Division and the Developer shall jointly select that consultant.

yyy. The Engineering and Capital Projects Division shall reserve the right to over-size or realign the design of infrastructure to accommodate future development as determined by accepted engineering calculations. Funding shall be the responsibility of Washoe County. Washoe County shall either participate monetarily at the time of design and/or shall credit an appropriate dollar amount to the Developer at the time of recordation of the subdivision map.

Nevada Division of Environmental Protection

3. The following conditions are requirements of the Nevada Division of Environmental Protection, which shall be responsible for determining compliance with these conditions.

Contact Name – Patrick Mohn, 775.687.9419, pmohn@ndep.nv.gov

a. An intent-to-serve letter for sewer will be required for Tentative Map review and a formal Will-Serve for sewer will be required for the NDEP Final Map review.

Truckee Meadows Fire Protection District

4. The following conditions are requirements of the Truckee Meadows Fire Protection District, which shall be responsible for determining compliance with these conditions.

Contact Name – Lisa Beaver, 775.326.6000, LBeaver@tmfpd.us

a. The project must comply with the following codes for fire and life safety;

   i. 2012 International Fire Code

   ii. Chapter 60 Washoe County Code

   iii. 2012 WUI Code

   iv. All Applicable NFPA codes

Regional Transportation Commission

5. The following conditions are requirements of the Regional Transportation Commission, which shall be responsible for determining compliance with these conditions.

Contact Name – Rebecca Kapuler, 775.332.0174, rkapuler@rtcwashoe.com

a. The developer shall contact Tina Wu, RTC Senior Transit Planner, at 775.335.1908 or twu@rtcwashoe.com, to discuss future transit improvements for this project.

*** End of Conditions ***

Exhibit B

North Valleys Citizens Advisory Board

MEMORANDUM

Date: **April 9, 2018**
To: **Roger Pelham, Washoe County Planners**
Re: **Tentative Subdivision Map Case Number WTM18-004 (Lemmon Drive Estates)**
From: **Misty Moga, Recording Secretary**

The following is an excerpt from the North Valleys Citizen Advisory Board on April 9, 2018.

7. DEVELOPMENT PROJECTS- The project description is provided below with links to the application or you may visit the Planning website and select the Applications tab and then the Applications Commission District Four: https://www.washoecounty.us/csd/planning_and_development/index.php.

6.B. Tentative Subdivision Map Case Number WTM18-004 (Lemmon Drive Estates) – Request for community feedback, discussion and possible action to forward community and Citizen Advisory Board comments to Washoe County staff on a request for a 98-lot single-family residential, common open space subdivision. Lot sizes are proposed to range from a minimum size of 5,218 square feet (± .12 acres) to a maximum size of 10,811 square feet (± .25 acres) with an average size of 6,011 square feet (± .14 acres). Front yard setbacks are proposed to be reduced from a minimum of from 20 feet to a minimum of 10 feet adjacent to a public street or common driveway, and maintain 20 feet in front of each garage. Rear yard setbacks are proposed are proposed to be reduced from a minimum of 20 feet to a minimum of 10 feet. Side yard setbacks are proposed to be reduced from a minimum of 8 feet to a minimum of 5 feet. Required lot widths are proposed to be reduced from a minimum of 80 feet to a minimum of 75 feet. (for Possible Action)

- Applicant: Lakes at Lemmon Valley, LLC.
- Property Owner: Lakes at Lemmon Valley, LLC.
- Location: On the east side of Lemmon Drive, approximately 700 feet south of its intersection with Military Road.
- Assessor's Parcel Number: 552-201-18
- Staff: Roger Pelham, Senior Planner; 775-328-3622; rpelham@washoecounty.us
- Reviewing Body: Tentatively scheduled for Planning Commission, May 1, 2018

- Roger Pelham, Washoe County Planning, introduced himself. He said he is available for process and procedure questions. He said the tentative subdivision map is the first step for a developer.
- Roger Edwards asked about utility; where will the sewer be pumped. A public member said Stead.

Dave S., Project representative, gave an overview:

- Lemmon Estates, a common open space subdivision
- The flood channel is not being disturbed
- Detention basin is larger than it needs to be
- Proposed common open space subdivision; leaving the scenic features of the natural landscape
- Current project allows for 101 units at medium density. They are proposing 98 units.
- Exploring trail connectivity within common open space
- Expansion of the road
- Subdivision with sidewalks
    - miles of paths around the subdivision.

Public comment:

WTM18-004
EXHIBIT B

Danny Cleous said all the runoff will go into Swan Lake. It's full. There doesn't need houses there. Lemmon Drive is always a mess. Stead Sewer Plant is already full. This development is not needed.

Denise Ross said the FEMA application was posted on FB. They have changed the application. We don't need any changes to our flood plan at this time. This project's geotechnical report states concerns. She said there will be more impervious surfaces as a result of more buildings and coverage; where does that water go. It runs into Swan Lake. 50% of water usage in the home leaves as sewage. They will import from Fish Springs. We are in the middle of a catastrophic event. Build infrastructure. There is a need for housing, but not here. Let's figure it out first.

Joe Reinhardt said he is the Silver State Kennel co-owner. The kennel has been in existence since 70s. He said the kennel is good neighbors. He said they are concerned when there will be houses built within 40 feet of the kennel. The new neighbors will complain about barking dogs. He said they are working with the project manager to install a wall, include a disclosure to the new homeowners, and other things. If this does go through, we will work with them to be good neighbors.

Tammy Holt-Still, a member of the Swan Lake Recovery Committee, said follow NRS 278.828, the Health Department says you need to have sewer, water, fire police, and schools. The elementary school is full. 395 is already at capacity. A boy had a seizer, and it took 20 minutes for him to get service.

Maureen O'Brien said she is concerned with fire and emergency medical responses. She asked if this project is in the sphere of influence. The representative said it would be serviced by TMFPD. Reno/Stead corridor plan will be revised.

Teresa Aquila asked about access. The representative said Traffic Worx and RTC have looked at access. It will be right-in, right-out movement. They will work with the geography for a U-turn. Teresa asked about the traffic study. The representative said approximately 900+/- trips. It's less than ¼ mile to the shopping node. It's an opportunity for people to walk to the shopping rather than drive. Teresa said that will create an increase in pedestrian activity.

Roger Edwards said he doesn't have problem with this kind of development. He said he doesn't like that the Setbacks are 10 feet down to 0 feet. He said the open space includes the retention basins. He said this is a way to get away from not dedicating open space. The development will be 1 foot above elevation. Roger said unless there will be excavation, it won't do anything. Roger Edwards said he won't vote for anymore development in this basin.

Chief Charlie Moore of TMFPD said we do not have a mutual aid with the City of Reno for EMT services. He said TMFPD won't be the first to respond if this is in the City of Reno. He said they have automatic aid for brush and structure fire. You won't get rapid service from City of Reno.

Ray Lake asked for clarification regarding the fills of 4-5 feet in-fill on the east end of the property in order to get out of the flood zone. The representative said the elevation will change. Ray Lake said there will be 463 trips per day according to the traffic study, with the majority of the traffic heading south. There will be approximately 417 u-turns at Military Road; there needs to be another way. The sewer and run-off needs to be addressed.

Jean Harris said she echoes what has been said. No more development needs to happen in this basin. There needs to be remediation. There needs to be change. She said the density is too high. Cluster homes don't belong in the North Valley. Not one more thing should be built out here until there is mitigation with flooding.

MOTION: Roger Edwards moved to recommend denial; the board is not in favor of this project. The Board will forward comments to the Planning and County Commission. Teresa Aquila seconded the motion to recommend denial. Motion carried unanimously.

Exhibit C

WASHOE COUNTY
COMMUNITY SERVICES DEPARTMENT
Engineering and Capital Projects

1001 EAST 9TH STREET
PO BOX 11130
RENO, NEVADA 89520-0027
PHONE (775) 328-3600
FAX (775) 328.3699

Date: April 3, 2018

To: Roger Pelham, Senior Planner

From: Leo Vesely, P.E., Licensed Engineer

Re: Lemmon Drive Estates WTM18-004 (98 Lots)
APN 552-201-18

GENERAL PROJECT DISCUSSION

Washoe County Engineering and Capital Project staff has reviewed the above referenced application. The proposed project consists of a 98-lot subdivision and is located on approximately 34 acres along the east side of Lemmon Drive and north of Buck Drive. Sanitary sewer service will be provided by Washoe County. The Engineering and Capital Projects Division recommends approval with the following comments and conditions of approval which supplement applicable County Code and are based upon our review of the site and the tentative map application prepared by CFA, Inc. The County Engineer shall determine compliance with all the following conditions of approval.

For questions related to sections below, please see the contact name provided.

GENERAL CONDITIONS

Contact Information: Leo Vesely, P.E. (775) 328-2313

1. Final maps and final construction drawings shall comply with all applicable statutes, ordinances, rules, regulations, and policies in effect at the time of submittal of the tentative map or, if requested by the developer and approved by the applicable agency, those in effect at the time of approval of the final map.
2. Prior to acceptance of public improvements and release of any financial assurances, the developer shall furnish to the water and sewer provider(s) and Engineering and Capital Projects Division a complete set of reproducible as-built construction drawings in an approved digital format, prepared by a civil engineer registered in the State of Nevada.
3. The developer shall be required to participate in any applicable General Improvement District or Special Assessment District formed by Washoe County. The applicable County Department shall be responsible for determining compliance with this condition.
4. The developer shall provide written approval from the U.S. Postal Service concerning the installation and type of mail delivery facilities. The system, other than individual mailboxes, must be shown on the project construction plans and installed as part of the onsite improvements.
5. A complete set of construction improvement drawings, including an onsite grading plan, shall be submitted to the County Engineer for approval prior to finalization of any portion of the tentative map. Grading shall comply with best management practices (BMP's) and shall include detailed plans for grading and drainage on each lot, erosion control (including BMP locations and

Exhibit C

installation details), slope stabilization and mosquito abatement. Placement or disposal of any excavated material shall be indicated on the grading plan.

6. All open space shall be identified as common area on the final map. A note on the final map shall indicate that all common areas shall be privately maintained and perpetually funded by the Homeowners Association. The maintenance of the common areas shall also be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.
7. Any existing easements or utilities that conflict with the development shall be relocated, quitclaimed, and/or abandoned, as appropriate.
8. Any easement documents recorded for the project shall include an exhibit map that shows the location and limits of the easement in relationship to the project.
9. All existing overhead utility lines shall be placed underground, except electric transmission lines greater than 100 kilovolts, which can remain above ground.
10. With each affected final map, provide written approval from NV Energy for any improvements located within their easement or under their facilities.
11. Appropriate easements shall be granted for any existing or new utilities, with each affected final map. This includes, but is not limited, to electrical lines, water lines, and drainage maintenance access.
12. Appropriate easements shall be granted to perpetuate/relocate existing access roads and easements.
13. A 10 foot Public Utilities Easement and a 10 foot easement for traffic control signage, plowed snow storage and sidewalks shall be granted adjacent to all rights-of-way.
14. A design level geotechnical investigation with fault study shall be provided with the submittal of each final map.
15. Cut slopes, fill slopes, and berms shall be setback from parcel lines and access easements in accordance with Washoe County Code Article 438.
16. Slope easements shall be provided for areas of cut or fill that fall outside of the subdivision boundary.

DRAINAGE (COUNTY CODE 110.420)
Contact Information: Leo Vesely, P.E. (775) 328-2313

1. The conditional approval of this tentative map shall not be construed as final approval of the drainage facilities shown on the tentative map. Final approval of the drainage facilities will occur during the final map review and will be based upon the final hydrology report.
2. Prior to finalization of the first final map, a master hydrology/hydraulic report and a master storm drainage plan shall be submitted to the County Engineer for approval.
3. Prior to finalization of any portion of the tentative map, a final, detailed hydrology/hydraulic report for that unit shall be submitted to the County Engineer. All storm drainage improvements necessary to serve the project shall be designed and constructed to County standards and specifications and/or financial assurances in an appropriate form and amount shall be provided.
4. Any increase in peak stormwater runoff flow rate resulting from the development and based on the 5 year and 100 storm(s) shall be detained onsite.

Exhibit C

5. The 100-year floodplain boundaries and flood elevations shall appear on each final map. If the floodplain boundary has been conditionally changed by a Federal Emergency Management Agency (FEMA) Conditional Letter of Map Amendment or Conditional Letter of Map Revision, the date of that letter and a note to that effect shall appear on the final map. All grading and construction in these areas shall be in conformance with the Washoe County Code Article 416.
6. Prior to placement of any fill material within a FEMA Special Flood Hazard Area, an approved Conditional Letter of Map Revision (CLOMR) shall be obtained from FEMA.
7. An approved Letter of Map Revision (LOMR) shall be obtained from FEMA prior to issuance of a Certificate of Occupancy for any structures within the Special Flood Hazard Area.
8. Standard reinforced concrete headwalls or other approved alternatives shall be placed on the inlet and outlet of all drainage structures, and grouted rock riprap shall be used to prevent erosion at the inlets and outlets of all culverts to the satisfaction of the Engineering and Capital Projects Division.
9. The developer shall provide pretreatment for petrochemicals and silt for all storm drainage leaving the site to the satisfaction of the Engineering and Capital Projects Division.
10. The Truckee Meadows Regional Stormwater Quality Management Program Construction Permit Submittal Checklist and Inspection Fee shall be submitted with each final map.
11. In medians with irrigated landscaping adjacent to the curb, a subdrain system shall be installed a minimum of one foot behind the back face of curb to intercept drainage from the landscaping. The system shall be tied to the storm drain system or an acceptable alternative drainage system.
12. Drainage swales that drain more than two lots are not allowed to flow over the curb into the street; these flows shall be intercepted by an acceptable storm drain inlet and routed into the storm drain system.
13. A note on the final map shall indicate that all drainage facilities not maintained by Washoe County shall be privately maintained and perpetually funded by a homeowners association. As an alternative to a homeowners association, the developer may request the establishment of a County Utility Service Area under which fees would be paid for maintenance of the proposed storm drainage detention facility. The fee amount will be based on the additional service above that normally provided by the County to maintain new stormwater facilities dedicated by the developer (i.e., curb and gutter, drop inlets and piping). The County Engineer shall determine compliance with this condition. The maintenance and funding of these drainage facilities shall also be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.
14. The maximum permissible flow velocity (that which does not cause scour) shall be determined for all proposed channels and open ditches. The determination shall be based on a geotechnical analysis of the channel soil, proposed channel lining and channel cross section, and it shall be in accordance with acceptable engineering publications/calculations. Appropriate linings shall be provided for all proposed channels and open ditches such that the 100-year flows do not exceed the maximum permissible flow velocity.
15. Prior to issuance of a grading permit or finalization of the first final map, a wetlands delineation must be approved by the United States Army Corps of Engineers (COE). A copy of the wetlands delineation and the COE approval shall be submitted to the County Engineer.
16. Prior to issuance of a grading permit or approval of the affected final map, the developer shall obtain a permit from the COE for any work within the wetlands/waters of the U.S., or a letter from the COE indicating that a permit is not required. A copy of the permit/letter shall be submitted to the County Engineer.

Exhibit C

17. Maintenance access and drainage easements shall be provided for all existing and proposed drainage facilities. All drainage facilities located within Common Area shall be constructed with an adjoining minimum 12' wide gravel access road. Maintenance access road shall be provided to the bottom of proposed detention basins as well as over County owned and maintained storm drainage facilities.
18. Drainage easements shall be provided for all storm runoff that crosses more than one lot.
19. The project shall mitigate the increased stormwater volume produced from the development based on the 100 year–10 day storm event. Alternatives for mitigation include excavation of material within or adjacent to the existing flood zone creating additional effective flood volume or other means subject to approval by the County Engineer.
20. Prior to the finalization of the first final map, a maintenance and operation plan for the maintenance of the project's detention/retention basins and Volume Replacement Area shall be developed in accordance with the Washoe County Code Article 421.
21. A note shall be added to the final map and similar language contained with the project CC&R's stating that owners of parcels created by final map within this development shall not protest the formation of a Storm Water Utility District, Flood Control District, Special Assessment District or other funding mechanism which is approved and created for the purpose of storm water and/or flood water management.
22. Offsite drainage and common area drainage draining onto residential lots shall be perpetuated around the residential lots, and drainage facilities capable of passing a 100-year storm shall be constructed with the subdivision improvements to perpetuate the storm water runoff to improved or natural drainage facilities. The maintenance of these drainage facilities shall be addressed in the CC&Rs to the satisfaction of the District Attorney's Office.

TRAFFIC AND ROADWAY (COUNTY CODE 110.436)
Contact Information: Clara Lawson, P.E. (775) 328-3603

1. All roadway improvements necessary to serve the project shall be designed and constructed to County standards and specifications and/or financial assurances in an appropriate form and amount shall be provided.
2. An Occupancy Permit shall be obtained from the City of Reno for all construction within the Lemmon Drive right-of-way, and a copy of said permit shall be submitted to the County Engineer prior to finalization of the affected final map.
3. The applicant shall dedicate any additional right-of-way, as needed, to the City of Reno for Lemmon Drive to accommodate the planned widening from 4 lanes to 6 lanes as stated in the 2040 RTC Regional Transportation Plan.
4. Street names shall be reviewed and approved by the Regional Street Naming Coordinator.
5. Proposed landscaping and/or fencing along street rights-of-way and within median islands shall be designed to meet American Association of State Highway and Transportation Officials (AASHTO) sight distances and safety guidelines. No tree shall overhang the curb line of any public street.
6. A note on each affected final map shall state that no direct access from individual lots shall be allowed onto Lemmon Drive. This note shall also be included in the CC&Rs to the satisfaction of the District Attorney's Office.

Exhibit C

Subject: ***Lemmon Drive Estates WTM18-004*** (98 Lots)
Date: April 3, 2018
Page: 5

7. For any utilities placed in existing County streets, the streets shall be repaired to the satisfaction of the County Engineer. At a minimum, this will require full depth removal and replacement of asphalt for half the street width, or replacement of non-woven pavement reinforcing fabric with a 2" asphalt overlay for half the street width. Type II slurry seal is required for the entire street width with either option. Full width street improvements may be required if the proposed utility location is too close to the centerline of the existing street.
8. Streetlights shall be constructed to Washoe County standards at locations to be determined at the final design stage.
9. AASHTO clear zones shall be determined for all streets adjacent to retaining walls or slopes steeper than 3:1. If a recoverable or traversable clear zone cannot be provided, an analysis to determine if barriers are warranted shall be submitted for approval.
10. All retaining walls that are adjacent to, provide support for or retain soil from the County right-of-way shall be constructed of reinforced masonry block or reinforced concrete and designed by an engineer licensed in the State of Nevada.
11. All retaining walls that are within the slope failure wedge from Washoe County right-of-way shall be constructed of reinforced masonry block or reinforced concrete and designed by an engineer licensed in the State of Nevada. Retaining walls shall not be located within Washoe County right-of-way. The maintenance of the retaining walls shall be by Homeowners Association and the CCR's shall clearly identify the HOA's maintenance responsibilities of retaining walls.
12. No retaining walls that retain soil from the County right-of-way shall be located within a plowed snow storage easement.
13. Sidewalks shall be constructed on both sides of the street and shall meet ADA requirements.
14. Curb and gutter shall be standard Type I per Washoe County standard details.
15. Prior to recordation of the final map, an environmental study that confirms no hazardous materials exist in the property to be dedicated to Washoe County.
16. Appropriate transitions shall be provided between the existing and proposed improvements at all proposed street connections. This may include removal of existing pavement.
17. Any streetlights that do not meet Washoe County standards shall be placed outside Washoe County right-of-way. These streetlights shall be private, and the CC&R's shall indicate operation and maintenance of the streetlights shall be the responsibility of the Homeowners Association. The County Engineer and the District Attorney's Office shall determine compliance with this condition.
18. Adequate snow storage easements shall be identified on the final plat.
19. The conditions, covenants and restrictions (CC&Rs) shall prominently note to the satisfaction of the District Attorney's Office and the County Engineer that Washoe County will not assume responsibility for maintenance of the development's median islands.
20. Signing, striping and traffic control improvements shall comply with American Association of State Highway and Transportation Officials Design guidelines, the Manual of Uniform Traffic Control Devices and Washoe County requirements and where applicable Nevada Department of Transportation requirements.
21. Access from Lemmon Drive to Sunset View Drive and Snowbrush Court shall be constructed as right-in/right-out only.

Exhibit C

22. The proposed project should modify the channelizing island on the west side of Lemmon Drive at the Lemmon Drive/Military Road intersection to provide enough space for large passenger vehicles to make northbound to southbound U-turns.
23. A deceleration lane shall be constructed on Lemmon Drive at the intersection of Sunset View Drive to the satisfaction of the City of Reno.

UTILITIES (County Code 422 & Sewer Ordinance)
Contact Information: Tim Simpson, P.E. (775) 954-4648

1. The applicant shall conform to all conditions imposed by intergovernmental agreements required to provide sewer service to the subject project, and, if required, be a party to any such agreements.
2. All fees shall be paid or deferred in accordance with Washoe County Ordinance prior to the approval of each final map.
3. Improvement plans shall be submitted and approved by the Engineering and Capital Projects Division prior to approval of the final map. They shall be in compliance with Washoe County Design Standards and be designed by a Professional Engineer licensed to practice in the State of Nevada.
4. The applicant shall submit an electronic copy of the street and lot layout for each final map at initial submittal time. The files must be in a format acceptable to Washoe County.
5. The applicant shall construct and/or provide the financial assurance for the construction of any on-site and off-site sanitary sewer collection systems prior to signature on each final map. The financial assurance must be in a form and amount acceptable to the Engineering and Capital Projects Division.
6. Approved improvement plans shall be used for the construction of on-site and off-site sanitary sewer collection system. The Engineering and Capital Projects Division will be responsible to inspect the construction of the sanitary sewer collection system.
7. The sanitary sewer collection system must be offered for dedication to Washoe County along with the recordation of each final map.
8. Easements and real property for all sanitary sewer collection systems and appurtenances shall be in accordance with Washoe County Design Standards and offered for dedication to Washoe County along with the recordation of each final map.
9. A master sanitary sewer report for the entire tentative map shall be prepared and submitted by the applicant's engineer at the time of the initial submittal for the first final map which addresses:
    a. the estimated sewage flows generated by this project,
    b. projected sewage flows from potential or existing development within tributary areas,
    c. the impact on capacity of existing infrastructure,
    d. slope of pipe, invert elevation and rim elevation for all manholes,
    e. proposed collection line sizes, on-site and off-site alignment, and half-full velocities.
10. No Certificate of Occupancy will be issued until all the sewer collection facilities necessary to serve each final map have been completed, accepted and engineer prepared as-built drawings are delivered to the utility. As-built drawings must be in a format acceptable to Washoe County.
11. No permanent structures (including rockery or retaining walls, building's, etc.) shall be allowed within or upon any County maintained utility easement.

Exhibit C

12. A minimum 30-foot sanitary sewer and access easement shall be dedicated to Washoe County over any facilities not located in a dedicated right of way.
13. A minimum 12-foot wide all weather sanitary sewer access road shall be constructed to facilitate access to off-site sanitary sewer manholes.
14. The existing sewer main to be realigned shall be abandoned to the satisfaction of the County Engineer.
15. The developer will be responsible to fund the design and construction of major infrastructure such as pump structures, controls, telemetry and appurtenances, lift stations, force mains, sewer mains, interceptor and wastewater treatment facilities necessary to accommodate the project. However, the actual design will be the responsibility of the Engineering and Capital Projects Division. Prior to initiation of design the Developer shall pay the estimated design costs to Washoe County. The Engineering and Capital Projects Division may either provide such design in-house, or select an outside consultant. When an outside consultant is to be selected, the Engineering and Capital Projects Division and the Developer shall jointly select that consultant.
16. The Engineering and Capital Projects Division shall reserve the right to over-size or realign the design of infrastructure to accommodate future development as determined by accepted engineering calculations. Funding shall be the responsibility of Washoe County. Washoe County shall either participate monetarily at the time of design and/or shall credit an appropriate dollar amount to the Developer at the time of recordation of the subdivision map.

Exhibit C

March 30, 2018

Roger Pelham, MPA, Senior Planner
Washoe County Community Services
Planning and Development Division
PO Box 11130
Reno, NV 89520-0027

RE: WTM18-004 Lemmon Drive Estates; Click here to enter text.
Click here to enter text.; Click here to enter text.

Dear Mr. Pelham:

The Washoe County Health District, Environmental Health Services Division (WCHD) has reviewed the above referenced project. Approval by the WCHD is subject to the following conditions:

1. The project must comply with the following codes for fire and life safety;
2. 2012 International Fire Code
3. Chapter 60 Washoe County Code
4. 2012 WUI Code
5. All Applicable NFPA codes

Please contact me for additional questions

Sincerely,

Denise Reynolds

TRUCKEE MEADOWS FIRE PROTECTION DISTRICT
1001 E. Ninth St. Bldg. D 2nd Floor • Reno, Nevada 89512 • PO Box 11130 • Reno, Nevada 89520
Office 775.326.6000 *Fax* 775.326.6003

Exhibit C

From: John Christopherson [mailto:jchrist@forestry.nv.gov]
Sent: Wednesday, March 28, 2018 2:09 PM
To: Stark, Katherine
Subject: RE: Added Traffic Impact Study - March Agency Review Memo II

Hello Katherine,

The Division of Forestry has not comments on the Lemmon Drive Estates tentative subdivision map case.

Thank you.

John

John Christopherson
Natural Resource Program Manager
Nevada Division of Forestry
2478 Fairview Drive, Carson City, NV 89701
ph: (775) 684-2507 | fax: (775) 684-2571
jchrist@forestry.nv.gov

From: Patrick Mohn
To: Pelham, Roger
Subject: WTM18-004 Lemmon Drive Estates
Date: Thursday, March 22, 2018 8:31:28 AM

The NDEP will do a detailed review of the Tentative Map when it is submitted to the NDEP with proper fees. The NDEP understands that the development will be served by Washoe County for sewer. Intent-to-Serve letter for sewer will be required for Tentative Map review, and a formal Will Serve for sewer will be required for the NDEP Final Map review.

Pat

Patrick A. Mohn, M.Sc., P.E.
UIC Compliance Coordinator
Bureau of Water Pollution Control (BWPC)
Nevada Division of Environmental Protection
901 South Stewart Street, Suite 4001
Carson City, NV 89701
p: 775.687.9419 fax: 775.687.4684
pmohn@ndep.nv.gov

Exhibit C

REGIONAL TRANSPORTATION COMMISSION
Metropolitan Planning · Public Transportation & Operations · Engineering & Construction
Metropolitan Planning Organization of Washoe County, Nevada

April 3, 2018

FR: Chrono/PL 183-17

Mr. Roger Pelham, Senior Planner
Community Services Department
Washoe County
PO Box 11130
Reno, NV 89520

RE: WTM18-004 (Lemmon Drive Estates)

Dear Mr. Pelham,

We have reviewed the subject application and have the following comments and recommendations.

Comments and Recommendations:

1. The 2040 Regional Transportation Plan (RTP) identifies Lemmon Drive as an arterial with Moderate-Access control. To maintain arterial capacity, the following RTP access management standards should be maintained.

Access Management Standards-Arterials[1] and Collectors							
Access Management Class	Posted Speeds	Signals Per Mile and Spacing[2]	Median Type	Left From Major Street? (Spacing from signal)	Left From Minor Street or Driveway?	Right Decel Lanes at Driveways?	Driveway Spacing[3]
Moderate Access Control	40-45 mph	3 or less Minimum spacing 1590 feet	Raised or painted w/turn pockets	Yes 500 ft. minimum	No, on 6 or 8-lane roadways w/o signal	Yes[4]	200 ft./300 ft.

1 On-street parking shall not be allowed on any new arterials. Elimination of existing on-street parking shall be considered a priority for major and minor arterials operating at or below the policy level of service.
2 Minimum signal spacing is for planning purposes only; additional analysis must be made of proposed new signals in the context of planned signalized intersections, and other relevant factors impacting corridor level of service.
3 Minimum spacing from signalized intersections/spacing other driveways.
4 If there are more than 60 inbound, right-turn movements during the peak-hour.

2. The policy Level of Service (LOS) standard for Lemmon Drive is LOS D. Policy LOS for intersections shall be designed to provide a level of service consistent with maintaining the policy level of service of the intersection corridor. This project should be required to meet all the conditions necessary to complete road improvements to maintain policy LOS standards.

3. The 2040 RTP identifies Lemmon Drive from US 395 to Military Road to be widened from 4 to 6 lanes by 2026. Dedication of right of way or setbacks adequate to complete RTP improvements should be required as a condition of approval. See the attached typical 120' right of way section for a 6-lane facility. Additional right-of-way may be required for dedicated turn lanes at intersections.

PO Box 30002, Reno, NV 89520 · 1105 Terminal Way, Reno, NV 89502 · 775-348-0400 · rtcwashoe.com

Exhibit C

4. The applicant may be eligible for RRIF waivers for right-of-way and/or construction of improvements to Lemmon Drive through a RRIF Offset Agreement. To be eligible for RRIF waivers, the capital improvements to Lemmon Drive must be included in the RRIF Capital Improvement Plan (CIP). RRIF eligible intersection improvements are limited to the intersection of two regional roadways. The project access roadways are not regional roadways and therefore, not eligible for RRIF Waivers the RRIF Offset program. The 6th Edition RRIF CIP is currently under development and will include the widening of Lemmon Drive to 6 lanes. Once the RRIF CIP is adopted, the developer may request to enter into a RRIF Offset Agreement through a letter of intent. Questions regarding RRIF waivers should be directed to Julie Masterpool, RTC Engineering Manager – RRIF Traffic Engineer (348-0171).

5. Please have the developer contact Tina Wu, RTC Senior Transit Planner, at 775-335-1908 or twu@rtcwashoe.com, to discuss future transit improvements for this project.

6. The RTP, the RTC Bicycle/Pedestrian Master Plan and the Nevada Department of Transportation Pedestrian Safety Action Plan, all indicate that new development and re development will be encouraged to construct pedestrian and bicycle facilities, internal and/or adjacent to the development, within the regional road system. Also, these plans recommend that the applicant be required to design and construct any sidewalks along the frontage of the property in conformance with the stated ADA specifications.

Thank you for the opportunity to comment on these applications. Please feel free to contact me at 775-332-0174 or email me at rkapuler@rtcwashoe.com if, you have any questions or comments.

Sincerely,

Rebecca Kapuler

Rebecca Kapuler
Planner

RK/jm

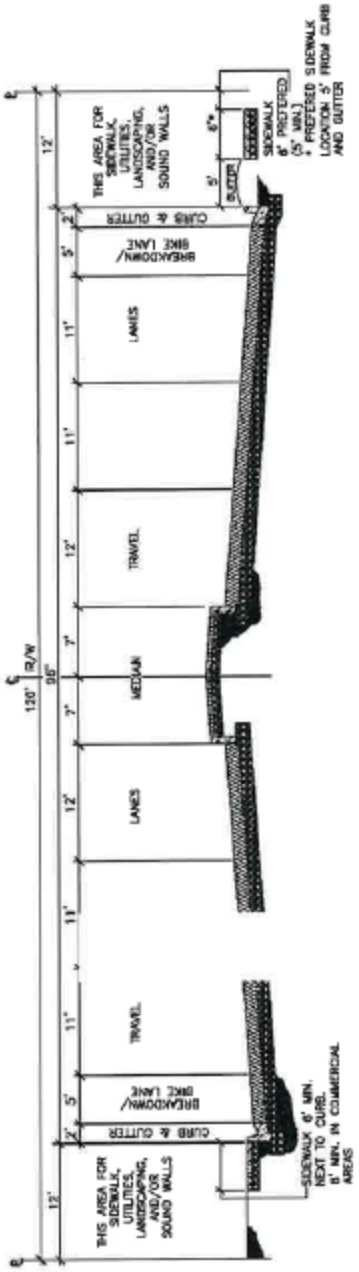
Attachment

Copies: Mojra Hauenstein, Washoe County Community Services
Trevor Lloyd, Washoe County Community Services
Jae Pullen, Nevada Department of Transportation, District II
Daniel Doenges, Regional Transportation Commission
Tina Wu, Regional Transportation Commission
Mark Maloney, Regional Transportation Commission
Julie Masterpool, Regional Transportation Commission
David Jickling, Regional Transportation Commission

/807 Lemmon Drive Estates

Exhibit C

TYPICAL 6-LANE RIGHT-OF-WAY SECTION



TYPICAL 120' RIGHT-OF-WAY SECTION
SIX TRAVEL LANES

REGIONAL TRANSPORTATION COMMISSION
RIGHT-OF-WAY SECTION

REGIONAL TRANSPORTATION COMMISSION

Exhibit C

From: Kaneyuki, Bradley
To: Pelham, Roger
Cc: Kaneyuki, Bradley
Subject: re: Lemmon Drive Estates - Tentative Map WTM18-004 (CFA - Dave Snelgrove for Lakes at Lemmon Valley - Chuck Bluth)
Date: Wednesday, March 21, 2018 5:29:36 PM

Roger,

For the purposes of Emergency Management, these street names have been rejected because the street name already exists or sounds phonetically similar to an existing street name:

1. WILD RYE rejected on WILDRYE

**Note: Washoe County GIS reserves the right to rescind any reserved street name before recordation, in accordance with public safety concerns.

**Note: A street name reservation is valid for one year after it is ACCEPTED. If the name does not appear on a recorded document within one year of acceptance, then there is no obligation to honor the reservation. Notify GIS for renewal.

Attention: All future street name requests:

1. Download the form from: https://www.washoecounty.us/csd/engineering_capitalprojects/files-engineering-capital-projects/mapping_streets_roads/New%20street_reservation.pdf
2. Fill out *Request to Reserve New Street Name(s).* Do NOT include USPS suffix types (e.g. AVE, ST, RD, CT, DR, LN, WAY, CIR, PL, TRL, etc.); that comes later.
3. No more than 14 letters, 15 if there is an "i" in the name (spaces count as a character).
4. Special characters are NOT allowed (', ", `, ~, /, \, -, *, #, &, @, %, +).
5. Abbreviations for MOUNT (MT) and SAINT (ST) are NOT allowed.
6. E-mail form to: Addressing@Washoecounty.us Do NOT fax or e-mail a photo-copy.

For the purposes of Emergency Management, street names will reject if the street name already exists or sounds similar, phonetically, to an existing street name. For street names that already exist or reserved in the Washoe County Master Street Directory click: https://www.washoecounty.us/csd/engineering_capitalprojects/street_directory_naming.php

1. Existing streets: Click 11X17 Regional Street Directory
2. Reserved streets: Click Reservation Street Name Listing

Bradley Kaneyuki
Technology Systems Developer II
Regional Services/GIS
(775) 328-2344
1001 E 9th St, Bldg C, Reno, NV 89512

Exhibit C

From: Kaneyuki, Bradley
Subject: re: Tentative Map WTM18-004: Lemmon Drive Estates - Reserved Street Names
Date: Wednesday, March 21, 2018 5:19:00 PM

Reserved Street Name Recipients:

These street name(s) have been accepted and reserved into the Washoe County Master Street Directory Reservation table:
In Washoe County APN 552-210-18

Reservations		
Date Submitted	**Fullname**	**Description**
3/21/2018	FIRE WHEEL	Lemmon Drive Estates - Tentative Map WTM18-004 (CFA - Dave Snelgrove for Lakes at Lemmon Valley - Chuck Bluth)
3/21/2018	SNOWBRUSH	Lemmon Drive Estates - Tentative Map WTM18-004 (CFA - Dave Snelgrove for Lakes at Lemmon Valley - Chuck Bluth)
3/21/2018	SUNSET VIEW	Lemmon Drive Estates - Tentative Map WTM18-004 (CFA - Dave Snelgrove for Lakes at Lemmon Valley - Chuck Bluth)
3/21/2018	WOLF WILLOW	Lemmon Drive Estates - Tentative Map WTM18-004 (CFA - Dave Snelgrove for Lakes at Lemmon Valley - Chuck Bluth)

**Note: Washoe County GIS reserves the right to rescind any reserved street name before recordation, in accordance with public safety concerns.

**Note: A street name reservation is valid for one year after it is ACCEPTED. If the name does not appear on a recorded document within one year of acceptance, then there is no obligation to honor the reservation. Notify GIS for renewal.

Attention: All future street name requests:

1. Download the form from: https://www.washoecounty.us/csd/engineering_capitalprojects/files-engineering-capital-projects/mapping_streets_roads/New%20street_reservation.pdf
2. Fill out *Request to Reserve New Street Name(s)*. Do NOT include USPS suffix types (e.g. AVE, ST, RD, CT, DR, LN, WAY, CIR, PL, TRL, etc.); that comes later.
3. No more than 14 letters, 15 if there is an "i" in the name (spaces count as a character).
4. Special characters are NOT allowed (', ", `, ~, /, \, -, *, #, &, @, %, +).
5. Abbreviations for MOUNT (MT) and SAINT (ST) are NOT allowed.
6. E-mail form to: Addressing@Washoecounty.us Do NOT fax or e-mail a photo-copy.

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1. Existing streets: Click 11X17 Regional Street Directory
2. Reserved streets: Click Reservation Street Name Listing

Bradley Kaneyuki
Technology Systems Developer II
Regional Services/GIS
(775) 328-2344
1001 E 9th St, Bldg C, Reno, NV 89512

Exhibit C

WASHOE COUNTY
COMMUNITY SERVICES
INTEGRITY COMMUNICATION SERVICE

P.O. Box 11130
Reno, Nevada 89520-0027
Phone: (775) 328-3600
Fax: (775) 328-3699

March 22, 2018

TO: Roger Pelham, MPA, Senior Planner, CSD, Planning & Development Division

FROM: Vahid Behmaram, Water Management Planner Coordinator, CSD

SUBJECT: Tentative Subdivision Map Case Number WTM18-004 (Lemmon Drive Estates).

Project description:

The applicant is proposing the approval of Tentative Subdivision Map consisting of a 98-lot single-family residential, common open space subdivision.

The property is located on the east side of Lemmon Drive, approximately 700 feet south of its intersection with Military Road, Assessor's Parcel Number: 552-201-18, Parcel Size: ± 33.97 acres.

Water service is to be provided by the Truckee Meadows Water Authority (TMWA) and Sanitary Sewer service to be provided by Washoe County.

The Community Services Department (CSD) recommends approval of this project with the following Water Rights comments and conditions:

1) There are no water rights conditions or comments for approval.
2) Following the possible approval of the tentative subdivision map, the potential future project will require water supply and sewer service which in turn will require the expansion of water and sewer services and annexation to TMWA service area. This project is located within Washoe County sewer service area.
3) Application indicates TMWA discovery process completed.

Exhibit D

Silver State Kennel
600 Lemmon Drive
Reno, Nevada 89506
775-677-2442

April 9, 2018

CFA, Inc.
1150 Corporate Boulevard
Reno, Nevada 89502

Dear Sirs,

Silver State Kennel owned by Carolyn Goll and Joe Reinhardt is located at 600 Lemmon Drive and is adjacent to the southern border of the proposed Lemmon Drive Estates. The Kennel has been in operation for 45 years in its present location with a number of owners over the years. The kennel was established as Silver State Kennel in November, 1989. The original special use permit has been updated and amended over the years with the latest special use permit amendment (Special Use Permit Case No. SB02-001) approved and issued March 11. 2002. In addition to conforming to the use on the designated land use category, the amendment focused on updates of General Conditions addressing construction for sound attenuation associated with Kennel operation. In addition, Operational Conditions were stipulated to go along with the noise management for the kennel. These conditions include hours of operation limited to 7:00 to 6:00 pm and that all dogs shall be contained inside within the kennel building for the night no later than 8:00 pm and not let out earlier than 7:00. Our hours of operation (open for clients) are currently 8:00am to 5:00 pm with letting out the dogs at 7:00 am. Silver State Kennel has been abiding by these conditions with no known complaints and we intend to continue our practices as stipulated.

The proposed Lemmon Drive Estates will result in a number of homes that will be constructed within 40 feet of the Silver State Kennel property line. We realize that dogs will bark and we make every effort to minimize the barking during the day. We also realize that barking dogs can be an impact on neighbors. The Kennel was established at its location due to the rural setting and lack of close neighbors. We have a number of concerns associated with the construction of homes so close to our operation and the possibility of noise issues. We feel that with cooperation with planners, Lakes at Lemmon Valley LLC, and potential homeowners we can all exist with minimal impact.

We would like to propose for your consideration some Conditions of Design and Construction for the subdivision to address sound attenuation and that these be addressed as part of approval of the application. These include and are not limited to:

1. Construction of a low maintenance sound wall. The wall constructed of materials that are durable, sound attenuating and visually attractive. The wall shall extend from the Lemmon Drive easement and along the adjoining property line to the end.
    a. In conjunction with a sound attenuating wall evergreen vegetation planted along the planned natural vegetation strip along the property line.
    b. Extend the width of the planned natural vegetation strip to 80 feet.
2. Home construction techniques conducive to sound attenuation. These techniques should be utilized on homes constructed within 200 feet of the Silver State Kennel property line.

Exhibit D

Silver State Kennel
600 Lemmon Drive
Reno, Nevada 89506
775-677-2442

   a. Exterior walls, especially on the south facing walls of those homes directly adjacent to the Silver State Kennel property line, be constructed utilizing sound board and any other sound attenuation techniques.
   b. No windows on the south facing walls of those homes directly adjacent to the Silver State Kennel property line.
   c. Windows/ sliding glass doors and doors rated for maximum sound attenuation.
3. No construction shall commence prior to 7:00 am nor shall go on past 6:00 pm. We are restricted to letting dogs out at 7:00 am. Any activity and noise next door wakes those dogs up and becomes a hardship on us with extra barking as well as sanitary issues for the dogs.

We would also like to propose for your consideration some Conditions of Notification and Disclosure for the subdivision to address notification of potential home buyers of the presence of Silver State Kennel in proximity to their home and that these be addressed as part of approval of the application. These include and are not limited to:

1. Applicant shall recognize and acknowledge in writing, the existence of the established Silver State Kennel and all aspects of the operation of said Kennel.
2. Applicant shall signify and notify on final planning maps the existence of the established Silver State Kennel and all aspects of the operation of said Kennel.
3. Applicant shall signify and notify on all sales documents, contracts, etc. that the home buyer acknowledges and understand that they are purchasing a home next door to a long established Kennel operation and all aspects of the operation of said kennel. Signed acknowledgement of the disclosure shall be included in all sales.
4. All disclosures shall be included for any future resale documents, stated in any CCR's and/or any HOA requirements.
5. All disclosures shall be developed jointly with Silver State Kennel so that there is a thorough understanding of residing near a kennel and signed copies shall be made available to Silver State Kennel for file.

Silver State Kennel has been dedicated to maintaining our operation as a good neighbor. To that end we replaced all outdoor kennels with indoor/outdoor kennels so the dogs are inside at night and noise is mitigated. We intend to continue our good neighbor philosophy, without compromising our current operations, employees and business. Thank you for your consideration of the above conditions.

Sincerely,

Carolyn Goll	Joe Reinhardt
Owner	Co-owner
Silver State Kennel	Silver State Kennel

Cc:
North Valleys CAB
Roger Pelham, MPA, W.C. Senior Planner

Exhibit E

From: David Snelgrove
To: Pelham, Roger
Subject: Very Rough Condition :Language Suggestion Relative to Silver State Kennels
Date: Wednesday, April 11, 2018 10:43:33 AM

Roger:

Per our telephone conversation, I spoke to Chuck Bluth (the applicant on the Lemmon Drive Estates project) after he had a chance to review the letter submitted by Silver State Kennels. Following are the (very rough) condition suggestions that he would be accepting of:

- Disclosure – The developer shall provide a disclosure statement within the sales documents for the homes within the project notifying each owner that a dog kennel exists at the south end, adjacent to the housing development.

- Sound Wall – A 6' high sound wall shall be constructed from the point where the southwesternmost lot (#89) begins eastward along the southern property line of the project to the point where the Kennel Property (APN 522-190-05) ends.

- Intensified Planting – Planting consisting of 100% evergreen trees shall be provided within the common area at the south end of the property, adjacent to the proposed new lots. Evergreen planting shall be provided with an average spacing of one tree every 25 feet in staggered rows with the intention of creating a year-round landscaped screen.

The other conditional items that were suggested by Silver State Kennels were not agreeable to the project applicant.

I realize that there will need to be some wording adjustment to make these condition read appropriately and have necessary county or agency checks. I greatly appreciate your time in discussion of these as well as the owners of Silver State Kennels in the time that they put in to thinking about possible conditions.

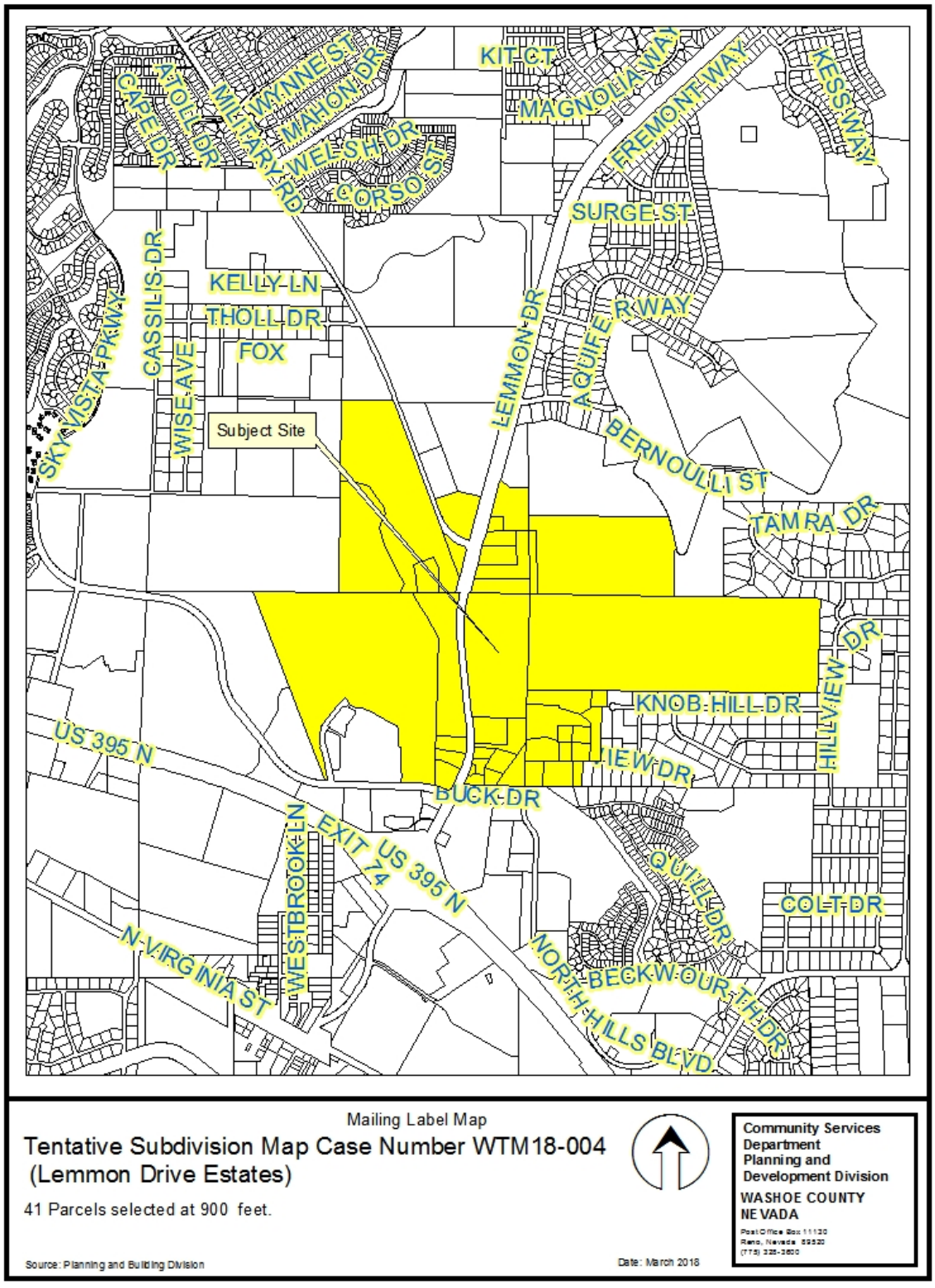
Please feel free to call with any questions, comments or concerns.

R. DAVID SNELGROVE, A.I.C.P., PLANNING AND RIGHT-OF-WAY MANAGER

CFA, INC.
LAND SURVEYORS
CIVIL ENGINEERS
LAND USE PLANNERS

1150 CORPORATE BOULEVARD ¦ RENO, NEVADA 89502
MAIN 775-856-1150 ¦ EXT 102 ¦ DIRECT 775-856-7073 ¦ CFARENO.COM

Exhibit F



Mailing Label Map

Tentative Subdivision Map Case Number WTM18-004
(Lemmon Drive Estates)

41 Parcels selected at 900 feet.

Source: Planning and Building Division

Date: March 2018

Community Services Department
Planning and Development Division
WASHOE COUNTY
NEVADA
Post Office Box 11130
Reno, Nevada 89520
(775) 328-3600

Exhibit G

LEMMON DRIVE ESTATES
TENTATIVE MAP
& COMMON OPEN SPACE DEVELOPMENT

PREPARED FOR

LAKES AT LEMMON VALLEY, LLC

PREPARED BY:
CFA, INC.
1150 CORPORATE BOULEVARD
RENO, NV 89502
(775) 856-1150

MARCH 15, 2018

PROJECT: 16-013.00

WTM18-004
EXHIBIT G

Table of Contents

Appendices

Table of Contents (cont.)

Project Description

Project Request

This application is a request for a common open space tentative map on a 33.97+/- acre parcel located at on the east side of Lemmon Drive between Buck Drive and Military Road in Lemmon Valley. The Washoe County Assessor's office recognizes the property as APN 552-210-18.

In addition to this tentative map including a request for a common open space development, this request also includes the review of the site relative to the Hillside Ordinance (Article 424 of the Washoe County Development Code). It should be noted that the reason that a common open space development has been requested is to protect sensitive areas of the site (steep slopes and a drainageway). As such, there is not development proposed in the steep areas of the site, located in the northeast corner of the property, nor in the drainageway flow corridor.

As can be The property is made up of diverse terrain that is , inclusive of approximately 78% of the site in very developable slopes and approximately 22% of the site in moderate to steep slopes, which are predominately consolidated in the northeastern corner of the site. In addition to the slope constraints, a 100-year flood plain crosses the property and separates the most developable slopes from the steeper slope areas.

Requested with this application is a Common Open Space Development and Tentative Map for 98 single family lots parcels. The property is zoned MDS (Medium Density Suburban, which would allow for residential development at a density of up to 3 dwelling units per acre. The maximum number of units that would be allowed per the zoning designation is 101.91 lots residential lots. The proposed development plan contains 98 lots and has a gross density of 2.88+/- dwelling units per acre.

Property Location

The subject property is locate on the west side of Lemmon Drive between Buck Drive and Military Road. The southern property line of the subject parcel is located approximately 1,200 feet north of Buck Drive and the north property line of the subject property is approximately 650 feet south of Military Road. A vicinity map is provided on page 2 of this project description.

Figure 1 – Vicinity Map

Master Plan and Zoning Conformance

Master Plan -- The subject property is designated Medium Density Suburban in the Reno Stead Corridor Joint Plan. This designation allows for 1 – 3 dwelling units per acre. The proposed Lemmon Drive Estates project has a gross density of 2.88+/- dwelling units per acre. As such, the project provides the type of development (single family) that is allowed within this master plan designation and presents a density that conforms to the master plan designation.

Zoning – The property is zoned MDS, allowing for up to 3 dwelling units per acre, conforming with the master plan designation for the property. The proposed Lemmon Drive Estates project has a gross density of 2.88+/- dwelling units per acre. As such, the project provides the type of development (single family) that is allowed within this master plan designation and presents a density that conforms to the zoning designation.

Existing Site Conditions

The site is currently vacant and presents low to moderately sloped land on the western and southern ends of the site and possesses a floodplain and steep slopes that are located approximately in the northeast ¼ to 1/3 third of the property. Following are site photos showing the existing condition of the property. All of the photos were taken from the areas that are defined by Washoe County to be the most developable portions of the property via the Development Suitability Map from the North Valleys Area Plan

View of subject property from Southwest corner, near Lemmon Drive and Silver State Kennels.

View of property from current intersection of gas line and sewer line toward the northeast. Lower rock outcropping is on the subject property and will not be disturbed. Peak of hill is not part of subject property.

View of property from current northwest corner near Lemmon Drive and north property line. Dirt road to on left side of photo is the existing sewer line easement access road.

Project Summary

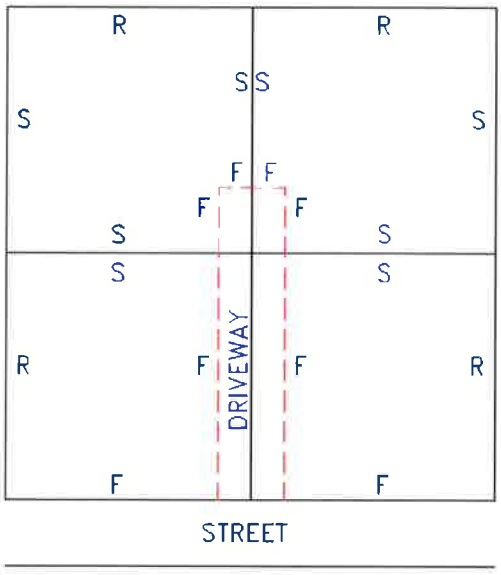
Overview - Lemmon Drive Estates is proposed to be a 98-lot single family subdivision that will incorporate common open space areas to preserve areas of steep slopes and existing drainage corridor that cross the property. The project is proposed to be developed in similar fashion and design to a recently developed project in the City of Sparks called The Preserve. The development design incorporates a clustered lot pattern, where four home sites are served off a common driveway.

Setbacks - Minimum setback requirement are proposed to be provided at 5 feet on all sides of the property with the exception of setbacks to garage faces where a 20-foot setback will be provided to accommodate for a driveway to accommodate 2 cars of parking, in addition to the 2 parking spaces in within the garage of each home. Please see Figure 2 showing a typical setback exhibit of where each yard area (front, side and rear) would be considered for the Lemmon Drive Estates project. Figure 3 shows an aerial view of cluster court from The Preserves Subdivision in Sparks. This image shows the

Minimum Setbacks

Front (home to public street) – 10 feet
Front (garage to public street) – 20 feet
Front (home to common driveway) – 5 feet
Front (garage to common driveway) – 20 feet
Side – 5 feet
Rear – 5 feet

Figures 2 & 3 – Yard Definition Exhibit & Product Example Aerial Image



Streets and Access - All streets within the proposed Lemmon Drive Estates project will be designed and constructed to Washoe County standards. The streets are currently planned to be public streets, but through the review process the applicant will discuss with County staff about the potential of providing private streets with gated entries to the project.

The street sections will be designed with sidewalk on one side of each street except for entry roads with direct connection to Lemmon Drive, where sidewalks on both sides of the street will be provided.

Common Area, Pedestrian Linkages Within and Outside the Community – Lemmon Drive Estates is proposed to be a 98-lot single family residential community with 16.68+/- acres of common area that will be maintained by the Lemmon Drive Estates Homeowner's Association. The project provides approximately 1.1+/- miles of path/sidewalk loops through the community. A Path Loop Exhibit map is provided in Appendix D that illustrates the location of the pedestrian loops around the community. The location of Lemmon Drive Estates provides the nearest shopping and retail level services within ¼ mile of the southern end of the project providing some limitation on typical automobile dependence for short or small shopping trips.

Images of Similar Community - Following are photo images of a similar project to what is proposed for Lemmon Drive Estates. These images were taken at The Preserve in Sparks, Nevada. The project is located on the north side of Disc Drive, between Sparks Boulevard and Galleria Parkway. These images should be helpful in illustrating entry signage, general character and feel of the court appearance of the lots, and the general street scene.

Community Sign General Character Example

General Street Appearance Example

Rear Yard Fencing Concept, Abutting Street

Example Appearance of Court/Driveway with Housing

Development Statistics – Following are development statistics for the Lemmon Drive Estates.

Total Project Area:	33.97+/- AC
Maximum Dwelling Units Allowed (Per TMRPA constraint of 5 DU/AC):	101 Residential Lots
Total Dwellings Proposed:	98 Residential Lots
Gross Density Proposed:	2.88+/- DU/AC
Common Area Lots:	4 Parcel

Areas of Use

Residential Lot Area:	13.52+/- AC
Common Area (Landscaped and Natural Areas):	16.68+/- AC
Streets (ROW)	3.77+/- AC

Lot Sizes

Minimum Lot Size:	5,218+/- SF
Maximum Lot Size:	10,811+/- SF
Average Lot Size:	6,011+/- SF

Proposed Setbacks

Front (home to street/ROW)	10 feet
Front (garage to street/ROW)	20 feet
Front (home to common driveway)	10 feet
Front (garage to common driveway)	20 feet
Side	5 feet
Rear	10 feet

Landscape

Required Landscaping (20% of the site)	6.79+/- AC
Landscape Area Provided (Front Yard Landscape Not Included)	16.68+/- AC (49+/-%)

Common Open Space Development Considerations

Article 408 of the Washoe County Development Code requires that Common Open Space Development requests review (at a minimum) 16 Site Analysis considerations, per 110.408.30 relative to the project location, design and area infrastructure and facility connectivity and availability. Following is a listing of the 16 considerations and a response relative to each item. A Site Analysis Map has been provided as part of this application submittal. Some of the responses to considerations reference that map, other maps in the tentative map package or other reports or documents contained within this application. This review of Common Open Space Development Considerations is duplicated on the Site Analysis Map provide with this application.

a) Location Map – a location map is provided on the cover of the tentative map set and on page 2 of this project description.

b) Land Use – Current land use is "vacant." The planned land use is illustrated and defined and mapped in tentative form on the other sheets provided with this application.

c) Existing Structures – there are no existing structures on the site.

d) Existing Vegetation – The Washoe County Vegetative Communities/Landcover Map from the Washoe County Master Plan Conservation Element identifies that the area of the subject parcel is contained within the Sagebrush vegetative area

e) Prevailing Winds – prevailing winds come from the west.

f) Topography – A slope analysis map is provided in Appendix D of this application package. The site slope calculations on that map show that 6.7+/- acres of the site (19.7% of the site) is contained in 15% or steeper slopes. The steepest areas of the site (30% or greater) are held within the northeastern corner of the site across the drainageway the crosses the subject property. The steep slopes that exist on the site are not proposed for any development and will remain natural and be contained within the common area of the site.

g) Soils – A geotechnical report is provided in the application package identifying the soil characteristics of the site. Please see Appendix C of this application.

h) Natural Drainageways – A floodplain bisects the site from the southeast corner to the norther property line.

i) Wetlands and Waterbodies – no wetlands or water bodies appear on the subject property.

j) Flood Hazards – a 100-year floodplain is identified on the property through FEMA mapping. The flood plain location is shown on the Site Analysis Map provided on the following page.

k) Seismic Hazards – No seismic hazards were identified on the site. This is evidenced in the preliminary geotechnical report, provided in Appendix C.

l) Avalanche Hazards – There are not avalanche hazards on the site.

m) Sensitive Habitat and Migration Routes – The Washoe County Master Plan Conservation Element Habitat and Migration Route Maps show that Mule Deer habitat may exist in the area of the site (as it also appears to exist in Lemmon Valley, Spanish Springs, Reno, the Sparks Indian Colony, Stead, and Antelope Valley). No Bighorn, Black Bear, Pronghorn Antelope, Raptors, Sage Grouse or Wild Horse and Burro Herd habitats are shown to exist in the area of the subject property, per the Washoe County Conservation Element Habitat and Migration Route Maps.

n) Significant Views – The subject property sits in a moderately wide canyon between two hillsides that open to the north of the site and feed out to the expansive area of Lemmon Valley, where Swan Lake/Lemmon Lake is located. Due to this location, the best views from the property are located at the northeastern corner of the site, where the slopes on the property are the steepest and not proposed for development. No trail access is proposed into this area as there are no existing trails and the 120-acre federal land located to the east on (APN 552-210-19) contains no trails until you get to the western side of the hill that is contained within this federal parcel. No photos are provided as the views are (1) not significant and (2) not proposed to be accessible with the proposed development plan.

o) Easements – Existing easements are shown on the Subdivision Map Sheet 1 of 5, provided with this application.

p) Utilities – Utility connections are shown on the Site and Utilities Plan, Sheet 2 of 5 provided with this application package. Electric service is the only service identified in the requirements that is not shown on the Utilities Map. It is expected to enter the site at the project entrance(s) on Lemmon Drive or off the overhead power line that exists at the north end of the property. Electric, telephone and cable services will be run underground through the proposed subdivision.

q) Appropriate Access Points – Access to the site must be served off Lemmon Drive. Two access points will be necessary to meet emergency access requirements.

Tentative Map Findings

Article 821 of the Washoe County Development Code identifies findings that must be made in order to approve a common open space tentative map application. Following is an identification of each finding and the applicant's response as to how or why this finding is met with this request.

(a) Plan Consistency.

The requested Common Open Space Tentative Map request is consistent with the Washoe County Master Plan. The subject property is contained within the Reno Stead Corridor Joint Plan and holds a designation of Medium Density Suburban, which allows for single family residential development with a density range between 1 and 3 dwelling units per acre. The proposed project has a gross density of 2.88+/- dwelling units per acre and is consistent Some of the specific policies noting consistency are identified below:

Adjacent properties to the southeast of the subject property are designated with a combination of GR (General Rural) and LDS (Low Density Suburban). Per the Washoe County Master Plan, Land Use and Transportation Element, the MDS is highly compatible with LDS and GR designations (see Table 3: Land Use Compatibility Matrix, p.55 of the Washoe County Master Plan).

Reno Stead Corridor Joint Plan Policies

Conservation Policies

C.2.1 The use of major drainageways as undeveloped buffers between areas of development is encouraged. Undeveloped drainageways should also be used for pedestrian, equestrian or bicycle access into the Peavine Mountain area and other open space areas where appropriate. Access routes along major drainageways should include sufficient width for a trail easement. Motorized vehicle access should be restricted where appropriate.

The drainageway that crosses the property is incorporated into the eastern edge of the development area. Pedestrian accesses have been situated along or adjacent to the drainageway as a positive open space element within the subject property boundary. The drainageway offers a boundary to the steep slopes on the subject property that will be preserved in the development plan.

C.3.1 Each development proposal shall be evaluated with the intent to preserve visually prominent ridges and rock outcroppings. Evaluation should address mitigation of the affects on visual appearance, scarring of hillsides, and the impact of increasing access in roadless areas.

Rock outcroppings that are located in the northeastern portion of the property are to be left undisturbed as is the steeper sloped land surrounding the rock outcroppings.

Land Use and Transportation Element Policies

LUT.3.1 Require timely, orderly, and fiscally responsible growth that is directed to existing suburban character management areas (SCMAs) within the Area Plans as well as to growth areas delineated within the Truckee Meadows Service Area (TMSA).

The subject property situated near commercial development and is adjacent on both the north and south sides of the Lemmon Drive frontage with existing development (a dog kennel to the south and a church to the north).

LUT.3.3 Single family detached residential development shall be limited to a maximum of five (5) dwelling units per acre.

The proposed Lemmon Drive Estates project proposes a gross density of 2.88+/- DU/AC. This conforms with LUT 3.3.

Housing Element Goals and Policies

Program 3.5: The County will promote residential development in areas where services and infrastructure already exist or are planned.

Services and infrastructure already exist and the parcel is a vacant, infill site.

(b) Design or Improvement.

Finding b addresses consistency with master plan goals and policies, similar to finding a. As such, please see the address to finding a as the responses are the same.

(c) Type of Development

The areas of the subject property identified for development are categorized to be within the area "most suitable" for development per the Development Suitability Map within the North Valleys Area Plan. The steeper sloped portions of the property are to be retained as undisturbed open space.

(d) Availability of Services.

Based on preliminary discussion and review with utility purveyors that would serve the Lemmon Drive Estates project, utilities necessary to serve this in-fill site are generally adjacent to the site.

(e) Fish or Wildlife.

The Washoe County Master Plan Conservation Element Habitat and Migration Route Maps show that Mule Deer habitat may exist in the area of the site (as it also appears to exist in Lemmon Valley, Spanish Springs, Reno, the Sparks Indian Colony, Stead, and Antelope Valley). No Bighorn, Black Bear, Pronghorn Antelope, Raptors, Sage Grouse or Wild Horse and Burro Herd habitats are shown to exist in the area of the subject property, per the Washoe County Conservation Element Habitat and Migration Route Maps.

(f) Public Health.

A single-family manufactured home subdivision does not present any anticipated public health problems.

(g) Easements

There are only a few easements that currently encumber the property. A 16" natural gas line and sewer line are the primary easements and facilities that either dictate portions of the project design or will necessitate realignment through the subdivision with development of the site. Both easements can be accommodated or relocated appropriately within the proposed development plan.

(h) Access

Primary access is provided on E. Fourth Avenue, a collector status street as defined within the Sun Valley Area Plan Streets and Highways System Plan. Secondary/emergency access is provided to Pearl Drive as a gated emergency access.

(i) Dedications

The Valle Vista Community is proposed to contain private streets and private common area. No new dedications of roads or parks is expected. The existing flood plain at the northwest corner of the property is already contained within a protected drainage easement and no development is proposed for the storm water carrying feature.

(j) Energy

The proximity of the project to shopping and bus routes can have a positive impact on vehicle miles traveled. dependent upon the articulation of the roofline for each house that will be constructed (which will very), substantial roof surface should be available for solar panels on the majority of the homes with smaller areas available for solar panels, if the home owner wishes to install them.

APPENDIX A

Washoe County Development Application

Your entire application is a public record. If you have a concern about releasing personal information, please contact Planning and Building staff at 775.328.6100.

Project Information	**Staff Assigned Case No.:**
Project Name: Lemmon Drive Estates	
Project Description: A common open space tentative map is proposed for a 98 lot single family detached subdivision.	
Project Address: 0 Lemmon Drive	
Project Area (acres or square feet): 33.97 +/- Acres	
Project Location (with point of reference to major cross streets **AND** area locator): Located east of Lemmon Drive, north of Buck Drive, and south of the Church of Jesus Christ Latter Day Saints in Golden Valley.	

Assessor's Parcel No.(s):	Parcel Acreage:	Assessor's Parcel No.(s):	Parcel Acreage:
552-210-18	33.97+/- acres		

Section(s)/Township/Range: Sec. 09, T. 20, R. 19

Indicate any previous Washoe County approvals associated with this application:
Case No.(s). CPA99-NV-1 (a comp plan amendment that provided MDS designation)

Applicant Information (attach additional sheets if necessary)

Property Owner:		**Professional Consultant:**	
Name: Lakes at Lemmon Valley LLC		Name: CFA, Inc.	
Address: 4655 Longley Lane, Suite 107		Address: 1150 Corporate Blvd.	
Reno, NV	Zip: 89502		Zip:
Phone: 775-359-1191	Fax:	Phone: 775-856-7073	Fax:
Email: cpbluth@aol.com		Email: dsnelgrove@cfareno.com	
Cell: 775-772-1641	Other:	Cell: 775-737-8910	Other:
Contact Person: Chuck Bluth		Contact Person: Dave Snelgrove, AICP	
Applicant/Developer:		**Other Persons to be Contacted:**	
Name: Same as Owner		Name:	
Address:		Address:	
	Zip:		Zip:
Phone:	Fax:	Phone:	Fax:
Email:		Email:	
Cell:	Other:	Cell:	Other:
Contact Person:		Contact Person:	

For Office Use Only

Date Received:	Initial:	Planning Area:	
County Commission District:		Master Plan Designation(s):	
CAB(s):		Regulatory Zoning(s):	

Property Owner Affidavit

Applicant Name: Lakes at Lemmon Valley LLC

The receipt of this application at the time of submittal does not guarantee the application complies with all requirements of the Washoe County Development Code, the Washoe County Master Plan or the applicable area plan, the applicable regulatory zoning, or that the application is deemed complete and will be processed.

STATE OF NEVADA)
)
COUNTY OF WASHOE)

I, Charles Bluth, Owner of the Lakes at Lemmon Valley, LLC,
(please print name)

being duly sworn, depose and say that I am the owner* of the property or properties involved in this application as listed below and that the foregoing statements and answers herein contained and the information herewith submitted are in all respects complete, true, and correct to the best of my knowledge and belief. I understand that no assurance or guarantee can be given by members of Planning and Building.

(A separate Affidavit must be provided by each property owner named in the title report.)

Assessor Parcel Number(s): 552-210-18

Printed Name CHARLES P. BLUTH

Signed

Address 4655 Longley Lane, Suite 107

Subscribed and sworn to before me this 8TH day of MARCH, 2018

Notary Public in and for said county and state

My commission expires: 12-26-2018

(Notary Stamp)

KATHLEEN O'CONNELL
Notary Public, State of Nevada
Appointment No. 03-80171-2
My Appt. Expires Dec 26, 2018

*Owner refers to the following: (Please mark appropriate box.)

- ■ Owner
- ❑ Corporate Officer/Partner (Provide copy of record document indicating authority to sign.)
- ❑ Power of Attorney (Provide copy of Power of Attorney.)
- ❑ Owner Agent (Provide notarized letter from property owner giving legal authority to agent.)
- ❑ Property Agent (Provide copy of record document indicating authority to sign.)
- ❑ Letter from Government Agency with Stewardship

Tentative Subdivision Map Application
Supplemental Information

(All required information may be separately attached)

Chapter 110 of the Washoe County Code is commonly known as the Development Code. Specific references to tentative subdivision maps may be found in Article 608, Tentative Subdivision Maps.

1. What is the location (address or distance and direction from nearest intersection)?

The subject property is located in Golden Valley to the east of Lemmon Dr., north of Buck Drive and APN 552-190-05 and APN 552-190-11, and south of APN 552-262-01. The subject parcel is recognized by the Washoe County Assessor's Office as APN 552-210-18.

2. What is the subdivision name (proposed name must not duplicate the name of any existing subdivision)?

Lemmon Drive Estates

3. Density and lot design:

a. Acreage of project site	33.97 acres
b. Total number of lots	98 residential lots - 1 common area lot
c. Dwelling units per acre	3 DU/AC
d. Minimum and maximum area of proposed lots	Minimum 5,218+/- s.f. Maximum 10,811+/- s.f.
e. Minimum width of proposed lots	75'
f. Average lot size	6,011+/- SF

4. Utilities:

a. Sewer Service	Washoe County
b. Electrical Service	NV Energy
c. Telephone Service	AT&T
d. LPG or Natural Gas Service	NV Energy
e. Solid Waste Disposal Service	Waste Management
f. Cable Television Service	Charter
g. Water Service	Truckee Meadows Water Authority

5. For common open space subdivisions (Article 408), please answer the following:

a. Acreage of common open space:

16.68 acres of natural and landscaped common open space is provided, which equates to +/-49% of the total site.

b. Development constraints within common open space (slope, wetlands, faults, springs, ridgelines):

The FEMA map shows that the site has a flood plain running through it from southeast to the northern parcel line. The flood plain area separates the area of the site that is most suitable for development from the street slopes that exist on the parcel. The slope analysis map, provided with this application shows that there is a total of 6.7+/- acres of slopes in excess of 15% on the subject site. These slope areas are not proposed for development and are shown to be in common open space on the tentative map sheets with this application. The preliminary geotechnical investigation, provided with this application did not find any information evidencing any faults on the subject property.

c. Range of lot sizes (include minimum and maximum lot size):

Minimum - 5,218+/- s.f., Maximum - 10,811+/- s.f.

d. Average lot size:

6,011+/- SF

e. Proposed yard setbacks if different from standard:

Front (home to street) - 10 feet
Front (garage to street) - 20 feet
Front (home to common driveway) - 10 feet
Front (garage to common driveway) - 20 feet
Side - 5 feet
Rear - 10 feet

f. Justification for setback reduction or increase, if requested:

Smaller sized lots, which are allowed in common open space developments are meritorious having smaller setbacks, appropriate to their lot sizing, orientation and design. The proposed minimum setback distances are typical and provide flexibility for the home builder to provide a housing product that meets desires of many home buyers who do not want a yard area that creates considerable upkeep and maintenance. The trade-off for the compact lot and setback standards is the provision, protection and maintenance of common area that will not be scarred, developed or otherwise altered.

g. Identify all proposed non-residential uses:

There are not any non-residential uses proposed as part of the Lemmon Drive Estates project.

h. Improvements proposed for the common open space:

A pedestrian trail system is incorporated into appropriate sections of the common area to provide an interconnected series of loops with the sidewalks within the subdivision area. The total length of the path and sidewalk loops within the subdivision is 1.1+/- miles.

i. Describe or show on the tentative map any public or private trail systems within common open space of the development:

A pedestrian The sidewalk/pedestrian path system will be available and accessible to residents within the Lemmon Drive Estates housing development as well as the general public.

j. Describe the connectivity of the proposed trail system with existing trails or open space adjacent to or near the property:

There are no existing trails near the subject property. As such, no connections have been proposed.

k. If there are ridgelines on the property, how are they protected from development?

There are ridgelines on the property, only slopes heading toward ridgelines that exist off-property.

l. Will fencing be allowed on lot lines or restricted? If so, how?

Fencing will be allowed on lot lines, typical with good neighbor fencing or enhanced wood fencing (photo example from The Preserve is provided in project description). Open fencing or combined solid and open fencing treatments may be incorporated along common areas where roads are not adjacent.

m. Identify the party responsible for maintenance of the common open space:

The Lemmon Drive Estates Homeowner's Association will be responsible for maintenance of the Common Open Space within the project.

6. Is the project adjacent to public lands or impacted by "Presumed Public Roads" as shown on the adopted April 27, 1999 Presumed Public Roads (see Washoe County Engineering website at http://www.washoecounty.us/pubworks/engineering.htm). If so, how is access to those features provided?

The Washoe County Engineering website and "Presumed Public Roads" map of the Reno Area does not show any "presumed public roads" that are not in paved road alignments. Lemmon Drive is shown on the map as the nearest "presumed public road" and that paved public right-of-way will provide access to the project.

7. Is the parcel within the Truckee Meadows Service Area?

■ Yes	❑ No

8. Is the parcel within the Cooperative Planning Area as defined by the Regional Plan?

■ Yes	❑ No	If yes, within what city? Reno through the Reno-Stead Joint Corridor Plan

9. Will a special use permit be required for utility improvement? If so, what special use permits are required and are they submitted with the application package?

No. The subject property is an infill site along a major arterial roadway (Lemmon Drive) and utilities are available adjacent to the property.

10. Has an archeological survey been reviewed and approved by SHPO on the property? If yes, what were the findings?

Cultural Resources mapping provided in the Washoe County Master Plan indicates that SHPO has identified resources in the general area (within 1 mile of the project site), but it is unknown whether anything was identified, specific to the subject property.

11. Indicate the type and quantity of water rights the application has or proposes to have available:

a. Permit #		acre-feet per year	
b. Certificate #		acre-feet per year	
c. Surface Claim #		acre-feet per year	
d. Other #		acre-feet per year	

e. Title of those rights (as filed with the State Engineer in the Division of Water Resources of the Department of Conservation and Natural Resources):

Water is proposed to be served through TMWA. The applicant is fully aware that any necessary water rights to serve the project will have to be purchased by the applicant/project developer. A copy of the TMWA discovery report is provided with this application.

12. Describe the aspects of the tentative subdivision that contribute to energy conservation:

The proximity of the project to shopping and bus routes can have a positive impact on vehicle miles traveled. dependent upon the articulation of the roofline for each house that will be constructed (which will very), substantial roof surface should be available for solar panels on the majority of the homes with smaller areas available for solar panels, if the home owner wishes to install them.

13. Is the subject property in an area identified by Planning and Building as potentially containing rare or endangered plants and/or animals, critical breeding habitat, migration routes or winter range? If so, please list the species and describe what mitigation measures will be taken to prevent adverse impacts to the species:

The Washoe County Master Plan Conservation Element Habitat and Migration Route Maps show that Mule Deer habitat may exist in the area of the site (as it also appears to exist in Lemmon Valley, Spanish Springs, Reno, the Sparks Indian Colony, Stead, and Antelope Valley). No Bighorn, Black Bear, Pronghorn Antelope, Raptors, Sage Grouse or Wild Horse and Burro Herd habitats are shown to exist in the area of the subject property, per the Washoe County Conservation Element Habitat and Migration Route Maps.

14. If private roads are proposed, will the community be gated? If so, is a public trail system easement provided through the subdivision?

Streets are designed and proposed to be public, but the applicant will discuss with the County and the project. design team the possibility of providing private streets through the review process.

15. Is the subject property located adjacent to an existing residential subdivision? If so, describe how the tentative map complies with each additional adopted policy and code requirement of Article 434, Regional Development Standards within Cooperative Planning Areas and all of Washoe County, in particular, grading within 50 and 200 feet of the adjacent developed properties under 5 acres and parcel matching criteria:

This section of code addresses policies from the 2002 Regional Plan, which are no longer valid.

16. Are there any applicable policies of the adopted area plan in which the project is located that require compliance? If so, which policies and how does the project comply?

Please see the Tentative Map Legal Findings review section of the Project Description of this application.

17. Are there any applicable area plan modifiers in the Development Code in which the project is located that require compliance? If so, which modifiers and how does the project comply?

There are no applicable area plan modifiers in the Development Code that would apply to this project.

18. Will the project be completed in one phase or is phasing planned? If so, please provide that phasing plan:

The project will be constructed in a total of three (3) Phases. The proposed phasing lines are shown on the tentative map sheets provided with this application package.

19. Is the project subject to Article 424, Hillside Development? If yes, please address all requirements of the Hillside Ordinance in a separate set of attachments and maps.

■ Yes	❑ No	If yes, include a separate set of attachments and maps.

20. Is the project subject to Article 418, Significant Hydrologic Resources? If yes, please address Special Review Considerations within Section 110.418.30 in a separate attachment.

❑ Yes	■ No	If yes, include separate attachments.

Grading

Please complete the following additional questions if the project anticipates grading that involves: (1) Disturbed area exceeding twenty-five thousand (25,000) square feet not covered by streets, buildings and landscaping; (2) More than one thousand (1,000) cubic yards of earth to be imported and placed as fill in a special flood hazard area; (3) More than five thousand (5,000) cubic yards of earth to be imported and placed as fill; (4) More than one thousand (1,000) cubic yards to be excavated, whether or not the earth will be exported from the property; or (5) If a permanent earthen structure will be established over four and one-half (4.5) feet high:

21. How many cubic yards of material are you proposing to excavate on site?

41,500+/- CY

22. How many cubic yards of material are you exporting or importing? If exporting of material is anticipated, where will the material be sent? If the disposal site is within unincorporated Washoe County, what measures will be taken for erosion control and revegetation at the site? If none, how are you balancing the work on-site?

500+/- CY are estimated to be exported from the site. The grading plan identifies that the export material will be taken to the Lockwood Landfill, but if there is a suitable site that can accept the material that is within the Lemmon Valley area, we will take the material there. This will be determined nearer to the actual time of earthwork and grading permit for the project.

23. Can the disturbed area be seen from off-site? If yes, from which directions, and which properties or roadways? What measures will be taken to mitigate their impacts?

Most of the disturbed areas associated with site grading will be screened by the proposed development. Any portions that will remain visible will be revegetated, landscaped or left natural. Revegetation and landscaping are the primary mitigative treatments for such areas.

24. What is the slope (Horizontal/Vertical) of the cut and fill areas proposed to be? What methods will be used to prevent erosion until the revegetation is established?

3:1 maximum slope will be incorporated in the grading design. Fiber rolls, silt fences and/or other BMP's will be incorporated into the SWPPP for prevention of erosion escaping the site prior to revegetation or stabilization. BMP Notes are provided on the Grading Plan provided with this application.

25. Are you planning any berms and, if so, how tall is the berm at its highest? How will it be stabilized and/or revegetated?

No berms are proposed.

26. Are retaining walls going to be required? If so, how high will the walls be, will there be multiple walls with intervening terracing, and what is the wall construction (i.e. rockery, concrete, timber, manufactured block)? How will the visual impacts be mitigated?

There are no retaining walls on the site.

27. Will the grading proposed require removal of any trees? If so, what species, how many, and of what size?

There are no existing trees on the site.

28. What type of revegetation seed mix are you planning to use and how many pounds per acre do you intend to broadcast? Will you use mulch and, if so, what type?

DAVE (Hansen)

A revegetation seed mix will be used in areas where formal landscape is not proposed that have been graded. The total pounds per acre is expected to be 30+/- lbs/acre.

29. How are you providing temporary irrigation to the disturbed area?

No temporary irrigation is proposed for revegetation areas. Hydroseeding is the anticipated method of treatment for revegetation.

30. Have you reviewed the revegetation plan with the Washoe Storey Conservation District? If yes, have you incorporated their suggestions?

No, the plan has not been reviewed with the Washoe Storey Conservation District.

Request to Reserve New Street Name(s)

The Applicant is responsible for all sign costs.

Applicant Information

Name: Lakes at Lemmon Valley LLC

Address: 4655 Longley Lane, Suite 107

Reno, NV 89502

Phone (Home) : 775-359-1191 Phone (Work): _____

☐ Private Citizen ☑ Agency/Organization

Street Name Requests

(No more than 14 letters or 15 if there is an "i" in the name. Attach extra sheet if necessary.)

sunset view drive	snowbrush drive/court
fire wheel drive	wild rye court
wolf willow court	

If final recordation has not occurred within one (1) year, it is necessary to submit a written request for extension to the coordinator prior to the expiration date of the original approval request.

Location

Project Name: Need name from client

☐ Reno ☐ Sparks ☑ Washoe County

Parcel Numbers: 552-210-18

☑ Subdivision ☐ Parcelization ☐ Private Street

Please attach maps, petitions and supplementary information.

Approved: _____ Date: _____

Regional Street Naming Coordinator

☐ Except where noted

Denied: _____ Date: _____

Regional Street Naming Coordinator

Washoe County Department of Public Works

Post Office Box 11130 - 1001 E. Ninth Street

Reno, NV 89520-0027

Phone: (775) 328-2344 Please email form to: Addressing@washoecounty.us

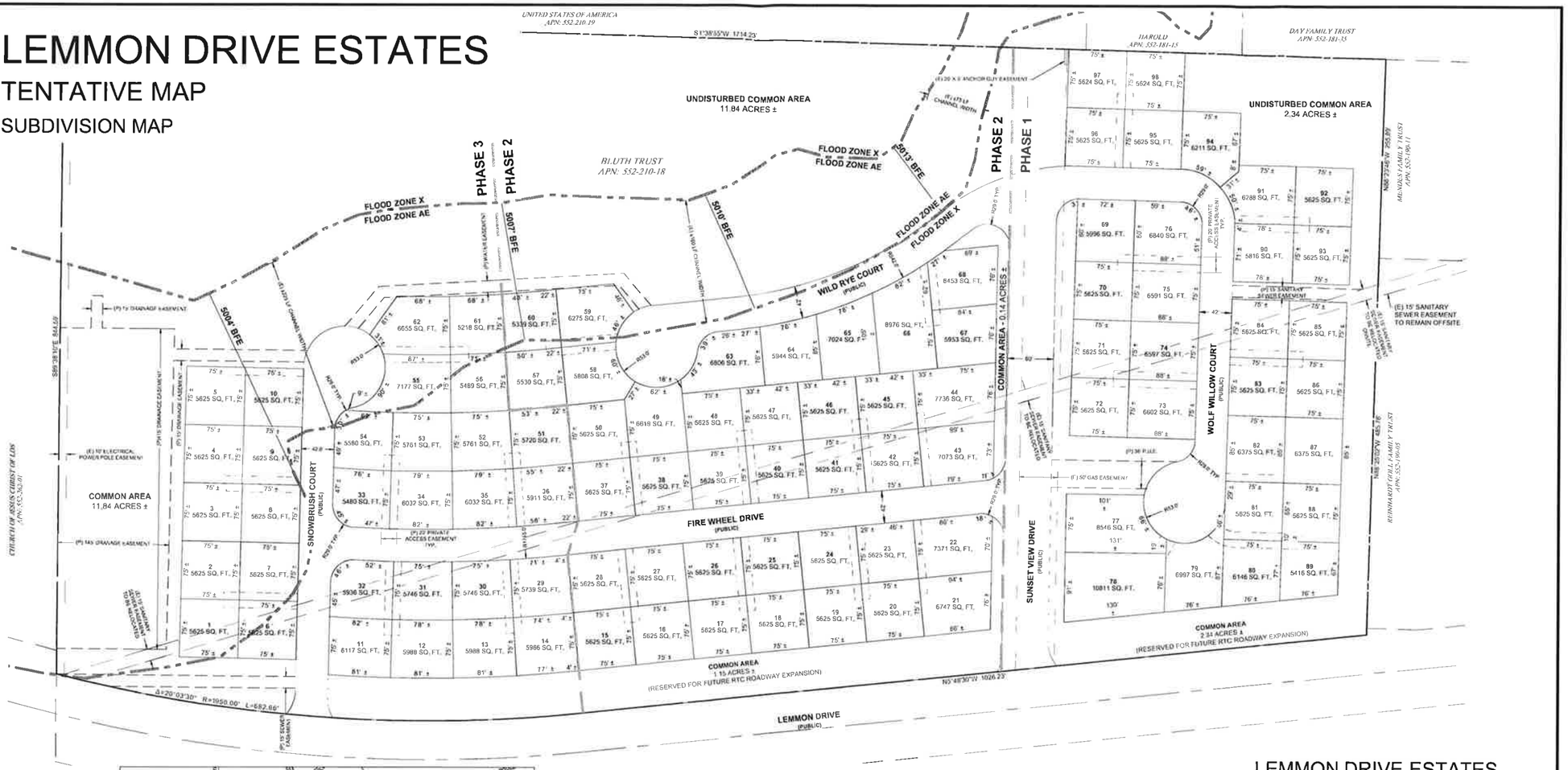
WTM18-004
EXHIBIT G

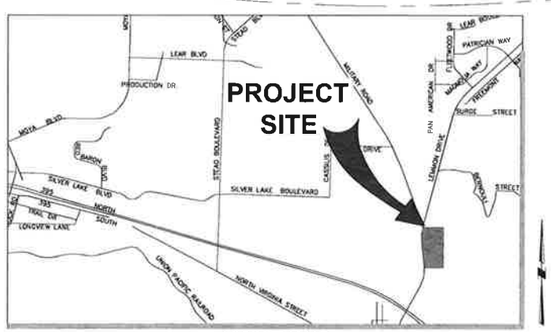
APPENDIX B

LEMMON DRIVE ESTATES

TENTATIVE MAP

SUBDIVISION MAP





VICINITY MAP
SCALE: NTS

GRAPHIC SCALE
60 0 30 60 120
1 inch = 60 ft.

ENGINEER'S STATEMENT:

TO THE BEST OF MY KNOWLEDGE, THE PLANS PREPARED ARE IN COMPLIANCE WITH APPLICABLE PROVISIONS OF THE WASHOE COUNTY DEVELOPMENT CODE.

JONATHON LAU, P.E.
CFA INC.

JONATHON LAU
Exp. 12-31-19
CIVIL
No. 24139
STATE OF NEVADA
PROFESSIONAL ENGINEER
03-15-2018

LEMMON DRIVE ESTATES
TENTATIVE MAP
SUBDIVISION MAP

WASHOE COUNTY NEVADA

CFA, INC.
LAND SURVEYORS
CIVIL ENGINEERS
LAND USE PLANNERS
1150 CORPORATE BOULEVARD • RENO, NEVADA 89502
775-856-1150 MAIN • 775-856-1160 FAX • CFARENO.COM

JOB NO: 16013.00 DATE: 03-15-2018

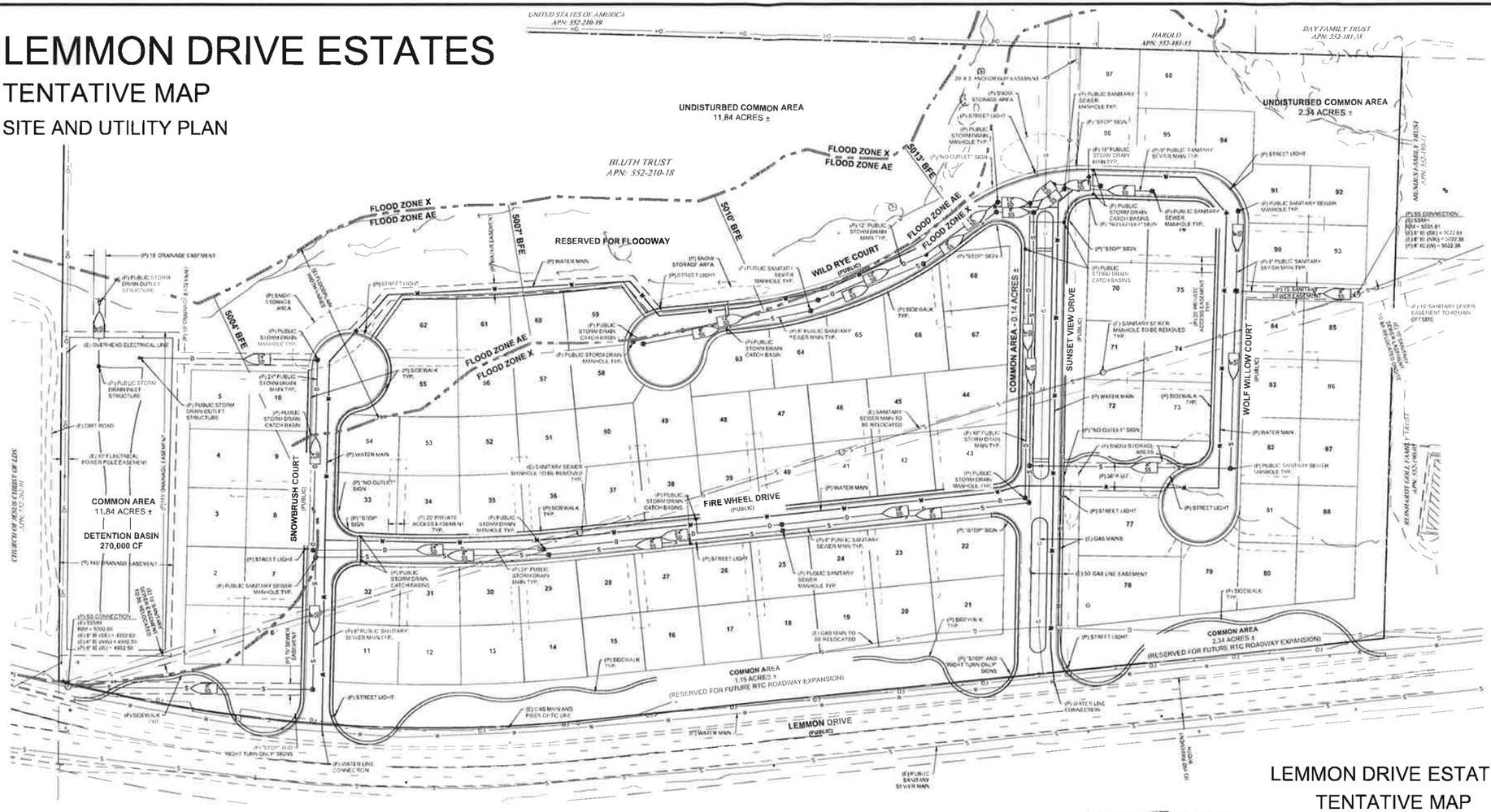
SHEET 1 OF 5

WTM18-004
EXHIBIT G

LEMMON DRIVE ESTATES

TENTATIVE MAP

SITE AND UTILITY PLAN



SITE INFORMATION

SITE INFORMATION:

SUBDIVISION NAME: LEMMON DRIVE ESTATES
APPLICANT: CHUCK BLUTH
PROPERTY OWNER: CHUCK BLUTH
ENGINEER: JONATHON LAU, CFA INC.

ASSESSOR PARCEL NUMBER: 552-210-18

STREET ADDRESS: 0 LEMMON DRIVE
WASHOE COUNTY, NV 89508

SITE STATISTICS:

TOTAL AREA: 33.97 AC
MAXIMUM TOTAL DWELLING UNITS ALLOWED: 101
TOTAL DWELLINGS: 98
COMMON AREAS: 4

AREA STATISTICS:

TOTAL RESIDENTIAL LOT AREA:	589,098 ± SF	(13.52 AC)
TOTAL COMMON AREA:	673,873 ± SF	(16.68 AC)
TOTAL STREET AREA:	164,068 ± SF	(3.77 AC)
TOTAL		33.97 AC

GROSS DENSITY: 2.88 DWELLINGS PER ACRE

COUNTY REGULATIONS:

MINIMUM LOT SIZE: 5,218 SF
MAXIMUM LOT SIZE: 10,811 SF
AVERAGE LOT SIZE: 6,011 SF

SETBACKS:

FRONT (HOME TO STREET): 10 FEET
FRONT (GARAGE TO STREET): 20 FEET
FRONT (HOME TO COMMON DRIVEWAY): 10 FEET
FRONT (GARAGE TO COMMON DRIVEWAY): 20 FEET
SIDE: 5 FEET
REAR: 10 FEET

LANDSCAPE STATISTICS:

TOTAL SITE AREA:	33.97 AC
UNDISTURBED AREA:	11.59 AC
TOTAL DEVELOPED AND GRADED AREA:	22.38 AC
REQUIRED LANDSCAPING (20%)	6.79 AC OR 295,772 SF
LANDSCAPE AREA PROVIDED: (FRONT YARDS NOT INCLUDED)	16.68 AC OR 673,873 SF

GRAPHIC SCALE

60 0 30 60 120

1 inch = 60 ft.

JONATHON LAU
Exp. 12-31-18
CIVIL
No. 24720
STATE OF NEVADA
REGISTERED PROFESSIONAL ENGINEER
03-15-2018

LEMMON DRIVE ESTATES
TENTATIVE MAP
SITE AND UTILITY PLAN

WASHOE COUNTY NEVADA

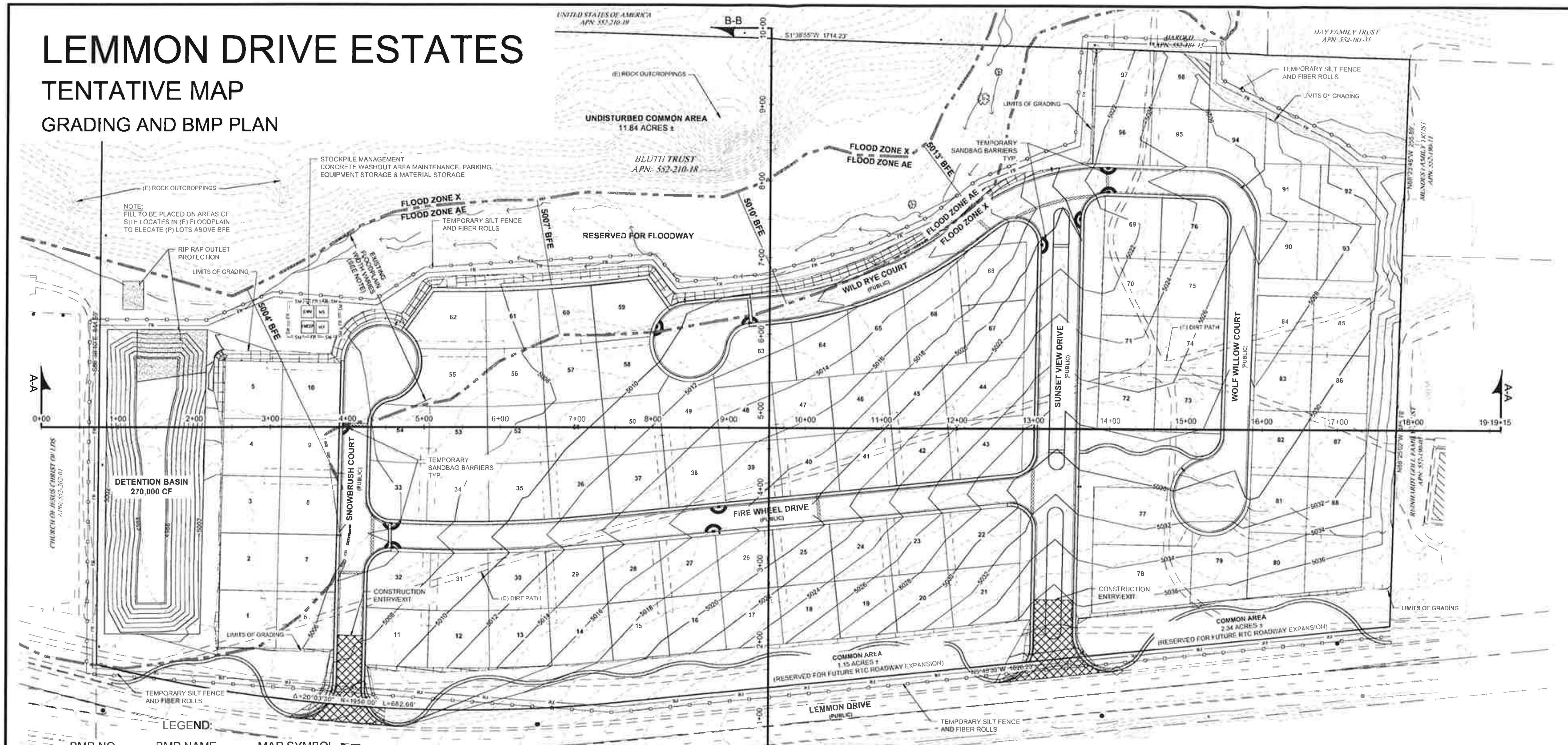
CFA, INC.
LAND SURVEYORS
CIVIL ENGINEERS
LAND USE PLANNERS
1150 CORPORATE BOULEVARD • RENO, NEVADA 89502
775-856-1150 MAIN • 775-856-1160 FAX • CFARENO.COM

JOB NO: 16013.00 DATE: 03-15-2018

SHEET 2 OF 5

WTM18-004
EXHIBIT G

LEMMON DRIVE ESTATES
TENTATIVE MAP
GRADING AND BMP PLAN



LEGEND:

BMP NO.	BMP NAME	MAP SYMBOL
SC-8	CONSTRUCTION SITE ENTRANCES AND EXITS	
EC-7	RIP RAP	
DP-3	SAND BAG BARRIERS (STORM DRAIN INLET PROTECTION)	
GM-2	STOCK PILE MANAGEMENT	SM
GM-5	STREET SWEEPING	SWEEP
GM-8	VEHICLE AND EQUIPMENT MAINTENANCE AND FUELING	VET
GM-9	HANDLING AND DISPOSAL OF CONCRETE AND CEMENT	CWM
GM-10	MATERIAL DELIVERY, HANDLING, STORAGE, AND USE	MS
SC-1	FIBER ROLLS (WATTLES)	FR
SC-5	SILT FENCE (MAY BE ATTACHED TO TEMP. CONSTRUCTION FENCE.	

STORMWATER QUALITY NOTES

1. THE OWNER, SITE DEVELOPER, CONTRACTOR AND/OR THEIR AUTHORIZED AGENTS SHALL EACH DAY REMOVE ALL SEDIMENT, MUD, CONSTRUCTION DEBRIS, OR OTHER POTENTIAL POLLUTANTS THAT MAY HAVE BEEN DISCHARGED TO, OR ACCUMULATE IN, THE PUBLIC RIGHTS OF WAYS OF THE CITY OF RENO OR WASHOE COUNTY AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIAL SHALL BE PREVENTED FROM ENTERING THE STORM SEWER SYSTEM.
2. ADDITIONAL CONSTRUCTION SITE DISCHARGE BEST MANAGEMENT PRACTICES MAY BE REQUIRED OF THE OWNER AND HIS OR HER AGENTS DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED PLAN DOES NOT MEET THE PERFORMANCE STANDARDS SPECIFIED IN WASHOE COUNTY CODE AND THE TRUCKEE MEADOWS CONSTRUCTION SITE BEST MANAGEMENT PRACTICES HANDBOOK.
3. TEMPORARY OR PERMANENT STABILIZATION PRACTICES WILL BE INSTALLED ON DISTURBED AREAS AS SOON AS PRACTICABLE AND NO LATER THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED. SOME EXCEPTIONS MAY APPLY; REFER TO STORMWATER GENERAL PERMIT NVR100000, SECTION I.B.1.b.(2).
4. AT A MINIMUM, THE CONTRACTOR OR HIS AGENT SHALL INSPECT ALL DISTURBED AREAS, AREAS USED FOR STORAGE OF MATERIALS AND EQUIPMENT THAT ARE EXPOSED TO PRECIPITATION, VEHICLE ENTRANCE AND EXIT LOCATIONS AND ALL BMPS WEEKLY, PRIOR TO A FORECASTED RAIN EVENT AND WITHIN 24 HOURS AFTER ANY ACTUAL RAIN EVENT. THE CONTRACTOR OR HIS AGENT SHALL UPDATE OR MODIFY THE STORMWATER POLLUTION PREVENTION PLAN AS NECESSARY. SOME EXCEPTIONS TO WEEKLY INSPECTIONS MAY APPLY, SUCH AS FROZEN GROUND CONDITIONS OR SUSPENSION OF LAND DISTURBANCE ACTIVITIES. REFER TO STORMWATER GENERAL PERMIT NVR100000, SECTION 1.B.1.g.
5. ACCUMULATED SEDIMENT IN BMPS SHALL BE REMOVED WITHIN SEVEN DAYS AFTER A STORMWATER RUNOFF EVENT OR PRIOR TO THE NEXT ANTICIPATED STORM EVENT WHICHEVER IS EARLIER. SEDIMENT MUST BE REMOVED WHEN BMP DESIGN CAPACITY HAS BEEN REDUCED BY 50 PERCENT OR MORE.
6. UPON COMPLETION OF CONSTRUCTION, CONTRACTOR SHALL PERMANENTLY REVEGETATE ALL AREAS DISTURBED WHERE CONSTRUCTION ACTIVITIES HAVE PERMANENTLY CEASED.
7. TEMPORARY BMPs SHALL BE REMOVED UPON COMPLETION OF CONSTRUCTION AND ACCEPTANCE OF MAINTENANCE BY WASHOE COUNTY.

REFERENCE TRUCKEE MEADOWS CONSTRUCTION SITE BEST MANAGEMENT PRACTICES (BMP) HANDBOOK FOR DETAILS ON INSTALLATION, INSPECTION AND MAINTENANCE PROCEDURE.

GRAPHIC SCALE

1 inch = 60 ft.

Cut/Fill Summary

[illegible]	[illegible]	[illegible]	2d Area	Cut	Fill	Net
Volume Surface	1.000	1.000	[illegible] Sq. Ft.	[illegible] Cu. Yd.	[illegible] Cu. Yd.	500 Cu. Yd. [illegible]

[illegible]

LEMMON DRIVE ESTATES
TENTATIVE MAP
GRADING AND BMP PLAN

WASHOE COUNTY NEVADA

JONATHON LAU
Exp. 12-31-19
CIVIL
No. 24738
03-15-2018

CFA, INC.
LAND SURVEYORS
CIVIL ENGINEERS
LAND USE PLANNERS
1150 CORPORATE BOULEVARD • RENO, NEVADA 89502
775-856-1150 MAIN • 775-856-1160 FAX • CFARENO.COM

JOB NO: 16013.00 DATE: 03-15-2018

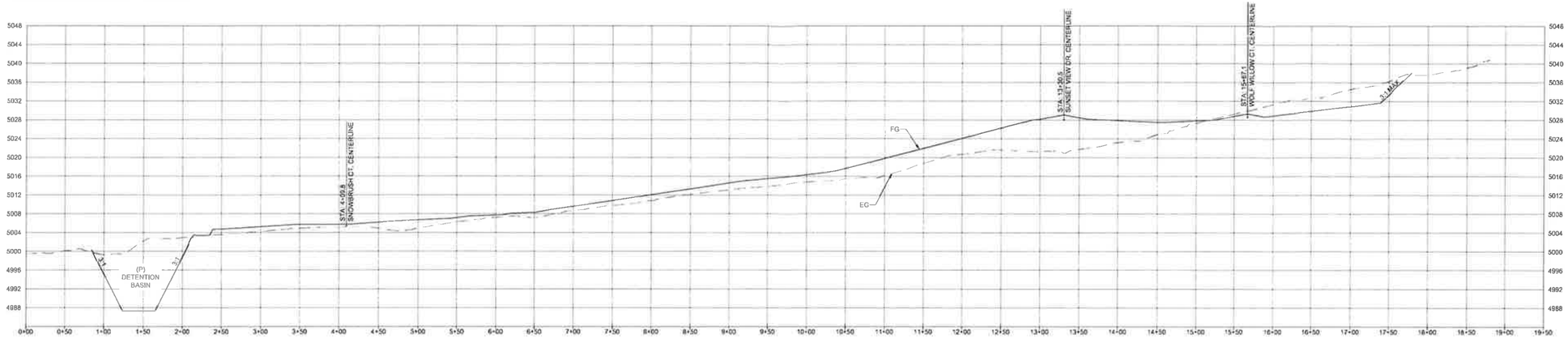
SHEET 3 OF 5

WTM18-004
EXHIBIT G

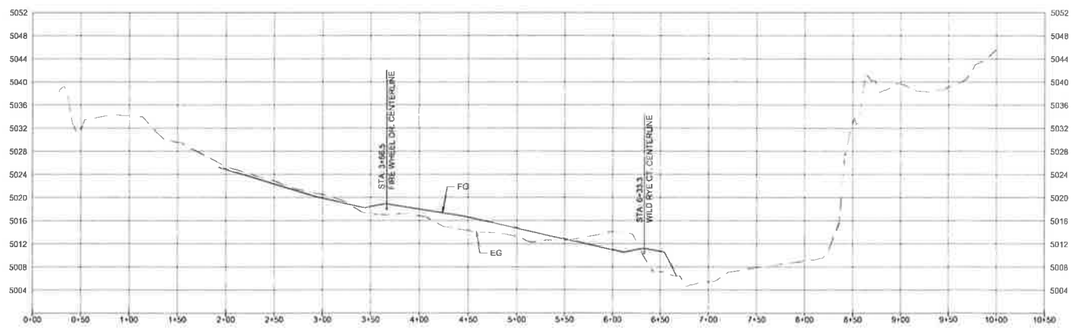
LEMMON DRIVE ESTATES

TENTATIVE MAP

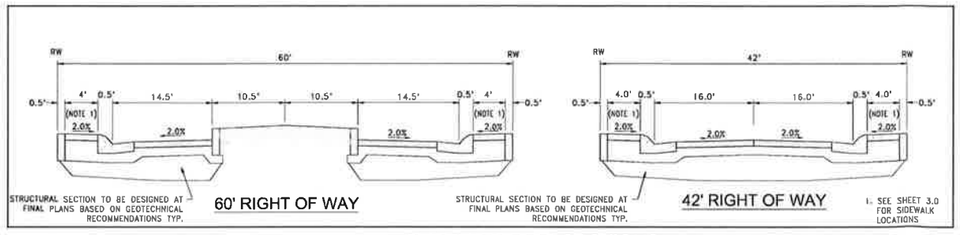
CROSS SECTIONS



SECTION A-A
H: 1"=60' V: 1"=10'



SECTION B-B
H: 1"=60' V: 1"=10'



STREET CROSS SECTIONS
NOT TO SCALE

JONATHON LAU
Exp 12-31-19
CIVIL
No. 24138
REGISTERED PROFESSIONAL ENGINEER
STATE OF NEVADA
03-15-2018

LEMMON DRIVE ESTATES
TENTATIVE MAP
CROSS SECTIONS

WASHOE COUNTY NEVADA

CFA, INC.
LAND SURVEYORS
CIVIL ENGINEERS
LAND USE PLANNERS
1150 CORPORATE BOULEVARD • RENO, NEVADA 89502
775-856-1150 MAIN • 775-856-1160 FAX • CFARENO.COM

JOB NO: 16013.00 DATE: 03-15-2018

SHEET 4 OF 5

WTM18-004
EXHIBIT G

LEMMON DRIVE ESTATES

TENTATIVE MAP

PRELIMINARY LANDSCAPE PLAN

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 PER LOT PER STREET FRONTAGE WHERE LOT DIRECTLY ABUTS A STREET.

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/SUNSET VIEW DRIVE - ADDITIONAL TREES HAVE BEEN PROVIDED IN COMMON AREAS AND ALONG SUNSET VIEW DRIVE NOT REQUIRED BY CODE. FINAL TREE COUNTS IN THESE AREAS WILL BE DETERMINED BY OWNER DURING THE DEVELOPMENT OF FINAL DRAWINGS BASED ON DESIRED COMMUNITY AESTHETICS.

NATIVE/UNDISTURBED LANDSCAPE

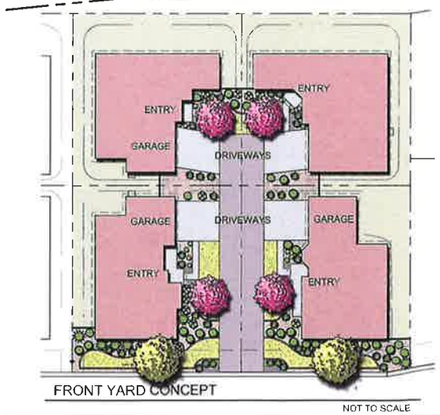
CANOPY SHADE TREES

ORNAMENTAL/FLOWERING ACCENT TREES

EVERGREEN TREES

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.



FRONT YARD CONCEPT

NOT TO SCALE

GRAPHIC SCALE

60 0 30 60 120

1 inch = 60 ft.

WASHOE COUNTY NEVADA

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CIVIL ENGINEERS
LAND USE PLANNERS
1150 CORPORATE BOULEVARD ▪ RENO, NEVADA 89502
775-856-1150 MAIN ▪ 775-856-1160 FAX ▪ CFARENO.COM

JOB NO: 682-510-03-18 DATE: 3/15/18

SHEET 5 OF 5

WTM18-004
EXHIBIT G

APPENDIX C

TRUCKEE MEADOWS WATER AUTHORITY
www.tmwa.com

Quality. Delivered.

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

TO: Karen Meyer **DATE:** September 8, 2016

THRU: Scott Estes SJE

FROM: Brooke Long BEL

CC: Tiffany Anderson

RE: Lemmon Drive Discovery, TMWA WO# 16-5019

SUMMARY:

TMWA can provide service to the project. The project lies outside TMWA's service territory and annexation will be required prior to water service.

The estimated planning level costs for facility improvements and applicable TMWA water service fees are on the order of $514,500.

Please contact Brooke Long (834-8104) with any questions or comments regarding this discovery.

PURPOSE:

Determine the offsite water facility requirements and planning level costs for service to the project.

PROJECT LOCATION:

The Project is located on the east side of Lemmon Drive between Buck Dr and Military Rd (see Figure 1). The Project is comprised of a single vacant parcel, outside TMWA's retail service territory. Annexation will be required prior to a water service agreement.

ASSUMPTIONS:

1. The applicant shall be responsible for all application, review, inspection, storage, treatment, permit, easements, and other fees pertinent to the Project as adopted by the TMWA at the time of application.
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. 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.
4. All TMWA owned facilities shall be constructed in public rights of way or easements granted to TMWA per TMWA Standards. Main sizes could change based on the required fire flow demand at the time of final application.

WTM18-004
EXHIBIT G

5. Project pressure criteria are:
    a. Maximum day pressure of 45 pounds per square inch (psi) at building pad elevation with tank level at top of fire storage,
    b. Peak hour pressure of 40 psi at building pad elevation with tank level at top of emergency storage, and
    c. Maximum day plus fire flow pressure of 20 psi at center of street elevation with tank level at bottom of fire storage.
6. Facility requirements for the Project are based on the assumed maximum day demand and fire flow requirements. Changes in demand or fire flow requirements may affect facility requirements.
7. Easements, permits and all pertinent Agency approvals are obtained for the design and construction of the water infrastructure necessary to serve the proposed Project.
8. 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.
9. 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.
10. Project water resources and storage will be obtained from the Vidler Water Company. Vidler owns the Fish Springs Ranch water rights and the available storage capacity in the TMWA's Terminal Tank. TMWA owns the importation water infrastructure, originating at the Fish Springs Ranch and terminating in Lemmon Valley.

DISCUSSION:

This project includes the development of 100 single family residential units on a single 34 acre parcel in Lemmon Valley between Military Rd and Buck Dr. The project water service plan includes supply from the 24" high pressure main on the south side of Lemmon Dr, adjacent to the project. Two supply taps off of the 24" main will be required to provide supply redundancy. Two pressure reducing stations will be required that reduce the pressure from around 220 psi to normal service pressures.

Project Water maximum Day Demands (MDD)

Project maximum day demands were estimated based on an average lot size of 5,000 ft2.

MDD = 0.009 * $\sqrt{5{,}000 ft^2}$ = 0.6 gpm

0.6 gpm * 100 lots = 60 gpm

The actual project demand will be re-evaluated at the time of application for water service.

System Capacity

There is adequate water system capacity to accommodate the total estimated build-out project demand.

Storage Capacity

The estimated required storage for this project is 46,063 gallons.

Fire Flows

Assumed project fire flows are 1,500 gpm for 2 hours. The actual fire flow requirement will be set by the governing fire agency.

Project Service and Improvements

Service to the project will include the following:

- Two connections to the high pressure main in Lemmon Dr.
- Two pressure reducing stations.
- 8" diameter piping routed throughout the project (see the attached figure).

TMWA's Area 10 Facility Charge is applicable, based on the project's maximum day demand. The reduced Area 10 charge of $3,575 per MDD gpm, reflects supply from Vidler's Fish Springs Ranch resource. Per an agreement between TMWA and the Vidler Water Company (VWC), development served directly from the terminal tank will pay a storage fee to VWC and as a result, will pay a reduced TMWA Area 10 Facility Charge.

Cost Opinion

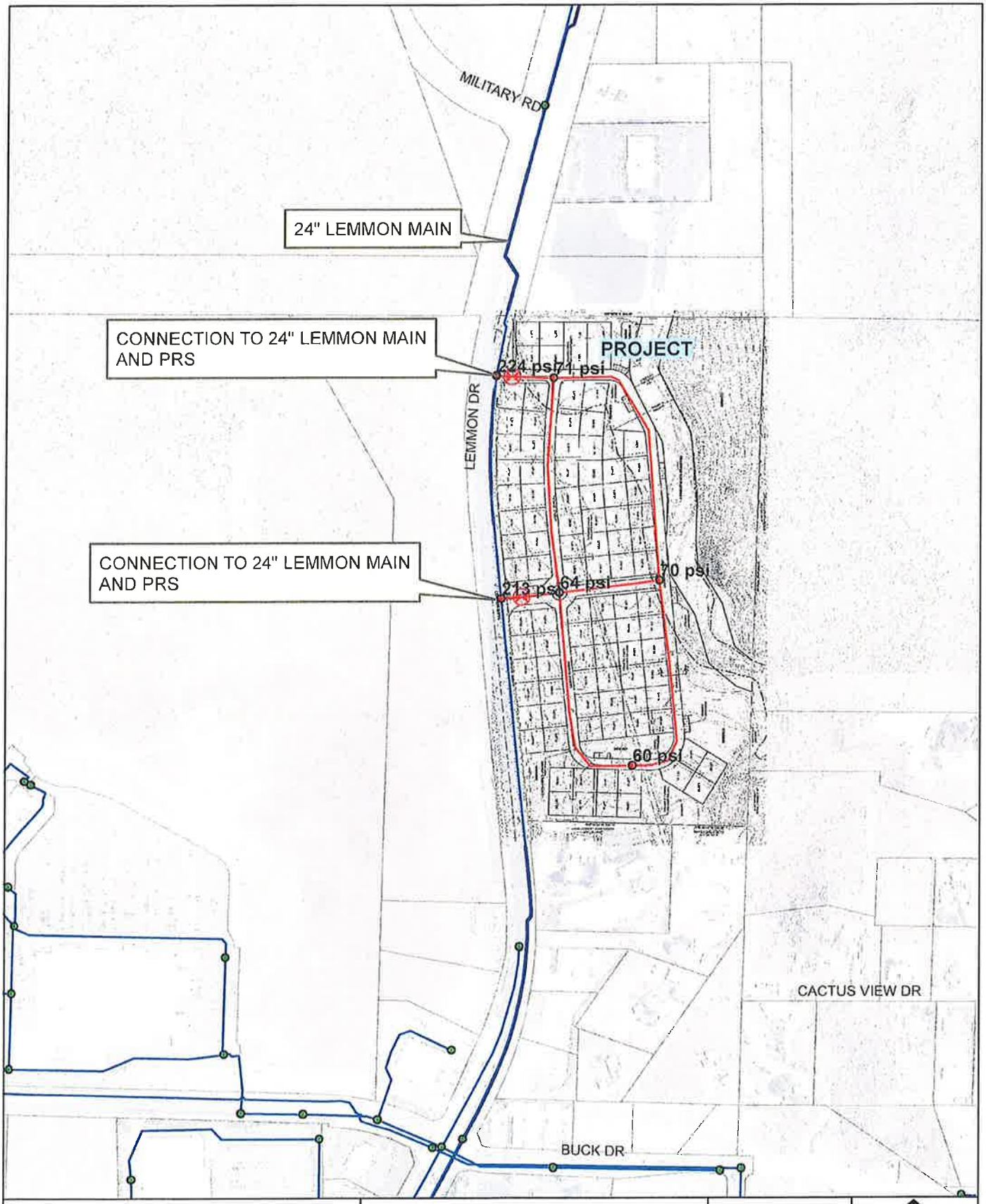
A planning level cost estimate to provide water service to the project can be found in Table 2. A cost estimate for service connections and associated appurtenances was not conducted.

Table 2. Planning level cost estimate of the Project off-site improvements.

Description	Quantity	Unit	Unit Cost	Cost
Area 10 Facility Charge	60.0	MDD, gpm	$3,575	$214,500
Connection to the 24" Lemmon Main	2.0	L.S.	$50,000	$100,000
Pressure Reducing Station (non-SCADA)	2.0	L.S.	$100,000	$200,000
			Total	**$514,500**

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 on-site 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.

cc: File WO# 16-5019
Attachments: Figure 1: Project Water Service Plan



TRUCKEE MEADOWS WATER AUTHORITY
Quality. Delivered.

WATER SERVICE PLAN
LEMMON VALLEY DISCOVERY
16-5019

DATE	SEPT 2016
MAP BY:	BEL
MODEL:	NV-STD_NAC 2016-02
SCALE:	1 inch = 433 feet

NORTH

NAD 83 NEVADA STATE PLANE WEST FEET

WTM18-004
EXHIBIT G

TRUCKEE MEADOWS WATER AUTHORITY
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775.834.8080 • 775.834.8003

Date: June 16, 2016

To: Karen Meyer

From: David Nelson DN

RE: 16-5019, Lemmon Valley, +/- 123 SFR Lots, (APN 552-210-18)

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:

- This subject parcel (APN 552-210-18) is 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 this property. 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 "123 SFR Lots" is estimated to require a domestic demand of **39.36 acre feet (AF)**. Landscaping was 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. If applicant dedicates surface water for this project additional fees and dedications will apply. TMWA's resources are first come, first serve and are limited in this area.*

- 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.

WTM18-004
EXHIBIT G

TRUCKEE MEADOWS WATER AUTHORITY

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

				Demand (Acre Feet)
1	Existing demand (current usage) at Service Property			**0.00**
2	Office/Living units	_____ x .12 (Apartments)	0.00	
3	Average Lot Size:	**123** x 0.32 per lot	39.36	
4	Fixture units:	_____ x 15x 365x 3.07/ 1 mil	0.00	
5	Landscaping:	Turf _____ sq ft x 3.41/ 43,560	TBD	
6	Drip		TBD	
7	Other calculated demand:		TBD	
8	New or additional demand at Service Property (lines 2+3+4+5+6)			**39.36**
9	**Total Demand at Service Property (lines 1+8)**			**39.36**
10	Less: Prior demand commitments at service property			
11	Less: Other resource credits		**0.00**	
12	**Total Credits (lines 10+11)**			**0.00**
13	Subtotal: Required resource dedication/commitment (lines 9-12)			**39.36**
14	Factor amount (0.11 x Line 13)			TBD
15	Return flow required ([1-2.5/duty] x Line 13)			TBD
16	**TOTAL RESOURCES REQUIRED (lines 13+14+15)**			**39.36**

17	Price of Water Rights per AF $7,500	$	TBD
18	Will Serve Commitment Letter Preparation Fee ($100 per letter)	$	100
19	Due Diligence Fee ($150.00 per parcel)	$	0
20	Demand Calc Sheet Revision due to plan changes ($100 per revised document)	$	0
21	Document Preparation Fees ($100.00 per document)	$	0
22	Meter Contribution ($1,830 x 39.36 acre feet of demand)	$	TBD
23	**TOTAL FEES DUE (lines 17 thorugh 22)**	$	**100**

Project: Lemmon Valley +/- 123 SFR Lots Discovery

Applicant: Chuck Bluth **Quote date:** 6/16/2016

Phone: CFA: Russ Applegate 856-1150 **Tech contact:** David 834-8021

APN: 552-210-18 **Project No:** 16-5019

Remarks: **Fees quotes are valid only within 15 calendar days of Quote Date.**

Estimate shows dedication of groundwater. Additional fees and dedications will apply if surface water is brought into TMWA. Property needs to be annexed.

WTM18-004
EXHIBIT G

TRAFFIC WORKS LLC

Traffic Engineering, Transportation Planning, & Forensic Services

March 14, 2018

Charles P. Bluth
BLUTH DEVELOPMENT
4655 Longley Lane, Suite 107
Reno, NV 89502

Trip Generation Letter for Lemmon Drive Residential Project – Bluth Development

Dear Mr. Bluth,

This letter provides trip generation estimates for the development of 98 single family residential units on parcel APN 555-210-18 in Reno, NV. The project is located on the east side of Lemmon Drive between Buck Drive and Military Road, just south of the existing church property opposite Military Road.

Trip Generation Estimates

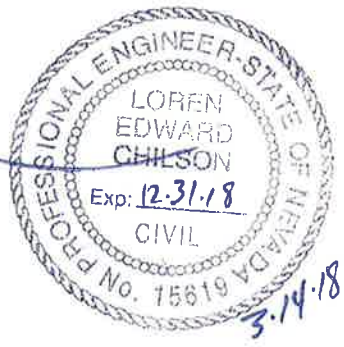
Trip generation rates for this analysis were obtained from the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 10th *Edition*.

The table below shows the Daily, AM peak hour, and PM peak hour trip generation details for the planned development. The project would be expected to generate approximately 925 Daily Trips, 73 AM peak hour trips, and 97 PM peak hour trips.

Land Use	Size	Units	Rates							Trips						
			Daily	AM	AM In	AM Out	PM	PM In	PM Out	Daily	AM	AM In	AM Out	PM	PM In	PM Out
Single-Family Detached Housing (210)	98	du	9.44	0.74	0.19	0.56	0.99	0.62	0.37	925	73	18	54	97	61	36

Please do not hesitate to contact us with any questions.

Sincerely,
TRAFFIC WORKS, LLC



Loren E. Chilson, PE
Principal

WTM18-004
EXHIBIT G

APPENDIX D

LEMMON DRIVE ESTATES

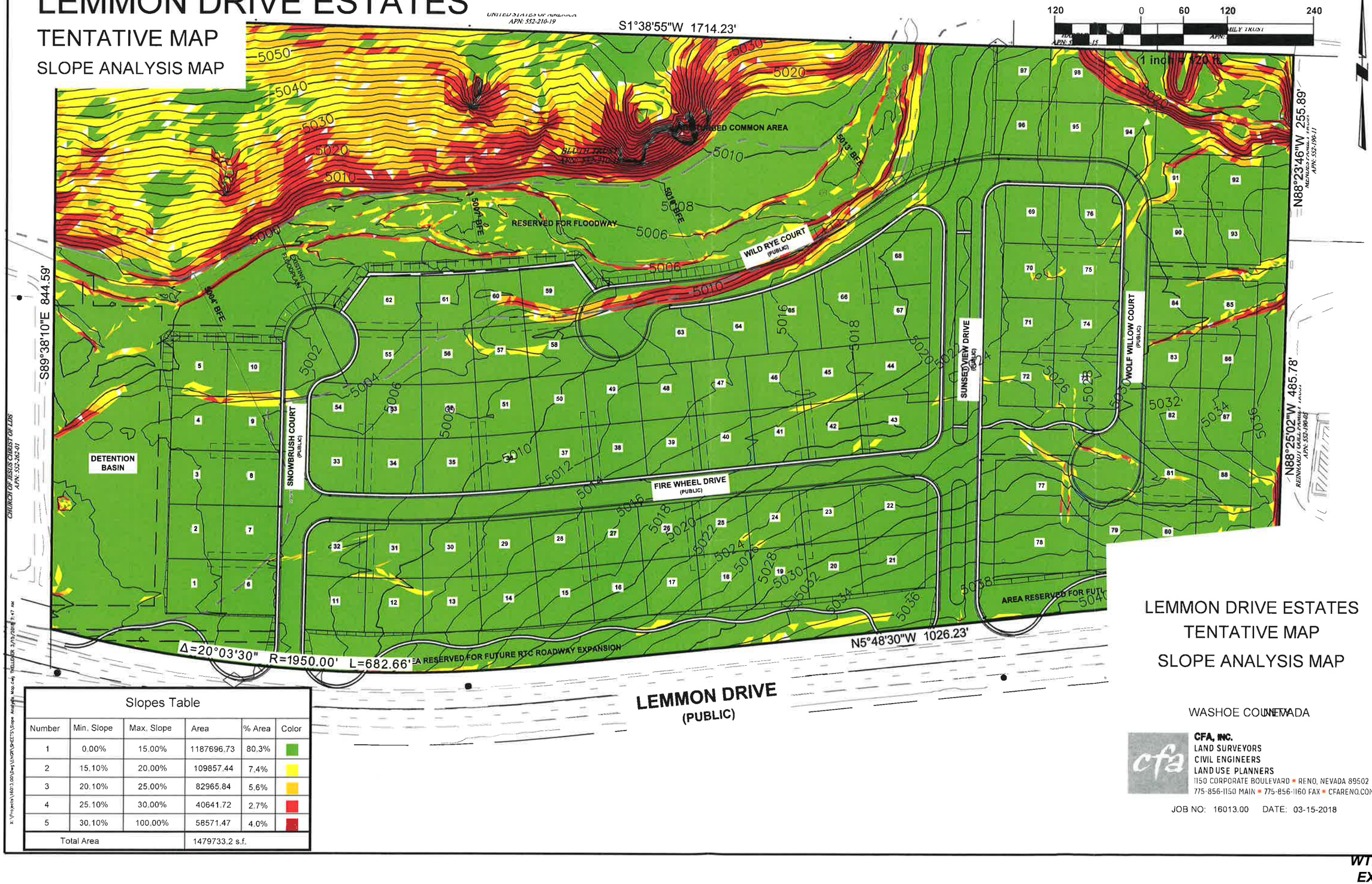
TENTATIVE MAP

SLOPE ANALYSIS MAP

GRAPHIC SCALE

120 0 60 120 240

(1 inch = 120 ft.)



Slopes Table					
Number	Min. Slope	Max. Slope	Area	% Area	Color
1	0.00%	15.00%	1187696.73	80.3%	
2	15.10%	20.00%	109857.44	7.4%	
3	20.10%	25.00%	82965.84	5.6%	
4	25.10%	30.00%	40641.72	2.7%	
5	30.10%	100.00%	58571.47	4.0%	
Total Area			1479733.2 s.f.		

LEMMON DRIVE ESTATES

TENTATIVE MAP

SLOPE ANALYSIS MAP

WASHOE COUNTY, NEVADA

CFA, INC.
LAND SURVEYORS
CIVIL ENGINEERS
LAND USE PLANNERS
1150 CORPORATE BOULEVARD • RENO, NEVADA 89502
775-856-1150 MAIN • 775-856-1160 FAX • CFARENO.COM

JOB NO: 16013.00 DATE: 03-15-2018

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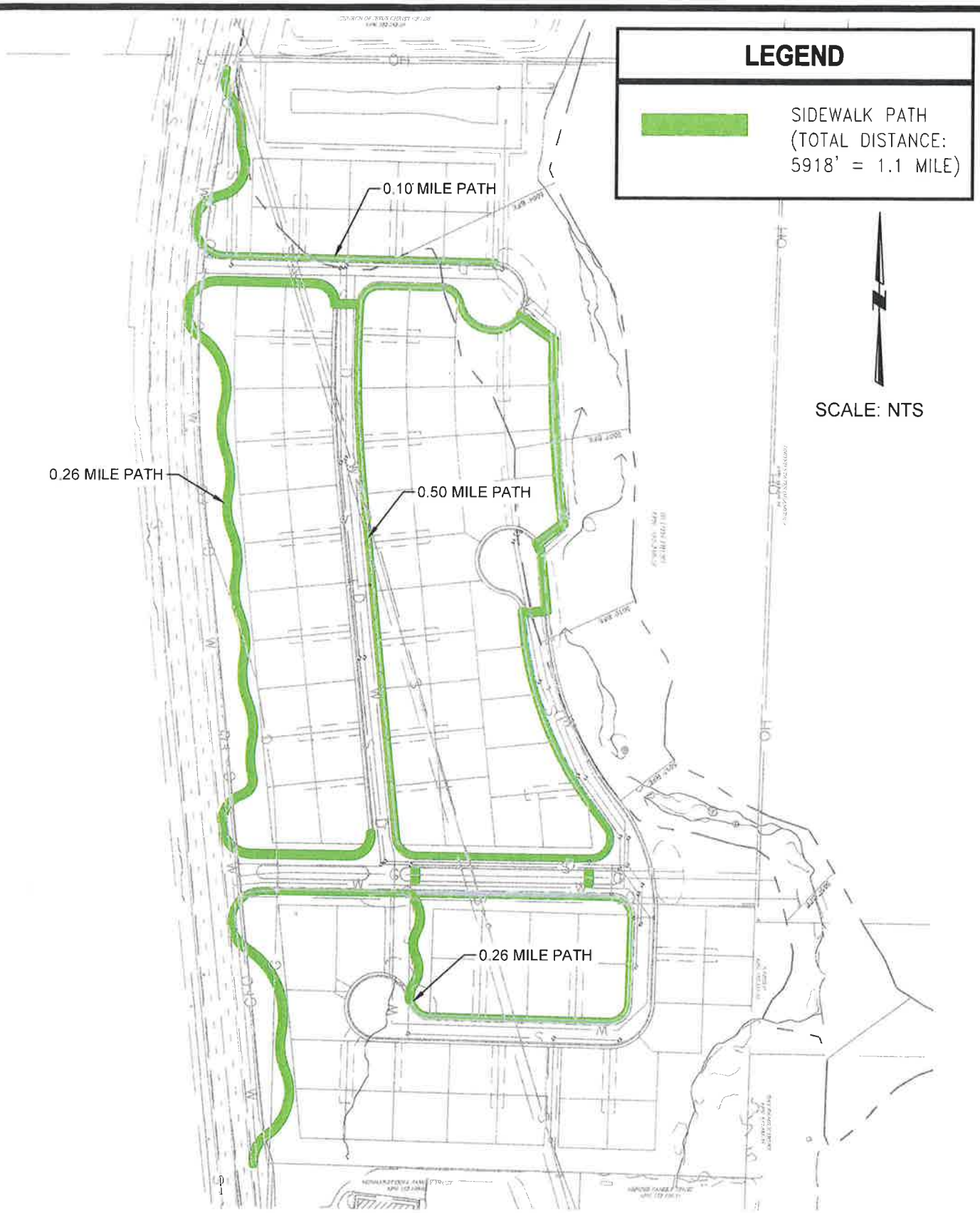

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1150 CORPORATE BLVD.
RENO, NV 89502
(775) 856-1150

LEMMON DRIVE ESTATES
TENATIVE MAP

PATH LOOP

LEMMON DRIVE
WASHOE COUNTY, NV

SHEET 1 OF 1

WTM18-004
EXHIBIT G

LEMMON DRIVE ESTATES

TENTATIVE MAP

CUT & FILL EXHIBIT

GRAPHIC SCALE

120 0 60 120 240

1 inch = 120 ft.

Elevations Table				
Number	Min. Elevation	Max. Elevation	Area (s.f)	Color
1	-17	-13	12150.12	
2	-13	-9	12401.10	
3	-9	-5	28916.25	
4	-5	-1	215910.43	
5	-1	3	506411.34	
6	3	7	124766.77	
7	7	11	6673.35	

UNITED STATES OF AMERICA
APN: 552-210-19

. S1°38'55"W 1714.23'

HAROLD
APN: 552-181-15

DAY FAMILY TRUST
APN: 552-181-35

AREA OF STEEP SLOPES
(UNDISTURBED)

BLUTH TRUST
APN: 552-210-18

(E) DRAINAGE

N88°23'46"W 255.89'

MIDKIFF FAMILY TRUST
APN: 552-190-11

N88°25'02"W 485.78'

RENHAM LIVING TRUST
APN: 552-190-03

S89°38'10"E 844.59'

CHURCH OF JESUS CHRIST OF LDS
APN: 552-262-01

Δ=20°03'30" R=[illegible]' L=682.66'

N5°48'30"

LEMMON DRIVE
(PUBLIC)

LEMMON DRIVE ESTATES
TENTATIVE MAP
CUT & FILL EXHIBIT

WASHOE COUNTY NEVADA

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JOB NO: 16013.00 DATE: 03-15-2018

WTM18-004
EXHIBIT G

THE PRESERVE - PLAN 1A - 1,643 SF

WTM18-004
EXHIBIT G

THE PRESERVE - PLAN 2B - 1,683 SF

WTM18-004
EXHIBIT G

THE PRESERVE - PLAN 3B - 1,709 SF

WTM18-004
EXHIBIT G

THE PRESERVE - PLAN 4B - 1,900 SF

WTM18-004
EXHIBIT G

THE PRESERVE - PLAN 4A - 1,900 SF

WTM18-004
EXHIBIT G

THE PRESERVE - PLAN 3A - 1,709 SF

WTM18-004
EXHIBIT G

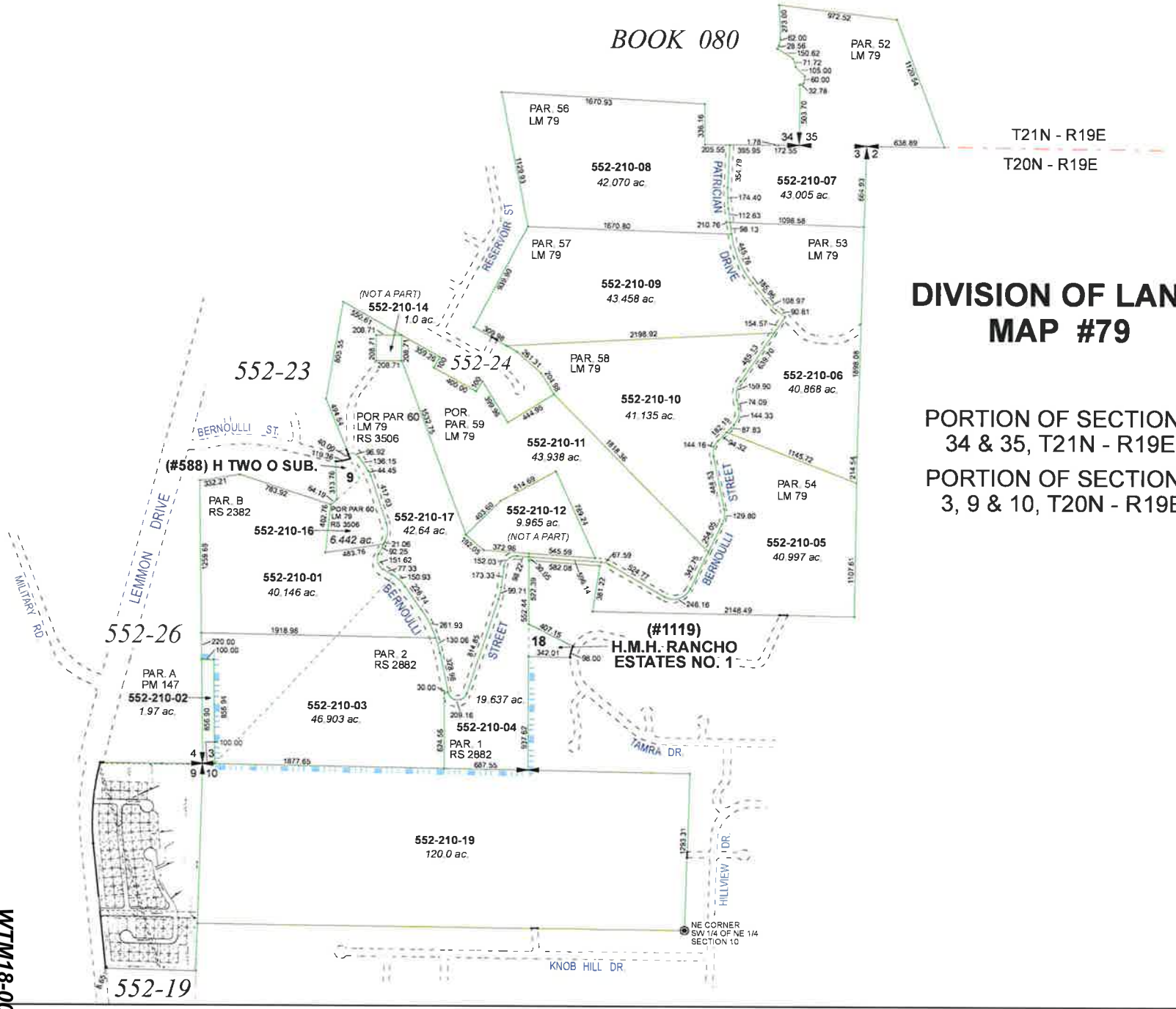
THE PRESERVE - PLAN 2A - 1,683 SF

WTM18-004
EXHIBIT G

THE PRESERVE - PLAN 1B - 1,643 SF

WTM18-004
EXHIBIT G

APPENDIX E



DIVISION OF LAND MAP #79

PORTION OF SECTIONS 34 & 35, T21N - R19E

PORTION OF SECTIONS 3, 9 & 10, T20N - R19E

Assessor's Map Number

552-21

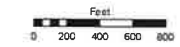
STATE OF NEVADA

WASHOE COUNTY

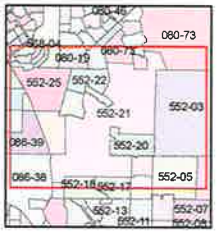
ASSESSOR'S OFFICE

Joshua G. Wilson, Assessor

1001 East Ninth Street
Building D
Reno, Nevada 89512
(775) 328-2231



1 inch = 800 feet



created by CFB 09/08/2010

last updated KSB 9/10/12 EMG 9/2/14

area previously shown on map(s)

552-19

NOTE: This map was prepared for the use of the Washoe County Assessor for assessment and illustrative purposes only. It does not represent a survey of the premises. No liability is assumed as to the sufficiency or accuracy of the data delineated hereon.

WTM18-004
EXHIBIT G

DOC #4670463
01/13/2017 11:02:30 AM
Electronic Recording Requested By
FIRST CENTENNIAL - RENO (MAIN OF
Washoe County Recorder
Lawrence R. Burtness
Fee: $18.00 RPTT: $0
Page 1 of 2

APN: 086-380-15 086-380-13
552-210-18
Escrow No. 00205870 - 001 - 06
RPTT 0.00
When Recorded Return to:
The Lakes at Lemmon Valley, LLC
9550 Gateway Dr.
Reno, NV 89521
Mail Tax Statements to:
Grantee same as above

SPACE ABOVE FOR RECORDERS USE

Grant, Bargain, Sale Deed

THIS INDENTURE WITNESSETH: That
Charles P. Bluth and Cynthia C. Bluth, trustees of The Bluth Trust UTD 4/19/93

In consideration of $10.00, the receipt of which is hereby acknowledged, do(es) hereby Grant, Bargain, Sell and Convey to
The Lakes at Lemmon Valley, LLC a Nevada Limited Liability Company

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

See Exhibit A attached hereto and made a part hereof.

Together with all and singular the tenements, hereditaments and appurtenances thereunto belonging or in anywise appertaining.

Witness my/our hand(s) this 3rd day of January, 2017

Charles P. Bluth and Cynthia C. Bluth,
trustees of The Bluth Trust UTD 4/19/93

Charles P. Bluth, trustee

Cynthia C Bluth
Cynthia C. Bluth, trustee

STATE OF NEVADA
COUNTY OF WASHOE

This instrument was acknowledged before me on January 3, 2017
By Charles P. Bluth and Cynthia C. Bluth

Kathleen O'Connell
NOTARY PUBLIC

KATHLEEN O'CONNELL
Notary Public, State of Nevada
Appointment No. 03-80171-2
My Appt. Expires Dec 26, 2018

SPACE BELOW FOR RECORDER

WTM18-004
EXHIBIT G

Exhibit A

PARCEL 1:

Parcel A of Parcel Map No. 4703, according to the map thereof, filed in the office of the County Recorder of Washoe County, State of Nevada, on January 10, 2007 as File No. 3485112, Official Records.

APN: 086-380-13

PARCEL 2:

Parcel A of Parcel Map No. 4704, for CAMINO VIEJO INVESTMENTS, according to the map thereof, filed in the office of the County Recorder of Washoe County, State of Nevada, on January 10, 2007, as File No. 3485113, Official Records.

APN: 086-380-15

PARCEL 3:

That portion of the Northeast Quarter (NE ¼) of Section 9, Township 20 North, Range 19 East, Mount Diablo Base and Meridian, lying East of the Easterly line of Lemmon Drive, as said Lemmon Drive currently exists.

EXCEPTING THEREFROM that portion thereof lying South of the most Northerly line of the land described in the deed to Silver State Kennel General Partnership, recorded March 23, 1999 as Document No. 2320002 of Official Records.

ALSO EXCEPTING THEREFROM that portion thereof lying South of the most Northerly line of the land described in the deed to Alan L. Mendes and Lilian A. Mendes recorded February 16, 1989 as Document No. 1305374 of Official Records.

APN: 552-210-18

SPACE BELOW FOR RECORDER

Washoe County Treasurer
Tammi Davis

Washoe County Treasurer
P O Box 30039, Reno, NV 89520-3039
ph: (775) 328-2510 fax: (775) 328-2500
Email: tax@washoecounty.us

Bill Detail

Back to Account Detail Change of Address Print this Page

Washoe County Parcel Information

Parcel ID	Status	Last Update
55221018	Active	3/13/2018 2:06:47 AM

Current Owner:
LAKES AT LEMMON VALLEY LLC
4655 LONGLEY LN STE 107
RENO, NV 89502

SITUS:
0 LEMMON DR
WCTY NV

Taxing District

Geo CD:

Legal Description

Section 9 Township 20 Range 19 SubdivisionName _UNSPECIFIED

Installments

Period	Due Date	Tax Year	Tax	Penalty/Fee	Interest	Total Due
INST 1	8/21/2017	2017	$0.00	$0.00	$0.00	$0.00
INST 2	10/2/2017	2017	$0.00	$0.00	$0.00	$0.00
INST 3	1/1/2018	2017	$0.00	$0.00	$0.00	$0.00
INST 4	3/5/2018	2017	$0.00	$0.00	$0.00	$0.00
	Total Due:		**$0.00**	**$0.00**	**$0.00**	**$0.00**

Tax Detail

	Gross Tax	Credit	Net Tax
State of Nevada	$343.61	($258.60)	$85.01
Truckee Meadows Fire Dist	$1,091.46	($855.80)	$235.66
Washoe County	$2,812.93	($2,117.05)	$695.88
Washoe County Sc	$2,301.16	($1,731.87)	$569.29
Total Tax	**$6,549.16**	**($4,963.32)**	**$1,585.84**

Payment History

Tax Year	Bill Number	Receipt Number	Amount Paid	Last Paid
2017	2017175096	B17.115237	$396.46	9/29/2017
2017	2017175096	B17.167131	$396.46	12/22/2017
2017	2017175096	B17.230091	$396.46	3/2/2018
2017	2017175096	B17.61449	$396.46	8/21/2017

Pay By Check

Please make checks payable to:
WASHOE COUNTY TREASURER

Mailing Address:
P.O. Box 30039
Reno, NV 89520-3039

Overnight Address:
1001 E. Ninth St., Ste D140
Reno, NV 89512-2845

Change of Address

All requests for a mailing address change must be submitted in writing, including a signature (unless using the online form).

To submit your address change online click here

Address change requests may also be faxed to: (775) 328-2500

Address change requests may also be mailed to:
Washoe County Treasurer
P O Box 30039
Reno, NV 89520-3039

LEMMON DRIVE ESTATES
TENTATIVE MAP
& COMMON OPEN SPACE DEVELOPMENT

(SPECIAL PACKET)

PREPARED FOR

PREPARED BY:
CFA, INC.
1150 CORPORATE BOULEVARD
RENO, NV 89502
(775) 856-1150

MARCH 15, 2018

PROJECT: 16-013.00

WTM18-004
EXHIBIT G

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(Special Package)

Appendices

Map Pocket

Preliminary Grading Plan

Preliminary Landscape Plan

APPENDIX A

Axion
GEOTECHNICAL
Geotechnical Engineering & Construction Testing Services
681 Edison Way, Reno, NV 89502

PRELIMINARY GEOTECHNICAL INVESTIGATION

PROPOSED

LEMMON DRIVE ESTATES

Washoe County Assessor's Office Parcel Number 555-210-18

Lemmon Valley Area

RENO, NEVADA

Prepared for:

Bluth Development, LLC
9550 Gateway Drive
Reno, Nevada 89521

Attention: Charles Bluth, President

March 13, 2018

Project No. 18.169.02-G

WTM18-004
EXHIBIT G

Axion
GEOTECHNICAL
Geotechnical Engineering & Construction Testing Services
681 Edison Way, Reno, NV 89502

March 13, 2018
Project No. 18.169.02-G

Bluth Development, LLC
9550 Gateway Drive
Reno, Nevada 89521

Attn: Charles Bluth, President

Re: Preliminary Geotechnical Investigation, Proposed Lemmon Drive Estates, Washoe County Assessor's Office Parcel Number 555-210-18, Lemmon Valley Area, Reno, Nevada.

Dear Bluth:

Axion Geotechnical is pleased to present results of a preliminary geotechnical investigation our firm conducted for the project. Based on results of our investigation, experience in the area, and understanding of project development, we conclude that the site is suitable for its intended use. The primary geotechnical concerns are the potential presence of **expansive soil** and **bedrock**, and the presence of **drainages**, **flood zone** and **utility easements**.

We appreciate being selected to perform this preliminary investigation and trust results fulfill your needs at this time. If you or your design consultants have questions, please contact us at (775) 771-2388 or at chris@axionengineering.net.

Respectfully,

AXION GEOTECHNICAL, LLC

Chris D. Betts

Chris D. Betts, P.E.
President

PROFESSIONAL ENGINEER STATE OF NEVADA
CHRISTOPHER D. BETTS
Exp: 12-31-18
CIVIL
No. 21633
3-13-18

WTM18-004
EXHIBIT G

CONTENTS

Axion Geotechnical, LLC
681 Edison Way
Reno, Nevada 89502
(775) 771-2388

I INTRODUCTION

Axion Geotechnical is pleased to present results of a preliminary geotechnical investigation our firm conducted for the proposed Lemmon Drive Estates. The 33.97-acre parcel is on the south side of Lemmon Drive, west of its intersection with Military Road and is Washoe County Assessor's Office parcel number 555-210-18 (Property). Proposed development includes construction of isolated pads for single-family residences serviced by community water and sewer system and on-site storm water retention. The structures will have one to two levels, will be wood-framed, and will be supported with shallow conventional spread foundations. Dedicated services streets will be surfaced with asphaltic concrete.

We have not received information concerning foundation loads; however, we anticipate maximum wall loads will be on the order of 1.5 kips per foot (dead plus live plus snow load), and that maximum column loads will be less than 5 kips (dead plus live plus snow load). For frost protection, perimeter foundations will bottom at least 24 inches below lowest adjacent exterior ground surface. Structural design will follow criteria outlined in the 2012 *International Building Code*.

We have not received civil design plans; however, we anticipate earthwork to attain proposed grades and for proper site drainage will include cuts and fill on the order of five feet. New slopes will be constructed at final inclinations of two horizontal to one vertical (2H:1V) or flatter. Site earth retaining walls are not anticipated. Depth of utility trenches should be less than eight feet. We assume underground utilities in proposed structural areas will be abandoned or relocated. Earthwork will be performed in accordance with the 2012 *Standard Specifications for Public Works Construction* by the Regional Transportation Commission (RTC).

The purpose of our preliminary geotechnical investigation was to perform a site reconnaissance and review available literature and maps to provide opinions and discussions concerning the geotechnical suitability of the Property for its intended use. Once design parameters, such as building locations, finish floor elevations, foundation loads and proposed grading are known; a design-level geotechnical investigation report with detailed information of the subsurface soil conditions and recommendations for design and construction must be performed.

This report is preliminary and geotechnical in nature and not intended to identify other potential site constraints such as environmental hazards, wetlands determinations or the potential presence of buried utilities. Opinions and discussions included in this report are specific to development at the Property and are not intended for off-site development.

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II SITE, SOIL AND WATER CONDITIONS

The Property is undeveloped, vacant, and bordered by undeveloped land to the east, Lemmon Drive to the west, a church to the north and dog kennels to the south. The surface grades gently downward from the south to the north, and moderately to steeply downward from the east to the west. The Property is covered by medium dense to dense sagebrush and weeds. Trees are present along the eastern drainage. Rock outcrops are present along the steep hillside to the east. Boulders are present tin the central portion of the site. Two drainages cross the Property from south to north. Overhead utilities cross along the eastern portion of the Property, and underground utilities (sanitary sewer) crosses the central and eastern portions of the Property. Dirt roads are present.

View of Property from SW corner

Based on the United States Geological Survey 7.5-Minute topographic map of the Reno Quadrangle, the Property is in the NE ¼ of Section 9, Township 19 North, Range 19 East and elevation ranges from about 5,040 to 5,060 feet relative to mean sea level.

Based on mapping by H. F. Bonham, Jr. and E. C. Bingler (*Reno Folio, Geologic Map*), the materials underlying the Property are predominantly Quaternary-age alluvial fan deposits of Peavine Mountain (Qpf), with Mesozoic-age granodiorite (Mzgd) along the eastern hillside. These units are described as follows:

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Peavine Mountain (Qpf): Poorly sorted, pale yellowish to reddish brown, montmorillonitic, gravelly, to sandy and clayey silt, with white silicified andesite fragments common. In the Black Springs area, the unit contains pale orange brown clayey and gravelly sand.

Granodiorite (Mzgd): Gray hornblende-biotite granodiorite. Deuteric alteration has commonly formed actinolite and chlorite from hornblende and biotite; epidote calcite, and sericite partially replace plagioclase. It is not normally deeply weathered and usually forms numerous outcrops.

According to mapping by the U. S. Department of Agriculture, Soil Conservation Service (*Soil Survey of Washoe County, Nevada, South Part*, Sheet No. 22, 1980), the Property is underlain by the following units:

Haybourne loamy sand, 2 to 4 percent slopes (# 140): This unit is along the larger drainage to the east. This very deep, well-drained soil on alluvial fans. It formed in alluvium derived dominantly from granitic rocks. Elevation is 4,500 to 5,900 feet. Typically, the surface layer is pale brown loamy sand about 10 inches thick. The subsoil is brown sandy loam about 16 inches thick. The substratum to a depth of 63 inches or more is brown, stratified fine sandy loam through coarse sand. Permeability is moderately rapid in the subsoil and moderately rapid to rapid in the substratum. Effective rooting depth is 60 inches or more. Runoff is slow, the hazard of water erosion is slight. The hazard for soil blowing is moderate. The soil is subject to flash flooding during storms of unusually high intensity and channeling. Deposition are common along streambanks. Limitations for shallow excavations are severe due to cutbanks caving. Limitations for dwellings with or without basements, small commercial buildings are severe due to flooding. Limitations for local roads and streets are severe due to flooding. Limitations for septic tank absorption fields are severe due to poor filter. The shrink-swell potential is low. The frequency of flooding is rare. Depth to high water table is greater than 6.0 feet. Depth to bedrock is greater than 60 inches. The potential frost action is moderate. The risk of corrosion to uncoated steel is moderate, and to concrete it is low. Limitations associated with the use of this unit for urban development, as defined by the soil survey, are flooding, rapid permeability and the susceptibility to frost heaving.

Northmore sandy loam, 2 to 4 percent slopes (# 201). This unit is along the central portion of the Property. This very deep, well-drained soil is on alluvial fans. It formed in alluvium derived from mixed rock sources. Elevation is 4,500 to 5,500 feet. Typically, the surface layer is grayish brown sandy loam about 15 inches thick. The subsoil is brown sandy clay about 30 inches thick. The substratum to a depth of 60 inches or more is pale brown sandy loam. Permeability is slow. Effective rooting depth is 60 inches or more. runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Limitations for shallow excavations are slight. Limitations for dwellings with or without basements are severe due to shrink-swell. Limitations for roadways are severe due to low strength and shrink-swell.

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Limitations for septic tank absorption fields are severe due to slow percolation rates. The shrink-swell potential is low to high. The frequency of flooding is none. Depth to high water table is greater than 6.0 feet. Depth to bedrock is greater than 60 inches. The potential frost action is low. The risk of corrosion to steel and concrete is moderate. The main limitations associated with the use of this unit for urban development, as described by the soil survey, are the high clay content, slow permeable subsoil, and low bearing strength.

Northmore sandy loam, 4 to 8 percent slopes (# 202). This unit is along the central and western portions of the Property. This very deep, well-drained soil is on alluvial fans. It formed in alluvium derived from mixed rock sources. Elevation is 4,500 to 5,500 feet. Typically, the surface layer is grayish brown sandy loam about 10 inches thick. The subsoil is brown sandy clay about 35 inches thick. The substratum to a depth of 60 inches or more is a pale brown sandy loam. Permeability is slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Limitations for shallow excavations are slight. Limitations for dwellings with or without basements and small commercial buildings are severe due to shrink-swell. Limitations for roadways are severe due to low strength and shrink-swell. Limitations for septic tank absorption fields are severe due to slow percolation rates. The shrink-swell potential is low to high. The frequency of flooding is none. Depth to high water table is greater than 6.0 feet. Depth to bedrock is greater than 60 inches. The potential frost action is low. The risk of corrosion to steel and concrete is moderate. The main limitations associated with the use of this unit for urban development, as described by the soil survey, are the high clay content, slow permeability, and low bearing strength.

Northmore sandy loam, 8 to 15 percent slopes (# 203). This unit is at the SE corner of the Property. This very deep, well-drained soil is on side slopes of alluvial fans. It formed in alluvium derived from mixed rock sources. Elevation is 4,500 to 5,500 feet. Typically, the surface layer is grayish brown sandy loam about 10 inches thick. The subsoil is brown sandy clay about 35 inches thick. The substratum to a depth of 60 inches or more is a pale brown sandy loam. Permeability is slow. Available water capacity is high. Effective rooting depth is 60 inches or more. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Limitations for shallow excavations are moderate. Limitations for dwellings with or without basements are severe due to shrink-swell. Limitations for small commercial buildings are severe due to shrink-swell and slopes. Limitations for roadways are severe due to low strength and shrink-swell. Limitations for septic tank absorption fields are severe due to slow percolation rates. The shrink-swell potential is low to high. The frequency of flooding is none. Depth to high water table is greater than 6.0 feet. Depth to bedrock is greater than 60 inches. The potential frost action is low. The risk of corrosion to steel and concrete is moderate. The main limitations associated with the use of this unit for urban development, as described by the soil survey, are the high clay content, slow permeability, and low bearing strength.

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Acrelane-Rock outcrop complex, 15 to 50 percent slopes (# 260): This unit is along the far eastern portions of the Property. This map unit is on uplands. Elevation is 4,500 to 6,000 feet. This unit is 65 percent Acrelane very stony sandy loam, 15 to 50 percent slopes, and 25 percent Rock outcrop. The Acrelane soil is on rolling uplands, and the Rock outcrop is on ridgetops and crests. Areas of the components of the unit are so intricately intermingled that it is not practical to map them separately at the scale used. Included in this unit are Verdico Variant soils on slightly concave slopes and in shallow depressions, Graufels soils at higher elevations near Rock outcrop, and Surgem soils on lower colluvial slopes. This unit is about 3 percent Verdico Variant soils, 4 percent Graufels soils, and 3 percent Surgem soils. Descriptions of the two main materials are as follows:

> Acrelane soil: This soil is shallow and well-drained. It formed in residuum derived dominantly from granodiorite. Typically, 3 to 10 percent of the surface is covered with stones. The surface layer is brown very stony sandy loam about 6 inches thick. The subsoil is brown very gravelly sandy clay loam about 4 inches thick. Weathered granodiorite is at a depth of 10 inches. Depth to weathered bedrock ranges from 10 to 20 inches. Permeability is moderate. Effective rooting depth is 10 to 20 inches. Runoff is rapid, and the hazard of water erosion is high. The hazard of soil blowing is slight. Limitations for shallow excavations are severe due to depth to rock. Limitations for dwellings with or without basements and for small commercial buildings are severe due to depth to rock and slope. Limitations for local roads and streets are severe due to slope. Limitations for septic tank absorption fields are severe due to depth to rock and slope. Shrink-swell potential is low to moderate. Frequency of flooding is none. Depth to high water table is greater than 6.0 feet. Depth to bedrock is 10 to 20 inches. Hardness of bedrock is soft. Potential frost action is moderate. Risk of corrosion to uncoated steel and concrete is moderate.
>
> Rock outcrop: This material consists of exposed areas of granodioritic rock.

The main limitations associated with the use of this complex for urban development, as defined by the soil survey, are steepness of the slopes, and the shallowness of soil over bedrock.

Acrelane very stony sandy loam, 8 to 15 percent slopes (# 262): This unit is along the far SE portion of the Property. This shallow, well-drained soil is on uplands. It formed in residuum derived dominantly granodiorite. Elevation is 4,500 to 6,000 feet. Typically, 3 to 10 percent of the surface is covered with stones. The surface layer is brown very stony sandy loam about 4 inches thick. The subsoil is brown very gravelly sandy clay loam about 6 inches thick. Weathered granodiorite is at a depth of 10 inches Depth to weathered bedrock ranges from 10 to 20 inches. Permeability is moderate. Available water capacity is very low. Effective rooting depth is 10 to 20 inches. Runoff is medium, and the hazard of water erosion is slight. The hazard of soil blowing is slight. Limitations for shallow excavations are severe due to depth to

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rock. Limitations for dwellings with or without basements and for small commercial buildings are severe due to depth to rock and slope. Limitations for roadways are moderate due to depth to rock, slope and frost action. Limitations for septic tank absorption fields are severe due to depth to rock. The shrink-swell potential is low to moderate. The frequency of flooding is none. Depth to high water table is greater than 6.0 feet. Depth to bedrock is 10 to 20 inches. The hardness of bedrock is soft. The potential frost action is moderate. The risk of corrosion to steel and concrete is moderate. The main limitations associated with the use of this unit for urban development, as described by the soil survey, are the steepness of slope, depth to bedrock and stones, shallowness of the soil over bedrock, and susceptibility of the soil to frost heaving.

According to the *Reno Folio Hydrologic Map* (Cooley, Span and Scheibach) the top of water table is estimated to be between 20 and 60 feet.

III GEOLOGIC AND SEISMIC CONSIDERATIONS

To evaluate geological hazards at the site, our investigation included a site reconnaissance and review of available geological literature and maps.

A. Geology

The Property is in the northern foothills of the Truckee Meadows a structural basin bounded by Peavine Mountain, Steamboat Hills, the Virginia Range and the Sierra Nevada to the north, south, east and west, respectively. The basin is transitional between the Basin and Range physiographic province to the east and the Sierra Nevada to the West. The geologic structure of the area is characterized by high-angle extensional normal faults trending in a north-northeast direction. The Truckee Meadows is a down-dropped graben with neighboring horsts to the east and west.

B. Faulting and Seismicity

Based on mapping by E. C. Bingler (*Earthquake Hazards Map, Reno Folio*) no fault traces cross the Property. According to the United States Geological Survey Earthquakes Hazards Program, *Quaternary Faults in Google Earth*, no faults cross the Property. The website indicates that the nearest Holocene- to latest-Pleistocene-age fault is approximately 1.9 mile southwest of the Property. These faults are those that have moved or shifted in the last 15,000 years.

According to the Nevada Seismological Laboratory website (http://www.seismo.unr.edu), the nearest principal Quaternary-age fault is the north Reno fault zone. The Nevada Seismological Laboratory indicates earthquakes of magnitude 6.6 is possible along this fault zone (*Reno/Carson Fault Information*, updated January 31, 2003).

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C. Liquefaction

Liquefaction is a loss of soil shear strength associated with loose saturated granular soils subjected to strong earthquake shaking. Liquefaction can result in unacceptable movement of foundations supported by such soils. According to the referenced earthquake hazards map the Property is not in an area of potential liquefaction.

D. Slope Stability

Based on the referenced Earthquake Hazards Map the subject property is in an area potentially underlain by moderately stable, semi-lithified alluvial fan deposits which may be subject to minor slumping and rock falls on vertical or near vertical cuts or natural embankments. Based on our understanding proposed slopes will be constructed at maximum inclinations of two horizontal to one vertical (2:1) or flatter, we do not believe the site is susceptible to slumps or ground disturbances.

E. Radon

Radon, a colorless, odorless, radioactive gas derived from the natural decay of uranium, is found in nearly all rocks and soils. The Environmental Protection Agency (EPA) suggests that remedial action be taken to reduce radon in any structure with average indoor radon of 4.0 picocuries per liter (pCi/L) or more. According to *Radon in Nevada* (Rigby *et al.*, Nevada Bureau of Mines and Geology, Bulletin 108, 1994), the Property is in an area with an average indoor measurement equal to or greater than 2.0 pCi/L and less than 4.0 pCi/L.

F. Flooding

Flood hazard studies were completed by the Federal Emergency Management Agency (FEMA), and are dated March 16, 2009 are published on Community Panel Number 32031C3026G. The map indicates much of the Property is in flood zone X; however, along the eastern drainage system it is in flood zone AE. According to FEMA, zone X are areas of minimal flood hazard, while zone AE are special flood hazard areas.

IV OPINION AND DISCUSSION

Based on results of our preliminary investigation, experience in the area, and understanding of the proposed project, we conclude that the site is suitable for its intended use. The primary geotechnical concerns are the potential presence of **expansive soil** and **bedrock**, and the presence of **drainages**, **flood zone** and **utility easements**.

Expansive soils are subject to substantial volume changes (shrink and swell) with changes in moisture content. Changes in moisture content can occur because of seasonal variations in precipitation, landscape irrigation, broken or leaking water pipes and sewer lines, and/or poor site drainage. These volume changes can cause differential movement such as

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settlement or heave of foundations, slabs-on-grade, exterior flatwork such as walkways, stoops and patios, and pavement sections. To reduce potential for movement the expansive soil must be removed (over-excavated) a sufficient depth and replaced with approved compacted granular fill, thereby reducing the thickness of the expansive layer, providing surcharge, and maintaining moisture at a near constant level.

Alternatively, to mitigate potential movement, structures can be supported with pier and grade beams which penetrates the expansive soil and attain support by end-bearing on the lower firm native soils or by surface adhesion with the pier edges and native soil. Structural support may also be attained using post-tensioned slab-on-ground foundations, which mitigates movement by the rigid nature of the system.

Clay or fine-grain soils exhibit a lower Resistance R-Value and Modulus of Subgrade Reaction (k) than granular material. To reduce the thickness of aggregate base and minimize future maintenance in slab-on-grade, exterior flatwork and pavement areas, portions of these soils must be removed and replaced with approved compacted granular fill subbase.

As clayey soil will also inhibit achieving uniform moisture content and impede compaction efforts, consideration should be given to time constraints associated with scarification, moisture conditioning, drying and compacting clayey soils. During periods of inclement weather, water may also become perched above the clayey soil, resulting in a saturated condition for prolonged periods and creating additional limitations on equipment mobility. Consideration should be given to the necessity for maintaining moisture content to prevent wind erosion and for controlling dust during earthwork operations.

Shallow bedrock is present across the Property. Consideration should be given to the difficulty of grading and trenching associated with bedrock. Although we do not believe that blasting will be necessary, as is inherent with bedrock, localized areas of resistant material may be encountered which will require the use of special equipment such as a hydraulic rock hammer.

In addition to potential difficulty of earthwork operations, consideration should be given to the fact that oversize aggregate such as gravel, cobbles and boulders, will be generated during earthwork operations. Consideration should be given to the subsequent reduction of the quantity of material available for use as fill, and that oversize aggregate could require off-hauling or that import material could be required to balance earthwork quantities to attain proposed grades. If oversize aggregate is proposed for use as fill, screening will be required, and sufficiently large equipment will be necessary to properly place and compact rock fills. Compaction approval during the placement of rock fills can only be achieved based on visual performance specifications established by the Geotechnical Engineer, which would increase on-site technician time and thus, in turn, increase the cost of inspection services. The removal of large cobbles or boulders will result in undercutting of excavation sidewalls and the resulting trench widths would be increased. The presence of

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resistant bedrock could protrude into foundation areas, thereby requiring the drilling and epoxy of reinforcing steel. Footings may need to be formed and stepped.

Two natural drainages cross portions of the Property. Consideration should be given to potential seepage associated with these drainages and ditch and added construction costs associated with their abandonment, containment or realignment. Consideration should be given to the complete removal of organic material associated with these ditches and that proper benching and fill are provided prior to the construction of site improvements or the placement of new fill material. Consideration should also be given to the possibility that construction set-backs may be required.

According to FEMA, a portion of the Property is in an area of potential flooding. Consideration should be given to local and federal regulations which may impose construction constraints, such as requiring minimum finish floor elevations, or ordinances banning basements. Due to constant revisions associated with flood zoning, the Property delineation with respect to flood zoning should be verified with the most current map at the time of building permit application.

Overhead and underground utility easements cross the Property. Consideration should be given to the possibility that, prior to development, these utilities require relocation or abandonment in proposed structural areas. Consideration should also be given to the possibility that construction set-backs are required, and the subsequent potential reduction of property available for development.

The presence of steep drainages can lead to differential settlement as transition areas will occur where building pads are supported on a combination of in-situ soil and compacted fill material. To mitigate potential differential settlement in transition zones, native soils should be removed a sufficient depth to provide for a minimum section of compacted fill material below foundations, or foundations should be deepened to bottom uniformly on in-situ soil. The presence of slopes will require that construction off-sets be established.

The soil survey suggests that the slow percolation rates, frost action low load-bearing and corrosion to steel and concrete can be an additional constraint associated with the use of the underlying soils for urban development. Based on our understanding that project development will be serviced by community water, sewer and storm drain systems, we do not believe that slow permeability rates will impact the site. Consideration, however, should be given to performing infiltration tests if retention/detention basins are proposed. Based on our anticipation that structural fill will be provided below footing and roadways, we do not believe frost action or lo load-bearing strength will impact site development. Based on our experience in the area, we believe adequate mitigation can be attained by using properly prepared and placed Type II portland cement concrete, by maintaining a minimum three-inch concrete cover where reinforcing steel or other metal is in proximity to native soils and, at the direction of the Manufacturer, by using special coating on reinforcing steel and metal. Consideration should also be given to chemical constituents which may inhibit establishment of landscaping, such as lawns, plants and other vegetation growth, not

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indigenous to the area. Laboratory testing to determine the agronomic characteristics of the native soils was not part of the scope of our work; however, it should be considered.

There are no apparent geologic hazards that would place unusual constraints on the project; however, strong ground shaking associated with earthquakes should be expected to occur during the life of the project.

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Reno, Nevada 89502
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V REFERENCES

American Concrete Institute, *Building Code Requirements for Reinforced Concrete* (ACI 318-83), revised 1986.

Bingler, E.C. *Reno Folio Earthquake Hazards Map*. 1:24,000. Reno: Nevada Bureau of Mines & Geology, University of Nevada, Reno, 1974.

Bonham, Harold F. Jr. and E.C. Bingler. *Reno Folio Geologic Map*. 1:24,000. Reno: Nevada Bureau of Mines & Geology, University of Nevada, Reno, 1973.

Cooley, R. L., Spane Jr., F. A., and Scheibach, R. B. *Reno Folio Hydrologic Map.* Nevada Bureau of Mines and Geology, 1974.

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Axion Geotechnical, LLC
681 Edison Way
Reno, Nevada 89502
(775) 771-2388

VI DISTRIBUTION

One wet-stamped .pdf to:

Bluth Development, LLC
9550 Gateway Drive
Reno, Nevada 89521
Attn: Charles Bluth, President
Telephone: (775) 749-1057

One unbound wet-stamped copy and one .pdf to:

CFA, Inc.
1150 Corporate Boulevard
Reno, Nevada 89502
Attn: David Snelgrove, Planning and Right-of -Way Manager
Telephone: (775) 856-1150
Facsimile: (775) 856-1160

APPENDIX B

PRELIMINARY
HYDROLOGY REPORT

LEMMON DRIVE ESTATES
TENTATIVE MAP
RENO, NV

WTM18-004
EXHIBIT G

PRELIMINARY
HYDROLOGY REPORT

LEMMON DRIVE ESTATES
TENTATIVE MAP
RENO, NV

PREPARED BY:
CFA, INC.
1150 CORPORATE BOULEVARD
RENO, NV 89502
(775) 856-1150

MARCH 2018

WTM18-004
EXHIBIT G

INTRODUCTION

This report presents the storm water drainage and management plan to support the tentative map for the Lemmon Drive Estates. This project is a proposed 98-lot subdivision located on approximately 32.76 acres of undeveloped range land in Section 4, Township 20 North, Range 19 East, M.D.M. in the Lemmon Valley area of Reno, Nevada (APN: 552-210-18).

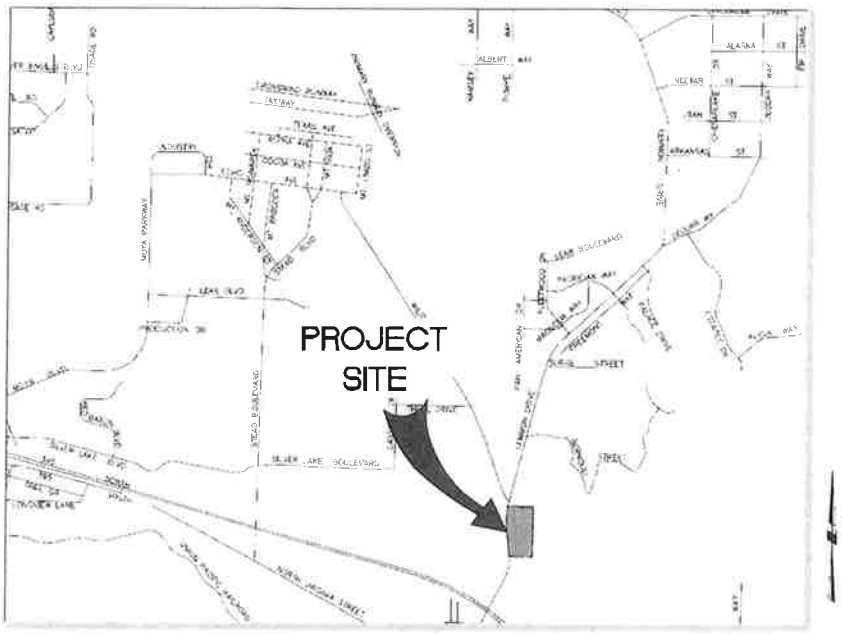
The purpose of this study is to compare the existing generated 5-year and 100-year flows to the proposed site development to mitigate any increase in flows for the 5-year and 100-year storms per Washoe County requirements.

An additional study of the onsite floodplain has been conducted by Schaff & Wheeler in their report *Floodplain Analysis for Lemmon Valley Drive Development Memorandum*, (March 2018) and is referenced in this report and included as appendix F.

EXISTING SITE DESCRIPTION

The project is bordered on the north by baseball fields and a church, to the west by Lemmon Drive, on the south by two private homes, and on the east by undeveloped range land and another private home. This site and all the surrounding parcels are a part of Washoe County. An overall Vicinity Map follows in this report that depicts the area of the proposed project, and a site plan is located on Sheet 1 of the associated drawings.

The existing site is undeveloped with established native weeds sporadic throughout the area. The natural grade slopes from the south to north with a total change in elevation of 37 feet. The grades mostly vary across the site, with an average grade change of approximately 2.2 percent. The Golden Valley Wash exists on site and transfers storm flows from the south to the north on the east side of the proposed project. This wash connects to the Southwest Lemmon Valley Channel A in Lemmon Drive north of the project site.



VICINITY MAP
SCALE: N.T.S.

PROJECT DESCRIPTION

The Lemmon Drive Estates project is a proposed 98-lot subdivision, with each lot being approximately 0.17 acres. The site will have two entrances, located on Lemmon Drive. A portion of the site will be filled to remove lots from the floodplain. The existing on-site drainage will travel to concrete curb and gutters to capture sheet flows and transfer them to a proposed on-site storm drain infrastructure system. Flows from the storm drain infrastructure system will be carried into a detention basin located on the north end of the site to detain and control storm water flows. The basin will be constructed with an outlet pipe and outlet weir structure to meter the flow out of the basin to pre-development conditions. The pipe will outlet into the Golden Valley Wash that currently exits the site and flows north to the Southwest Lemmon Valley Channel A (and eventually Swan Lake Playa).

FLOOD ZONE

According to FIRM Index Map #32031C2838G, dated March 16th, 2009, the site is located within two (2) flood zone areas:

- Zone X, Unshaded; flood zone areas determined to be outside the 0.2% annual chance floodplain
- Zone AE, Shaded, special flood hazard areas subject to inundation by the 1% annual chance flood, with base flood elevations determined

A copy of the FIRM Index Map is in Appendix A.
Portions of the development will be removed from the floodplain by filling the site to elevate structures above the effective base flood elevation (BFE). Reference *Floodplain Analysis for Lemmon Valley Drive Development Memorandum* (Schaaf & Wheeler 2018).

EXISTING DRAINAGE

Off-site Drainage:
Off-site drainage enters the site at the southeast corner of the site and traverses the site through the Golden Valley Wash. This exits at the north end of the site and discharges eventually into the Southwest Lemmon Valley Channel A. This off-site drainage was analyzed by Schaaf & Wheeler, and the results are summarized in the *Floodplain Analysis for Lemmon Valley Drive Development Memorandum* (Schaaf & Wheeler 2018).

On-site Drainage:
Existing on-site drainage patterns generally flow south to north. The flows are caught in the existing wash on the east that is channeled away from the site (Ref. Existing Drainage Plan, Appendix D). Under the existing undeveloped range conditions, the site is calculated to generate 3.54 cfs and 21.20 cfs of runoff for the 5-year and 100-year storms, respectively (Ref. Rational Method Calculations, Drainage Channel Calculations, Appendix B, Table 1).

PROPOSED DRAINAGE

Off-site Drainage:
The proposed off-site drainage network will remain unchanged from the existing off-site drainage network. The effects of filling the site to remove development from the flood plain on the effective BFE were

analyzed by Schaaf & Wheeler and summarized in the *Floodplain Analysis for Lemmon Valley Drive Development Memorandum* (Schaaf & Wheeler 2018).

On-site Drainage:
The site will develop new streets that will have their own drainage network with curb and gutter. Runoff from the lots will flow to the streets where it will be collected into the storm drainage network. The storm drainage network will be comprised of pipes, catch basins and curb and gutter. Flows from the storm drain infrastructure system will be carried into a detention basin located on the north end of the site to detain and control storm water flows (Ref. Proposed Drainage Plan, Appendix D). The proposed development was calculated to generate 11.45 cfs and 34.12 cfs of on-site peak runoff for the 5-year and 100-year storms, respectively (Ref. Rational Method Calculations, Appendix B, Table 2).

RATIONAL METHOD – Washoe County

The Rational Method is used to estimate the peak runoff resulting from a storm of given intensity and frequency falling on a specific watershed. The peak flow is expressed as:

$$Q = C\,i\,A$$

where
- Q = Peak rate of runoff, cubic feet per second
- C = Runoff coefficient
- i = Average rainfall intensity, inches per hour
- A = Watershed area, acres

Washoe County allows the use of the Rational Method for urban and small watersheds. Runoff computations are made using criteria provided by the Truckee Meadows Regional Drainage Manual. Rainfall intensities are determined from the rainfall intensity-duration-frequency (IDF) curves for Reno WSFO Airport. The initial time of concentration, $T_{c(1)}$, is calculated by the formula:

$$T_{c(1)} = 10 \text{ or } \frac{L}{60 \times V} \text{ (whichever is greater)}$$

where
- $T_{c(1)}$ = Initial time of concentration, minutes
- L = Length from uppermost point of watershed to design point, feet
- V = Channel or overland velocity, feet per second

The initial time of concentration models build-up and sheet flow conditions in the uppermost part of the watershed. Except for very small impervious watersheds, the minimum build-up time of 10 minutes is assumed. Therefore, for the first design point, the time of concentration is determined by adding travel time to the build-up time as follows:

$$T_{c(1)} = 10 + \frac{L}{60 \times V}$$

The time of concentration at successive points downstream is calculated by adding total travel time to the initial build-up time:

$$T_{c(n)} = 10 + \sum \frac{L}{60 \times V}$$

where $T_{c(n)}$ = Time of concentration at design point, minutes

$\sum \frac{L}{60 \times V}$ = Total travel time to design point, minutes

L = Length of flow path between design points, feet

V = Velocity, feet per second

Velocities used are 2 - 3 fps for surface flow and 3 - 5 fps for channel and conduit flow.

Rational Method calculations are performed using a spreadsheet containing the appropriate IDF curves and routing parameters. The peak flow for each drainage area is determined based on the runoff coefficient, initial time of concentration, and area (Ref. Rational Method Calculations, Appendix B).

HYDROLOGY

Peak flows for on-site watersheds were estimated for the 5-year and 100-year design storms using the Rational Method (Ref. Rational Method Calculations, Appendix B, Tables 1 and 2). Curb and gutter flows, along with the storm drain infrastructure piping were designed in accordance with the Truckee Meadows Regional Drainage Manual using the 5-year design storm event. Runoff from the 5-year design storm will increase from 3.54 cfs to 11.45 cfs, and from the 100-year design storm will increase from 21.20 cfs to 34.12 cfs. Once the runoff enters the proposed on-site storm drain system, it is conveyed through the system and into a detention basin located on the north end of the site to detain and control storm water

flows. The basin will be constructed with an outlet pipe and outlet weir structure. The pipe will outlet into the Golden Valley Wash that exits the site and flows north to the Southwest Lemmon Valley Channel A. The proposed detention basin will be public and maintained by Washoe County upon completion.

The increase in peak runoff generated by the proposed development of this project for the 100-year storm is 12.92 cfs. The increase in runoff volume generated because of the proposed development of the project will be mitigated for the 100-year, 10-day storm event per the Truckee Meadows Regional Drainage Manual for areas draining to the Swan Lake Playa. Flow generated from the proposed site development will be collected and diverted into the proposed detention basin located at the north end of the site. The volume required to mitigate 100-year, 10-day event is approximately 113,347 cubic feet (Ref. Detention Basin Volume Calculations, Appendix E). The proposed site development will provide 270,000 cubic feet of storm water storage.

A preliminary storm drain network was designed for this site and is shown on Sheet 2 of the associated drawings. Pipe sizing and hydraulic calculations for the storm drain network are presented in Appendix C. Proposed catch basins and storm drain piping for the site will have adequate inlet capacity to collect the peak runoff flows for the 5-year storm event. All storm drain pipes, catch basins and storm drain infrastructure are to be dedicated as public and maintained by Washoe County.

The velocities in the Golden Valley Wash through the site are highly erosive. The slope between the filled development and the wash will require rock placement for erosion protection. Reference *Floodplain Analysis for Lemmon Valley Drive Development Memorandum* (Schaaf & Wheeler 2018) for details.

CONCLUSION

As demonstrated in this report, the proposed drainage concept will convey the 5-year and 100-year storm flows, meeting the Washoe County development code requirements. The detention basin has been designed to mitigate twice the volumetric increase for the 100-year, 10-day storm event, helping mitigate flooding of Swan Lake Playa and meeting Washoe County and Truckee Meadows Regional Drainage Manual Design requirements. Lastly, this report demonstrates that Lemmon Drive Estates as planned meets the requirements of Washoe County, and development will not negatively impact adjacent properties or downstream storm drain infrastructure.

REFERENCE

Truckee Meadows Regional Drainage Manual, (April 2009).

Washoe County, *Washoe County Development Code*. (April 2016).

NOAA National Weather Service, *NOAA Atlas 14, Volume 1, Version 5, RENO WSFO AIRPORT, Station ID 26-6779* (NOAA Atlas 14 Point Precipitation Frequency Estimates: NV, 2004, Revised 2011)

Floodplain Analysis for Lemmon Valley Drive Development Memorandum, Schaaf & Wheeler (March 2018).

APPENDIX A
FIRM MAP

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Washoe County, NV and Incorporated Areas Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0 North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was State Plane Nevada Zone 2702 FIPS zone 2702. The horizontal datum was NAD 83, GRS80 ellipsoid. Differences in datum, spheroid, projection or State Plane zone used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at http://www.ngs.noaa.gov.

Base map used as the basemap information shown on this FIRM was provided by the Washoe County GIS Program. This data dated 2005 or later was provided in digital format at a scale of 1" 200' in urban areas and 1" 2,400' in rural areas.

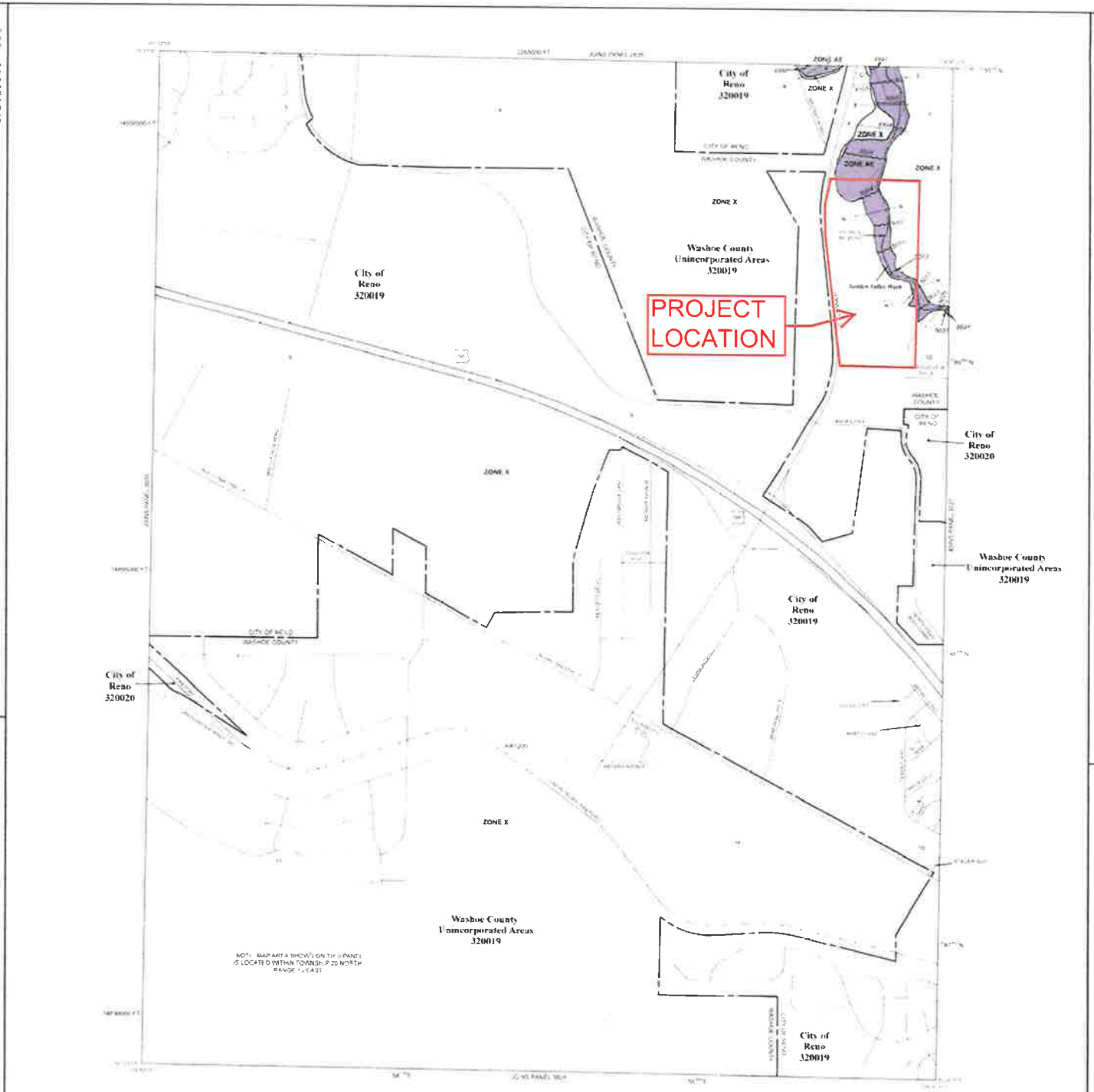
This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a listing of Communities Participating in the National Flood Insurance Program (NFIP) and their effective dates (or the panels on which each community is located).

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620, and its website at http://www.msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-**FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

OTHER AREAS

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAS)

MAP SCALE 1" = 1000'

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 3026G

FIRM

FLOOD INSURANCE RATE MAP

WASHOE COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 3026 OF 3475

MAP NUMBER 32031C3026G

MAP REVISED MARCH 16, 2009

Federal Emergency Management Agency

WTM18-004
EXHIBIT G

APPENDIX B
RATIONAL METHOD CALCULATIONS

RATIONAL METHOD HYDROLOGY
WASHOE COUNTY IDF CURVES

LEMMON DRIVE ESTATES - EXISTING DRAINAGE

DESIGN POINT	DRAINAGE SUB-BASIN	AREA (acres)	C **5-YR**	C **100-YR**	WATERSHED LENGTH (ft)	VELOCITY (ft/sec)	Tc (min)	INTENSITY (in/hr) 5-YR	INTENSITY (in/hr) 100-YR	PEAK RUNOFF (cfs) **5-YR**	PEAK RUNOFF (cfs) **100-YR**
PART B: EXISTING BASINS - ON-SITE											
	E1	21.09	0.20	0.50	1800	2	25.0	0.84	2.01	**3.54**	**21.20**
OVERALL TOTAL		**21.09**								**3.54**	**21.20**

RATIONAL METHOD HYDROLOGY
WASHOE COUNTY IDF CURVES

LEMMON DRIVE ESTATES - PROPOSED SITE DRAINAGE

DESIGN POINT	DRAINAGE SUB-BASIN	AREA (acres)	C 5-YR	C 100-YR	WATERSHED LENGTH (ft)	VELOCITY (ft/sec)	Tc (min)	INTENSITY (in/hr) 5-YR	INTENSITY (in/hr) 100-YR	PEAK RUNOFF (cfs) 5-YR	PEAK RUNOFF (cfs) 100-YR
PART B: PROPOSED BASINS - ON-SITE											
	P1	4.88	0.64	0.80	1800	2	25.0	0.84	2.01	**2.60**	**7.83**
	P2	0.17	0.88	0.93	1800	2	25.0	0.84	2.01	**0.12**	**0.31**
	P3	2.32	0.62	0.79	1800	2	25.0	0.84	2.01	**1.21**	**3.68**
	P4	0.63	0.88	0.93	1800	2	25.0	0.84	2.01	**0.46**	**1.17**
	P5	3.17	0.63	0.79	1800	2	25.0	0.84	2.01	**1.66**	**5.05**
	P6	0.16	0.88	0.93	1800	2	25.0	0.84	2.01	**0.12**	**0.30**
	P7	2.18	0.62	0.79	1800	2	25.0	0.84	2.01	**1.14**	**3.47**
	P8	3.85	0.62	0.79	1800	2	25.0	0.84	2.01	**1.99**	**6.10**
	P9	1.38	0.68	0.82	1800	2	25.0	0.84	2.01	**0.79**	**2.27**
	P10	2.00	0.65	0.81	1800	2	25.0	0.84	2.01	**1.09**	**3.25**
	P11	0.36	0.88	0.93	1800	2	25.0	0.84	2.01	**0.27**	**0.68**
ON-SITE TOTAL		**21.09**								**11.45**	**34.12**
OVERALL TOTAL		**21.09**								**11.45**	**34.12**

WTM18-004
EXHIBIT G

APPENDIX C
PIPE SIZING AND HYDRAULIC CALCULATIONS

PIPE SIZING AND HYDRAULIC CALCULATIONS

LEG 1 = P8 + P9 = 1.99 + 0.79 = 2.78 cfs
LEG 1 = 18" PIPE

LEG 2 = P4 + P5 = 0.46 + 1.66 = 2.12 cfs
LEG 2 = 12" PIPE

LEG 3 = LEG 1 + LEG 2 + P10 + P11 = 2.78 + 2.12 + 1.09 + 0.27 = 6.26 cfs
LEG 3 = 18" PIPE

LEG 4 = LEG 3 + P6 + P7 = 6.26 + 0.12 + 1.14 = 7.52 cfs
LEG 4 = 24" PIPE

LEG 5 = LEG 4 +P2 + P3 = 7.52 + 0.12 +1.21 = 8.85 cfs
LEG 5 = 24" PIPE

LEG 6 = LEG 5 + P1 = 8.85 + 2.60 = 11.45 cfs
LEG 6 = 24" PIPE

Worksheet for 24" Pipe at 0.5% Slope

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.50000	%
Normal Depth	24.00	in
Diameter	24.00	in
Discharge	14.85	ft³/s

Results

Discharge	14.85	ft³/s
Normal Depth	24.00	in
Flow Area	3.14	ft²
Wetted Perimeter	6.28	ft
Hydraulic Radius	6.00	in
Top Width	0.00	ft
Critical Depth	1.39	ft
Percent Full	100.0	%
Critical Slope	0.00728	ft/ft
Velocity	4.73	ft/s
Velocity Head	0.35	ft
Specific Energy	2.35	ft
Froude Number	0.00	
Maximum Discharge	15.98	ft³/s
Discharge Full	14.85	ft³/s
Slope Full	0.00500	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%

WTM18-004
EXHIBIT G

Worksheet for 18" Pipe at 0.5% Slope

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.50000	%
Normal Depth	18.00	in
Diameter	18.00	in
Discharge	6.90	ft³/s

Results

Discharge	6.90	ft³/s
Normal Depth	18.00	in
Flow Area	1.77	ft²
Wetted Perimeter	4.71	ft
Hydraulic Radius	4.50	in
Top Width	0.00	ft
Critical Depth	1.02	ft
Percent Full	100.0	%
Critical Slope	0.00778	ft/ft
Velocity	3.90	ft/s
Velocity Head	0.24	ft
Specific Energy	1.74	ft
Froude Number	0.00	
Maximum Discharge	7.42	ft³/s
Discharge Full	6.90	ft³/s
Slope Full	0.00500	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%

WTM18-004
EXHIBIT G

Worksheet for 12" Pipe at 0.5% Slope

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Capacity

Input Data

Roughness Coefficient	0.014	
Channel Slope	0.50000	%
Normal Depth	12.00	in
Diameter	12.00	in
Discharge	2.34	ft³/s

Results

Discharge	2.34	ft³/s
Normal Depth	12.00	in
Flow Area	0.79	ft²
Wetted Perimeter	3.14	ft
Hydraulic Radius	3.00	in
Top Width	0.00	ft
Critical Depth	0.65	ft
Percent Full	100.0	%
Critical Slope	0.00856	ft/ft
Velocity	2.98	ft/s
Velocity Head	0.14	ft
Specific Energy	1.14	ft
Froude Number	0.00	
Maximum Discharge	2.52	ft³/s
Discharge Full	2.34	ft³/s
Slope Full	0.00500	ft/ft
Flow Type	SubCritical	

GVF Input Data

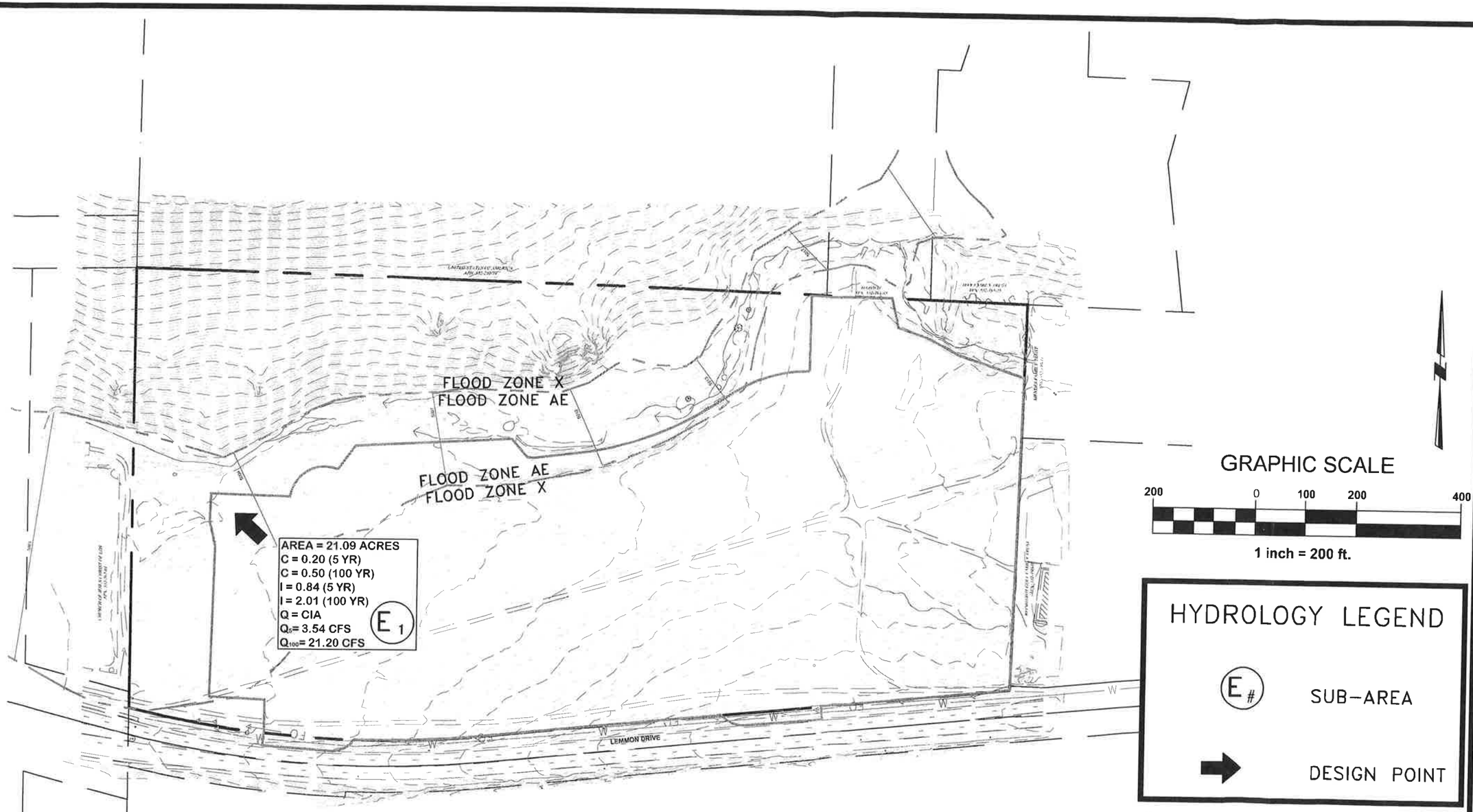
Downstream Depth	0.00	in
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	in
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%

WTM18-004
EXHIBIT G

APPENDIX D
PRE & POST DEVELOPMENT
STORM WATER DRAINAGE PLAN



GRAPHIC SCALE

200 0 100 200 400

1 inch = 200 ft.

HYDROLOGY LEGEND

E # SUB-AREA

DESIGN POINT

cfa
1150 CORPORATE BLVD.
RENO, NV 89502
(775) 856-1150
FAX: (775) 856-1160

LEMMON DRIVE ESTATES
TENTATIVE MAP

EXISTING HYDROLOGY

NEVADA

RENO

JOB NO.	16013.00
DESIGNED BY	JL
CHECKED BY	MW
DATE	03-15-2018

SHEET 1 OF 2

X:\PROJECTS\16013.00\DWG\ENGR\SHEETS\HYDRO-BLUTH LEMMON.DWG <JLAU> 3/13/2018 4:01 PM

WTM18-004
EXHIBIT G

AREA = 4.88 ACRES
C = 0.64 (5 YR)
C = 0.80 (100 YR)
I = 0.84 (5 YR)
I = 2.01 (100 YR)
Q = CIA
Q_5= 2.60 CFS
Q_{100}= 7.83 CFS
P 1

AREA = 0.17 ACRES
C = 0.88 (5 YR)
C = 0.93 (100 YR)
I = 0.84 (5 YR)
I = 2.01 (100 YR)
Q = CIA
Q_5= 0.12 CFS
Q_{100}= 0.31 CFS
P 2

AREA = 2.32 ACRES
C = 0.62 (5 YR)
C = 0.79 (100 YR)
I = 0.84 (5 YR)
I = 2.01 (100 YR)
Q = CIA
Q_5= 1.21 CFS
Q_{100}= 3.68 CFS
P 3

AREA = 0.63 ACRES
C = 0.88 (5 YR)
C = 0.93 (100 YR)
I = 0.84 (5 YR)
I = 2.01 (100 YR)
Q = CIA
Q_5= 0.46 CFS
Q_{100}= 1.17 CFS
P 4

AREA = 3.17 ACRES
C = 0.63 (5 YR)
C = 0.79 (100 YR)
I = 0.84 (5 YR)
I = 2.01 (100 YR)
Q = CIA
Q_5= 1.66 CFS
Q_{100}= 5.05 CFS
P 5

AREA = 0.16 ACRES
C = 0.88 (5 YR)
C = 0.93 (100 YR)
I = 0.84 (5 YR)
I = 2.01 (100 YR)
Q = CIA
Q_5= 0.12 CFS
Q_{100}= 0.30 CFS
P 6

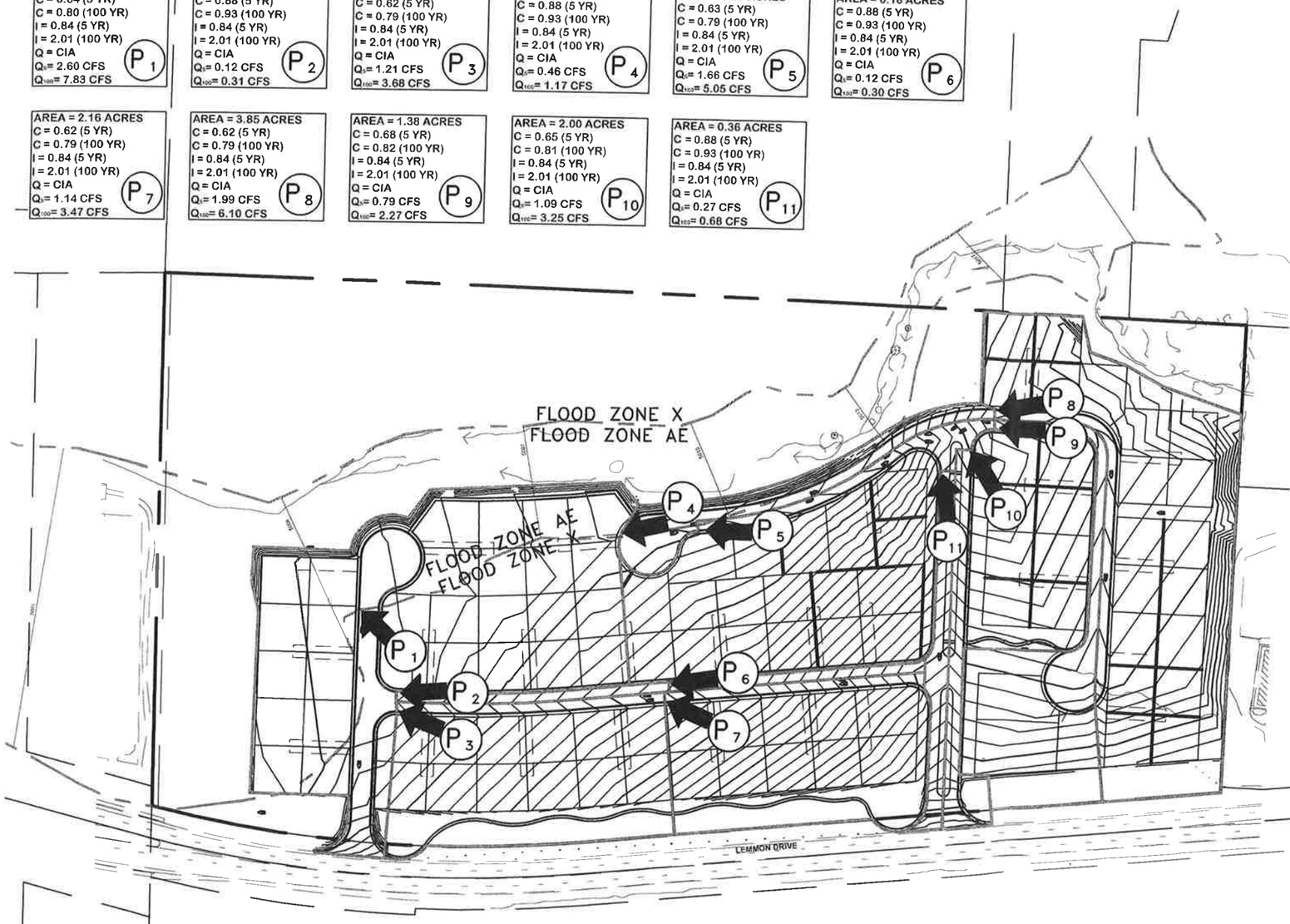
AREA = 2.16 ACRES
C = 0.62 (5 YR)
C = 0.79 (100 YR)
I = 0.84 (5 YR)
I = 2.01 (100 YR)
Q = CIA
Q_5= 1.14 CFS
Q_{100}= 3.47 CFS
P 7

AREA = 3.85 ACRES
C = 0.62 (5 YR)
C = 0.79 (100 YR)
I = 0.84 (5 YR)
I = 2.01 (100 YR)
Q = CIA
Q_5= 1.99 CFS
Q_{100}= 6.10 CFS
P 8

AREA = 1.38 ACRES
C = 0.68 (5 YR)
C = 0.82 (100 YR)
I = 0.84 (5 YR)
I = 2.01 (100 YR)
Q = CIA
Q_5= 0.79 CFS
Q_{100}= 2.27 CFS
P 9

AREA = 2.00 ACRES
C = 0.65 (5 YR)
C = 0.81 (100 YR)
I = 0.84 (5 YR)
I = 2.01 (100 YR)
Q = CIA
Q_5= 1.09 CFS
Q_{100}= 3.25 CFS
P 10

AREA = 0.36 ACRES
C = 0.88 (5 YR)
C = 0.93 (100 YR)
I = 0.84 (5 YR)
I = 2.01 (100 YR)
Q = CIA
Q_5= 0.27 CFS
Q_{100}= 0.68 CFS
P 11



GRAPHIC SCALE
200 0 100 200 400
1 inch = 200 ft.

HYDROLOGY LEGEND

P# SUB-AREA

DESIGN POINT

cfa
1150 CORPORATE BLVD.
RENO, NV 89502
(775) 856-1150
FAX: (775) 856-1160

LEMMON DRIVE ESTATES
TENTATIVE MAP

PROPOSED HYDROLOGY

NEVADA
RENO

JOB NO.	16013.00
DESIGNED BY	JL
CHECKED BY	MW
DATE	03-15-2018

SHEET 2 OF 2

X:\PROJECTS\16013.00\DWG\ENGR\SHEETS\HYDRO-BLUTH LEMMON.DWG <JLAU> 3/13/2018 4:01 PM

WTM18-004
EXHIBIT G

APPENDIX E

NOAA ATLAS 14, VOLUME 1, VERSION 5 PRECIPITATION FREQUENCY ESTIMATES; EXTENDED DETENTION CALCULATION FOR THE SWAN LAKE PLAYA

NOAA Atlas 14, Volume 1, Version 5
Location name: Reno, Nevada, US*
Latitude: 39.5000°, Longitude: -119.7833°
Elevation: 4413 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

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

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

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

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.086 (0.075-0.099)	0.106 (0.091-0.125)	0.142 (0.121-0.167)	0.176 (0.148-0.207)	0.231 (0.190-0.277)	0.281 (0.221-0.342)	0.341 (0.259-0.420)	0.411 (0.299-0.520)	0.527 (0.356-0.695)	0.631 (0.408-0.855)
10-min	0.130 (0.114-0.151)	0.161 (0.138-0.190)	0.217 (0.185-0.255)	0.267 (0.226-0.316)	0.351 (0.289-0.422)	0.428 (0.336-0.520)	0.518 (0.394-0.639)	0.627 (0.455-0.791)	0.802 (0.543-1.06)	0.961 (0.621-1.30)
15-min	0.161 (0.141-0.187)	0.200 (0.171-0.235)	0.269 (0.229-0.316)	0.331 (0.280-0.391)	0.436 (0.359-0.523)	0.531 (0.417-0.645)	0.643 (0.489-0.792)	0.777 (0.564-0.981)	0.995 (0.673-1.31)	1.19 (0.771-1.61)
30-min	0.217 (0.190-0.251)	0.269 (0.231-0.317)	0.362 (0.309-0.425)	0.447 (0.377-0.527)	0.587 (0.483-0.704)	0.715 (0.562-0.869)	0.866 (0.659-1.07)	1.05 (0.760-1.32)	1.34 (0.906-1.77)	1.60 (1.04-2.17)
60-min	0.269 (0.235-0.311)	0.333 (0.286-0.392)	0.448 (0.382-0.526)	0.553 (0.466-0.652)	0.727 (0.598-0.871)	0.885 (0.695-1.08)	1.07 (0.815-1.32)	1.29 (0.940-1.64)	1.66 (1.12-2.19)	1.99 (1.28-2.69)
2-hr	0.362 (0.320-0.414)	0.448 (0.400-0.517)	0.575 (0.502-0.661)	0.677 (0.584-0.783)	0.839 (0.696-0.982)	0.975 (0.789-1.17)	1.13 (0.886-1.37)	1.32 (0.985-1.65)	1.70 (1.20-2.21)	2.04 (1.39-2.72)
3-hr	0.427 (0.383-0.480)	0.532 (0.482-0.603)	0.666 (0.598-0.753)	0.767 (0.680-0.873)	0.909 (0.789-1.04)	1.03 (0.873-1.20)	1.17 (0.977-1.40)	1.35 (1.10-1.67)	1.71 (1.34-2.23)	2.06 (1.55-2.74)
6-hr	0.580 (0.525-0.645)	0.733 (0.661-0.817)	0.905 (0.816-1.01)	1.03 (0.925-1.15)	1.20 (1.05-1.35)	1.32 (1.14-1.50)	1.45 (1.23-1.67)	1.57 (1.31-1.84)	1.76 (1.41-2.25)	2.07 (1.62-2.77)
12-hr	0.737 (0.671-0.814)	0.924 (0.839-1.02)	1.17 (1.05-1.29)	1.35 (1.21-1.50)	1.59 (1.40-1.79)	1.77 (1.54-2.01)	1.95 (1.66-2.26)	2.13 (1.77-2.50)	2.36 (1.89-2.86)	2.55 (1.98-3.13)
24-hr	0.895 (0.813-0.996)	1.12 (1.02-1.25)	1.43 (1.29-1.58)	1.67 (1.52-1.86)	2.01 (1.81-2.24)	2.28 (2.04-2.54)	2.56 (2.27-2.88)	2.85 (2.50-3.22)	3.26 (2.81-3.70)	3.57 (3.05-4.10)
2-day	1.05 (0.956-1.17)	1.33 (1.21-1.47)	1.69 (1.53-1.87)	1.98 (1.79-2.19)	2.39 (2.14-2.65)	2.72 (2.42-3.03)	3.06 (2.69-3.43)	3.42 (2.97-3.86)	3.91 (3.34-4.47)	4.31 (3.61-4.97)
3-day	1.14 (1.04-1.27)	1.44 (1.31-1.60)	1.84 (1.67-2.04)	2.17 (1.96-2.41)	2.63 (2.35-2.92)	3.00 (2.66-3.35)	3.38 (2.96-3.80)	3.79 (3.28-4.29)	4.36 (3.70-4.99)	4.81 (4.02-5.56)
4-day	1.23 (1.12-1.37)	1.55 (1.41-1.73)	1.99 (1.80-2.21)	2.35 (2.12-2.62)	2.86 (2.56-3.19)	3.27 (2.90-3.66)	3.70 (3.24-4.17)	4.16 (3.59-4.71)	4.80 (4.07-5.50)	5.32 (4.43-6.16)
7-day	1.44 (1.30-1.62)	1.82 (1.64-2.04)	2.35 (2.10-2.63)	2.77 (2.48-3.12)	3.37 (2.99-3.79)	3.84 (3.38-4.34)	4.34 (3.79-4.94)	4.87 (4.20-5.57)	5.60 (4.73-6.48)	6.19 (5.16-7.23)
10-day	1.59 (1.43-1.78)	2.03 (1.82-2.26)	2.62 (2.36-2.93)	3.08 (2.77-3.45)	3.73 (3.32-4.18)	4.24 (3.74-4.76)	4.77 (4.17-5.38)	5.30 (4.60-6.03)	6.04 (5.14-6.93)	6.62 (5.57-7.65)
20-day	1.89 (1.71-2.10)	2.39 (2.16-2.66)	3.08 (2.79-3.42)	3.62 (3.26-4.01)	4.33 (3.88-4.80)	4.86 (4.33-5.42)	5.42 (4.78-6.08)	5.97 (5.21-6.72)	6.71 (5.79-7.65)	7.26 (6.20-8.33)
30-day	2.11 (1.91-2.35)	2.68 (2.44-2.98)	3.44 (3.12-3.81)	4.02 (3.63-4.46)	4.80 (4.30-5.33)	5.39 (4.80-6.02)	5.99 (5.28-6.71)	6.58 (5.76-7.43)	7.37 (6.37-8.38)	7.97 (6.81-9.14)
45-day	2.51 (2.28-2.75)	3.19 (2.90-3.49)	4.09 (3.71-4.47)	4.76 (4.30-5.20)	5.63 (5.08-6.16)	6.28 (5.63-6.88)	6.91 (6.16-7.60)	7.52 (6.67-8.31)	8.30 (7.27-9.25)	8.85 (7.71-9.95)
60-day	2.85 (2.60-3.13)	3.64 (3.31-3.97)	4.66 (4.23-5.08)	5.39 (4.89-5.87)	6.30 (5.70-6.88)	6.96 (6.27-7.63)	7.58 (6.81-8.32)	8.16 (7.28-8.97)	8.87 (7.86-9.83)	9.35 (8.23-10.4)

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

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

Please refer to NOAA Atlas 14 document for more information.

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PRELIMINARY HYDRO REPORT – TENATIVE MAP
Extended Detention Calculation for Swan Lake Playa

100-yr, 10-day precipitation depth = 4.77 inches
= 0.398 feet

Volume of detention needed
Volume (cf) = C*Depth*Area

$C = C_{proposed} - C_{existing}$
$C = 0.81 - 0.50 = 0.31$

Depth = 0.398 feet

Area = 21.09 acres * 43560 ft^2/ac = 918,680 ft^2

Volume needed = (0.31) * (0.398 ft) * (918,680 ft^2)
= 113,347 cf

Volume provided = 270,000 cf

APPENDIX C

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

870 Market Street, Suite 1278
San Francisco, CA 94102-2906
t. 415-433-4848
f. 415-433-1029
s&w@swsv.com

MEMORANDUM

TO:	Catie Harrison, PE CFA	DATE:	March 12, 2018
FROM:	Sarah L. Rahimi, PE Charles D. Anderson, PE	JOB#:	BDLC.01.17
SUBJECT:	Floodplain Analysis for Lemmon Valley Drive Development		

Introduction

Schaaf & Wheeler has been contracted to coordinate hydrologic design and floodplain management for the proposed 32-acre single family home development (Project) off Lemmon Drive just south of the intersection with Military Road (Figure 1). Part of the development parcel is located within a Special Flood Hazard Area (SFHA) associated with the Golden Valley Wash. To develop the Project, the flood prone area needs to be pushed to the east so that to remove the flood hazard zone designation from the developable portion of the parcel. Based on requirements by the Federal Emergency Management Agency (FEMA) and Washoe County, the floodplain conditions were analyzed to establish the maximum development potential of the project site and to evaluate the hydraulic impact from the proposed development footprint.

Figure 1. Location of the Proposed Lemmon Valley Drive Development

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Existing Flood Hazards

A portion of the proposed development is partially located within a FEMA SFHA Zone AE, which is an area designated as having a one percent annual chance of flooding to the extent shown and has defined Base Flood Elevations (BFEs). Properties within in a SFHA Zone AE are considered to be at high risk of flooding under the National Flood Insurance Program (NFIP). The BFEs through the Project site range from 5017 feet to 5002 feet NAVD as shown in Figure 2.

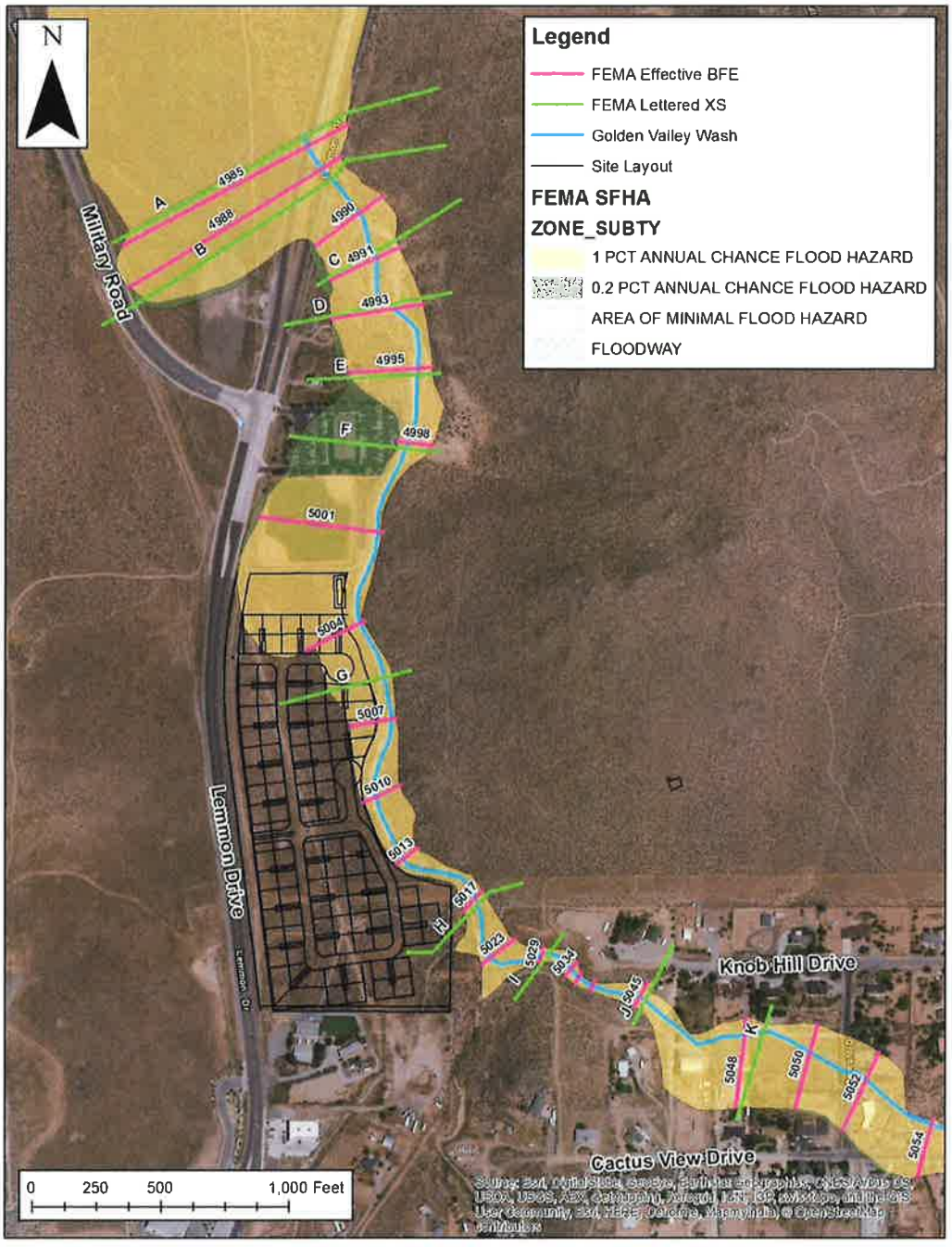

Figure 2. Effective FEMA Floodplain with Proposed Development Shown

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Just downstream of the Project site, FEMA approved a Conditional Letter of Map Revision (CLOMR: Case No. 15-09-2695R) in 2016 for the construction of the Southwest Lemmon Valley Channel A and the extension of the Southwest Lemmon Valley Channel B. This CLOMR, the application for which was prepared by Cardno, reflects a project that includes construction of 6,580 linear feet of Channel A to capture flow from an existing floodplain (Golden Valley Wash) and convey it to Channel B, and to extend Channel B by 2,030 linear feet, which ultimately drains directly to Swan Lake. The construction of Channel A will revise the floodplain boundaries currently classified as Zone A to be Zone AE contained within the channel. Channel A is proposed to begin where Golden Valley Wash intersects Lemmon Drive and terminate at its intersection with Channel B, where flow is also combined with that of Southwest Lemmon Valley Channel C.

Based on a thorough review of the CLOMR and the model, it is ascertained that the CLOMR does impact the floodplain hydraulics at the Lemmon Valley Drive development. Upstream of the development is another proposed development, Wild Stallion Estates, which is still in the planning stages. Additionally, this development is far enough upstream to have no hydraulic impact on the Lemmon Valley Drive development. Figure 3 shows the Lemmon Valley Development in relation to the referenced upstream and downstream hydraulic analyses.

County and FEMA Regulations

The proposed development will need to meet Division Four – Development Standards, Article 416: Flood Hazards of the Washoe County Development Code along with NFIP and FEMA regulations. The degree of flood protection required by Article 416 is considered reasonable for purposes of complying with the minimum standards required by the Federal Insurance Administration for maintaining eligibility for Washoe County property owners who desire flood insurance. The applicable codes are as following:

- County Code Section 110.416.50: That the cumulative effect of the proposed development, when combined with all other existing and anticipated development, will not increase the water surface elevation of the base flood more than one (1) foot at any point;
- County Code Section 110.416.65: In Zones AE and AH, new construction and substantial improvement of any structure shall have the top of the lowest floor (including basement floor) elevated to one (1) foot or more above the base flood elevation unless the construction of a crawlspace is in accordance with Section 110.416.60(h).
- FEMA 44 CFR 65. The proposed lowest adjacent grade to the structure or the lowest lot elevation must be at or above the BFE.

This memorandum evaluates the conceptual grading and site layout plans for the Project using these applicable codes.

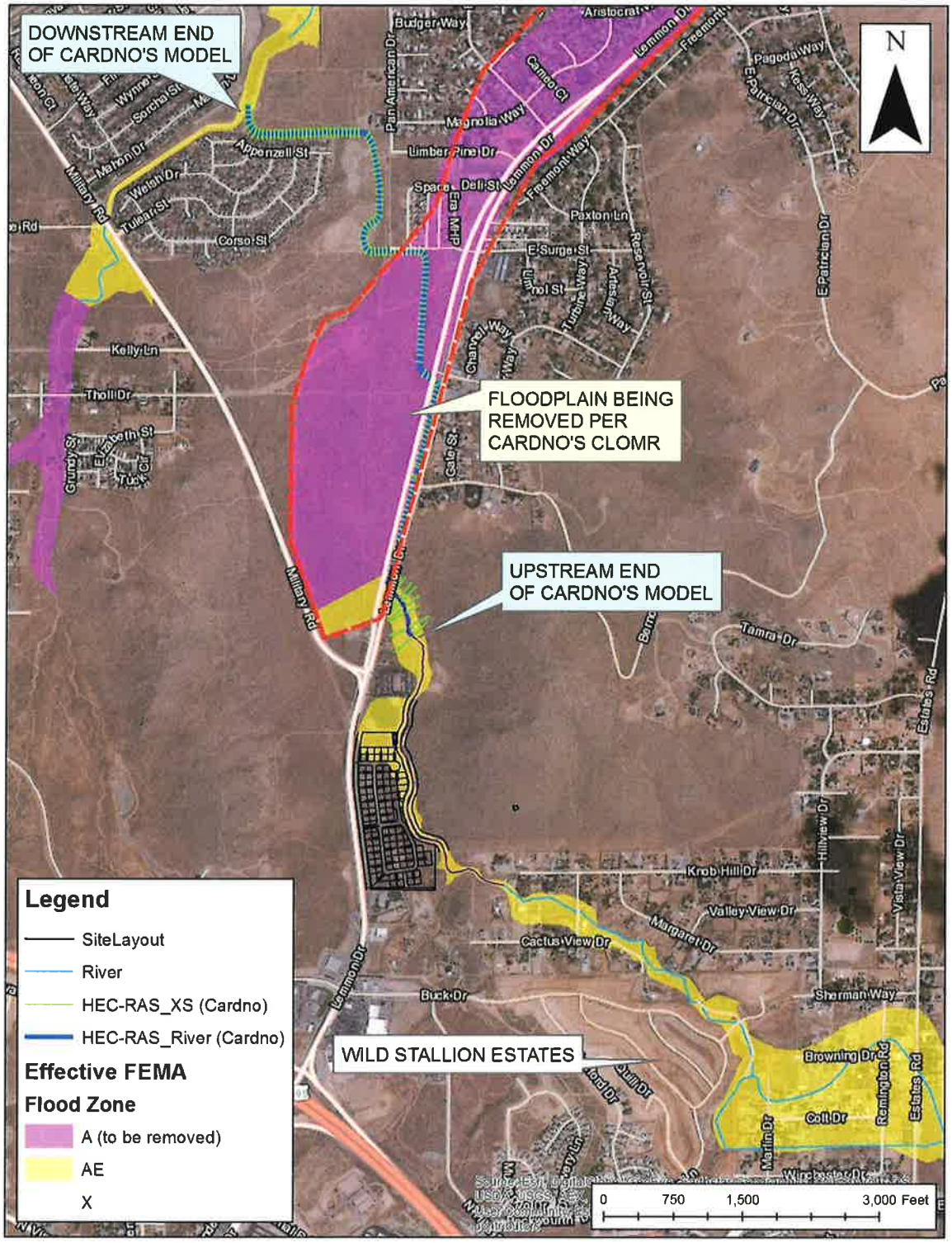


Figure 3. Study Area in Relation with CLOMR and Effective FEMA Floodplain

WTM18-004
EXHIBIT G

Hydraulic Impact Analysis

Based on requirements by FEMA and the Washoe County, the floodplain conditions have been analyzed to determine the maximum development potential of the project site.

Duplicate Effective Model

The existing effective model obtained from FEMA has been used to develop the duplicate effective model in HEC-RAS. The U.S. Army Corps of Engineers (USACE) Hydrologic Engineering Center's River Analysis System (HEC-RAS) effective model file was obtained from the FEMA Engineering Library. The duplicate effective model was then recreated in HEC-RAS 4.1.0 from cross sections XS 204 to XS 220 as shown in Figure 4. FEMA's published discharge for the Golden Valley Wash of 1,904 cfs is used. This duplicate effective model ties in with the FEMA lettered XS J at upstream XS 220 and at XS D at the downstream XS 204. As necessary the following conversion was used to convert the vertical datum from NGVD to NAVD: NAVD = NGVD + 3.74 feet.[1]

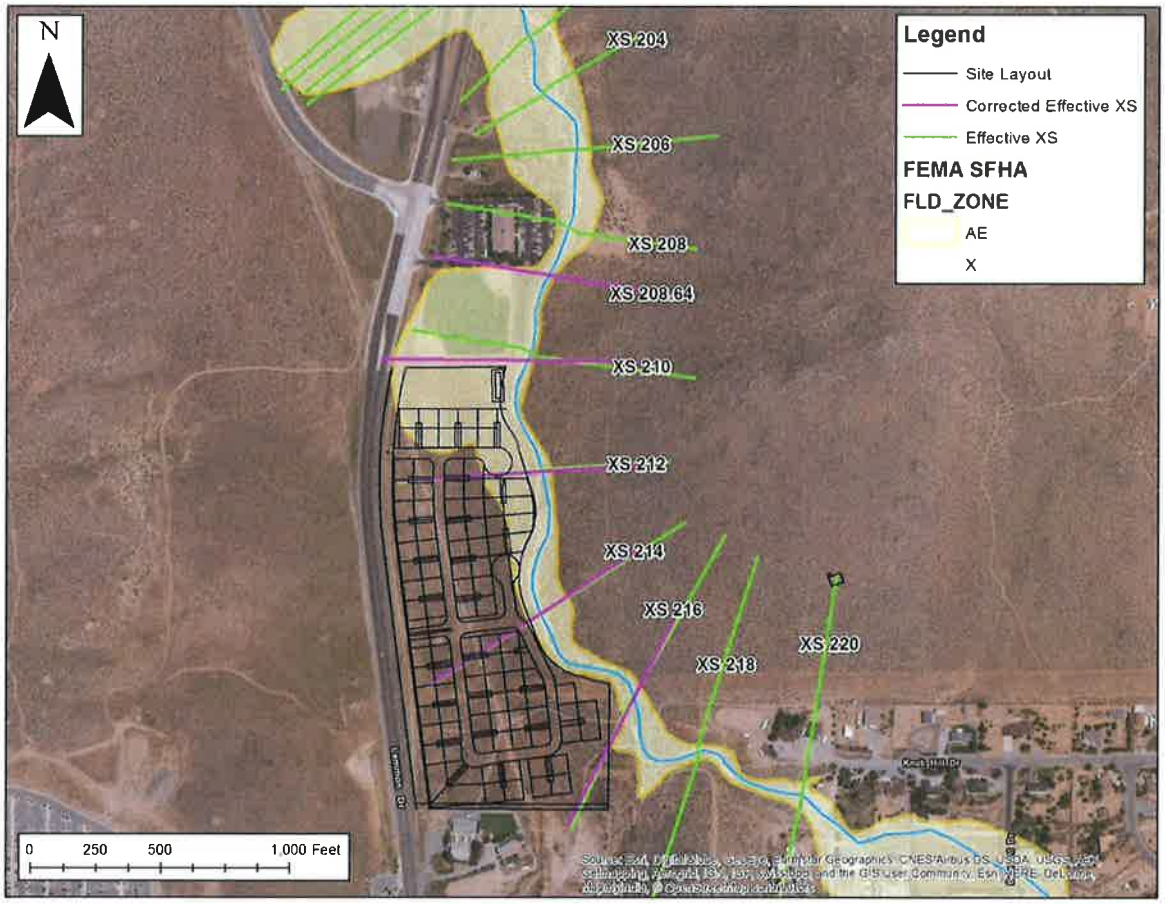


Figure 4. HEC-RAS Model Cross Sections

[1] NOAA National Geodetic Survey: VERTCON. https://www.ngs.noaa.gov/cgi-bin/VERTCON/vert_con.prl.

Corrected Duplicate Effective Model (Existing Conditions)

The duplicate effective model was utilized to create the existing conditions model. The cross sections through the site, which include XS 216 – XS 210 were updated with existing site topography as provided by CFA. An additional cross section, XS 208.64, downstream of the site has been interpolated to take into account the flow expansion and contraction north of the development. Effective flows through the site have not been changed. The location of the existing corrected effective XS as compared to the effective XS are shown in Figure 4. The existing topography is at a slightly lower elevation than in the effective FEMA model, which drops the BFEs through the site. However, the corrected duplicate effective model still ties into the effective FEMA model at the upstream end and downstream end of the revised cross section reach.

Project Model

The existing model of the Golden Valley Wash is utilized to determine the hydraulic impacts of development. This model has been modified based on the proposed development extents through the floodplain. The development area raised on engineered fill is modeled as normal blocked obstructions on the applicable cross sections to determine the potential hydraulic impacts from the development.

Results

The results from the model runs are summarized in Table 1 and Figure 5. While the Project increases the BFEs through a portion of the development, the increased BFEs are contained without impact to neighboring properties and Project BFEs are equal to or lower than effective FEMA BFEs upstream and downstream of the Project. In comparison to the existing conditions model, the proposed development creates a maximum impact of 0.85 foot at XS 212 which is contained within the development site itself. This meets the Washoe's County Code since the development will not increase the water surface elevation of the base flood more than one (1) foot at any point. Furthermore, the Project model still ties in upstream and downstream with the duplicate effective FEMA BFEs.

Table 1. 100-yr Water Surface Elevations through Golden Valley Wash

River Station XS	FEMA Lettered XS	Duplicate Effective WSEL (feet NAVD)	Existing WSEL (feet NAVD)	Project WSEL (feet NAVD)	Difference[2]
220	5046.0 (J)	5046.1	5046.08	5046.08	0.00
218		5029.2	5029.14	5029.14	0.00
216[1]	5017.4 (H)	5017.3	5015.33	5015.33	0.00
214[1]		5010.9	5009.56	5010.03	0.47
212[1]	5005.9 (G)	5005.8	5003.99	5004.84	0.85
210[1]		5002.2	5000.92	5000.84	-0.08
208.64			4999.80	4999.79	-0.01
208		4998.4	4998.39	4998.39	0.00
206		4995.3	4995.14	4995.14	0.00
204	4993.2 (D)	4993.0	4993.20	4993.20	0.00

1. *Cross sections through proposed development*
2. *Difference = Project WSEL – Existing WSEL*

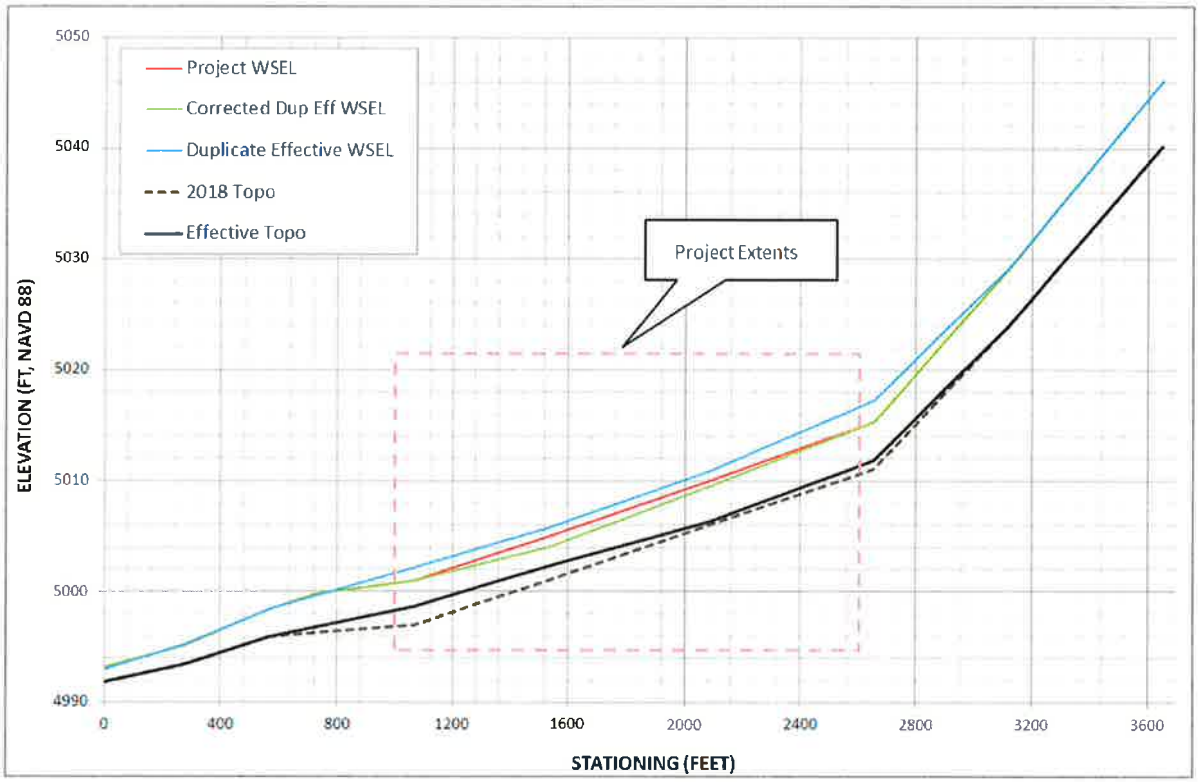


Figure 5. 100-yr Water Surface Elevations through the Golden Valley Wash

Floodplain Removal

To remove the portions of the development from the floodplain, two options have been investigated: floodplain removal via fill (CLOMR-F/LOMR-F) and floodplain removal via letter of map revision (CLOMR/LOMR). The fill option has been chosen for floodplain removal.

Floodplain Removal via Fill (CLOMR-F/LOMR-F)

A CLOMR-F is a letter from FEMA stating that a parcel of land or proposed structure that will be elevated by fill would not be inundated by the base flood if fill is placed on the parcel as proposed or the structure is built as proposed. A LOMR-F would be filed once the existing structure or parcel of land has been physically elevated by fill, and the Letter of Map Revision would indicate that the structure or parcel of land is not subject to inundation by the base flood shown on the FIRM.

Thus, to remove the development from the floodplain, fill can be placed on site to elevate the portions of the site in the SFHA above the effective BFE. If structures are only being removed, the proposed lowest adjacent grade to the structures must be elevated to at least the effective BFE or higher. And if the entire area within the SFHA is being removed via fill, the lowest lot elevation must be elevated to at least the BFE or higher. A CLOMR-F followed by a LOMR-F will have to be filed with FEMA to officially remove the designation of the SFHA.

Floodplain Removal via Letter of Map Revision (CLOMR/LOMR)

A Conditional Letter of Map Revision (CLOMR) is FEMA's comment on a proposed project that would, upon construction, affect the hydrologic or hydraulic characteristics of a flooding source and thus result in the modification of the existing regulatory floodway, the effective Base Flood Elevations (BFEs), or the Special Flood Hazard Area (SFHA). Following a CLOMR, once the project has been completed, a LOMR is filed which is a letter from FEMA officially revising the current NFIP map to show changes to floodplains, floodways, or flood elevations.

To remap the floodplain so that the proposed development area is no longer in the SFHA, a floodwall could be constructed along the Golden Valley Wash at the limit of proposed site development to channelize the floodplain and prevent inundation on site. Assuming the floodwall is built in the same location as the limit of placed fill; Base Flood Elevations would be based on the new analysis, thus remapping the BFEs as well.

For the floodwall to be FEMA accredited, and thus remap the floodplain, the floodwall must meet the requirements outlined in Title 44 of the Code of Federal Regulations Section 65.10 (44 CFR 65.10). 44 CFR 65.10 provides the minimum design, operation, and maintenance standards levee systems must meet and continue to meet in order to be recognized as providing protection from the base flood on a Flood Insurance Rate Map. Per FEMA regulations, this floodwall must provide a minimum freeboard of three feet above the new channelized BFE. A tie-back floodwall would have to be constructed to the south of proposed detention basin to keep floodwaters from entering the site from the North. A CLOMR followed by a LOMR would have to be filed with FEMA which will remap the development as a Zone X protected by levee. Once the LOMR is approved, the development area would be officially removed from the SFHA, and fill would not need to be placed onsite to do so.

Scour Protection

In the project condition, the velocities in the Golden Valley Wash along the development range from 9.6 ft/s to 10.5 ft/s, which are considered highly erosive velocities. Thus the side of the development along the wash will require erosion protection. The fill option for floodplain removal will require that the fill slope exposed to the wash to be protected. And the floodwall option will require that the floodwall be protected against undermining due to channel scour. Both these options, will require placement of ¼ ton D(50) 23" to ½ ton D(50) 28" rock to protect against erosion in the wash.

TRAFFIC IMPACT STUDY

for

LEMMON DRIVE ESTATES

March 27, 2018

PREPARED FOR:

Bluth Development

PREPARED BY:

TRAFFIC WORKS LLC

TRAFFIC WORKS, LLC
5482 Longley Ln, Suite B, Reno, NV 89511
775.322.4300
www.Traffic-Works.com

WTM18-004
EXHIBIT G

YOUR QUESTIONS ANSWERED QUICKLY

Why did you perform this study?

This Traffic Impact Study evaluates the potential traffic impacts associated with the proposed Lemmon Drive Estates project. This study of potential transportation impacts was undertaken for planning purposes and to determine what traffic controls or other mitigations may be needed to reduce potential impacts, if any are identified.

What does the project consist of?

For the purposes of this study, the project consists of 98 detached single-family residential homes. The project is located on the east side of Lemmon Drive between Sky Vista Parkway and Military Road in Washoe County, NV.

How much traffic will the project generate?

The Lemmon Drive Estates project is anticipated to generate 926 Daily trips, 73 AM peak hour trips, and 97 PM peak hour trips.

Are there any traffic impacts?

With the addition of project traffic, all study intersections are projected to operate at acceptable levels of service (LOS "C" or better) under "Existing Plus Project" conditions. No significant impacts are anticipated as a result of the project.

Are any improvements recommended?

The following are proposed improvements for the project:

- The project access driveways should be constructed as right-in/right-out only.
- The proposed project should modify the channelizing island on the west side of Lemmon Drive at the Lemmon Drive / Military Road intersection to provide enough space for large passenger vehicles to make northbound to southbound U-turns.
- The project should dedicate right-of-way, if necessary, on Lemmon Drive along the project frontage, to accommodate the planned widening from 4 lanes to 6 lanes as stated in the 2040 RTP. See **Appendix C** for the typical regional roadway cross-section. Any right-of-way dedication and any widening improvements may be eligible for a Regional Road Impact Fee (RRIF) waiver/offset agreement.

The project's contribution of standard Regional Road Impact Fees will mitigate the minor project effects on the roadway network.

LIST OF FIGURES

LIST OF APPENDICES

INTRODUCTION

This report presents the findings of a Traffic Impact Study completed to assess the potential traffic impacts on local intersections associated with construction of the Lemmon Drive Estates project. This Transportation Impact Study has been prepared to describe existing traffic conditions, quantify traffic volumes generated by the proposed project, identify potential impacts on all modes of travel, document findings, and make recommendations to mitigate impacts, if any are found.

Study Area and Evaluated Scenarios

The project is located on the east side of Lemmon Drive between Sky Vista Parkway and Military Road in Washoe County, NV. The project location and study intersections are shown in **Figure 1** and the site plan is provided in **Figure 2**. The following intersections were analyzed:

- Lemmon Drive / Military Road
- Lemmon Drive / Snowbrush Court
- Lemmon Drive / Sunset View Drive

This study includes analysis of both the weekday AM and PM peak hours as these are the periods of time in which peak traffic conditions are anticipated to occur. The evaluated development scenarios are:

- Existing Conditions (no project)
- Existing Plus Project Conditions

Future year scenarios have not been evaluated at this time due to the relatively small size and low trip generation of the project. Long-term plans for the Lemmon Drive corridor are outlined in the *North Valleys Multimodal Transportation Study* and the *2040 Regional Transportation Plan*.

Analysis Methodology

Level of service (LOS) is a term commonly used by transportation practitioners to measure and describe the operational characteristics of intersections, roadway segments, and other facilities. This term equates seconds of average delay per vehicle at intersections to letter grades "A" through "F" with "A" representing optimum conditions and "F" representing breakdown or over capacity flows.

The LOS for a Two-Way STOP Control (TWSC) intersection is defined by the worst movement delay. The complete methodology is established in the Highway Capacity Manual (HCM), 2010,

published by the Transportation Research Board. **Table 1** presents the delay thresholds for each level of service grade at un-signalized and signalized intersections.

Level of service calculations were performed for the study intersections using the Vistro 5.0 software package with analysis and results reported in accordance with the 2010 HCM methodology.

Table 1: Level of Service Definition for Intersections

Level of Service	Brief Description	Un-signalized Intersections (average delay/vehicle in seconds)	Signalized Intersections (average delay/vehicle in seconds)
A	Free flow conditions.	< 10	< 10
B	Stable conditions with some affect from other vehicles.	10 to 15	10 to 20
C	Stable conditions with significant affect from other vehicles.	15 to 25	20 to 35
D	High density traffic conditions still with stable flow.	25 to 35	35 to 55
E	At or near capacity flows.	35 to 50	55 to 80
F	Over capacity conditions.	> 50	> 80

Source: Highway Capacity Manual (2010), Chapters 16 and 17

Level of Service Policy

The 2040 Regional Transportation Plan (2040 RTP) establishes level of service criteria for regional roadway facilities in Washoe County, the City of Reno, and City of Sparks. The current Level of Service policy is:

- "All regional roadway facilities projected to carry less than 27,000 ADT at the latest RTP horizon – LOS D or better."
- "All regional roadway facilities projected to carry 27,000 ADT or more at the latest RTP horizon – LOS E or better."
- "All intersections shall be designed to provide a level of service consistent with maintaining the policy level of service of the intersecting roadways".

The 2040 traffic volume projections in the regional travel demand model exceed 27,000 ADT, therefore the policy LOS for intersections on Lemmon Drive in the study area is LOS E.

EXISTING TRANSPORTATION FACILITIES

Roadway Facilities

A brief description of the key roadways in the study area is provided below.

Lemmon Drive is a four-lane and six-lane north-south arterial roadway in the project area. There are four lanes fronting the project site with planned widening to six lanes in the 2040 RTP. It is classified as a "*Moderate Access Control Arterial*" in the 2040 RTP. The posted speed limit is 45 miles per hour (mph) within the project area.

Military Road is a two-lane arterial roadway in the project area. It is classified as a "Moderate Access Control Arterial" in the 2040 RTP. The posted speed limit is 45 mph within the project area.

Alternative Travel Modes

Within the immediate project vicinity, sidewalks are only present around the Lemmon Drive / Military Road intersection. Dedicated bike lanes exist only on Military Road. Additional pedestrian and bicycle facilities are planned and outline in the *North Valleys Multimodal Transportation Study*.

RTC Route 17 currently operates immediately in front of the project site, as shown in **Exhibit 1**. Route 17 has an existing stop at the north end of the project site.

Exhibit 1. Transit Routes

EXISTING CONDITIONS

Traffic Volumes

Existing traffic volumes were determined by collecting new turning movement counts during the AM and PM peak periods at the study intersections on an average mid-week day in March 2018. The existing peak hour intersection traffic volumes and lane configurations are shown in **Figure 3**, attached.

Level of Service Analysis

Level of service calculations were performed using the existing traffic volumes, lane configurations, and traffic controls. The results are presented in **Table 2** and the calculation sheets are provided in **Appendix A**, attached.

Table 2: Existing Conditions Level of Service Summary

Intersection	Control	Approach	Existing AM		Existing PM	
			LOS	Delay [1]	LOS	Delay
Lemmon Dr / Military Rd	Signal	Overall	C	23.4	C	20.3

Notes: [1] Delay is reported in seconds per vehicle for the overall intersection for signalized controlled intersections, and for the worst approach/movement for side-street stop controlled intersections.

PROJECT GENERATED TRAFFIC

Project Description

The project location is shown in **Figure 1** and the site plan is provided in **Figure 2**. The project consists of 98 detached single-family residential homes.

Trip Generation

Trip generation rates for the proposed project were obtained from the *Trip Generation Manual, 10th Edition*, published by the Institute of Transportation Engineers. **Table 3** provides the Daily, AM Peak Hour, and PM Peak Hour trip generation calculations for the proposed project.

Table 3: Trip Generation Estimates

Land Use	Size	Weekday			AM Peak			PM Peak		
		Total	Entry	Exit	Total	Entry	Exit	Total	Entry	Exit
210 – Single-Family Detached Housing	98 Dwelling Units	926	463	463	73	18	55	97	61	36

Notes: ITE 10th Ed. Trip Generation Rates for Single Family Detached Housing (Per Dwelling Unit) – Daily: 9.44, AM: 0.74, PM: 0.99

As shown in **Table 3**, applying the ITE Trip Generation Manual trip rates, the proposed project is anticipated to generate 926 total Daily trips, 73 total AM peak hour trips, and 97 total PM peak hour trips.

Trip Distribution and Assignment

Traffic generated by the project was distributed to the road network based on the location of the project, major activity centers, and local roadway connections. The following trip distribution percentages were used for distributing the project traffic:

- 90% travelling to/from the south on Lemmon Drive
- 5% travelling to/from the north on Lemmon Drive
- 5% travelling to/from the west on Military Road

Project generated trips were assigned to the adjacent roadway system based on the distributions outlined above. The AM and PM peak hour project trip assignment is shown on **Figure 4**, attached.

Project Access

The project will access Lemmon Drive using two project driveways, as shown on **Figure 2**. Both access points are proposed to have right-in and right-out movements only with side-street STOP control. It is important to note that since there will be only right-in and right-out movements at Lemmon Drive, residents will have to make a U-turn at the Lemmon Drive / Military Road intersection to travel south on Lemmon Drive.

The Access Management Standards (Table E-2) in the 2040 RTP state that right deceleration lanes at driveways are required on a Moderate Access Control arterial roadway if there are more than 60 inbound, right-turn movements during the peak-hour. The proposed project is anticipated to generate 40 or less inbound right-turn movements at each driveway in the PM peak hour. This is below the threshold of 60 inbound right-turn movements, therefore a right-deceleration lane is not required at either driveway.

EXISTING PLUS PROJECT CONDITIONS

Traffic Volumes

Existing Plus Project traffic volumes were developed by adding the project generated trips (**Figure 4**) to the existing traffic volumes (**Figure 3**) and are shown on **Figure 5**, attached. The Existing Plus Project condition Peak Hour Factors (PHF) and travel patterns were assumed to remain the same as existing conditions.

Intersection Level of Service Analysis

Table 4 presents the level of service analysis summary for the Existing Plus Project scenario. Detailed calculation sheets are provided in **Appendix B**, attached.

Table 4: Existing Plus Project Conditions Level of Service Summary

Intersection	Control	Approach	Plus Project AM		Plus Project PM	
			LOS	Delay	LOS	Delay
Lemmon Dr / Military Rd	Signal	Overall	C	24.4	C	23.7
Lemmon Dr / Snowbrush Ct	Side-Street STOP	Westbound Right	B	10.7	B	13.9
Lemmon Dr / Sunset View Dr	Side-Street STOP	Westbound Right	B	10.7	B	14.1

Notes: [1] Delay is reported in seconds per vehicle for the overall intersection for signalized controlled intersections, and for the worst approach/movement for side-street stop controlled intersections.

As shown in **Table 4**, all study intersections are anticipated to operate at acceptable level of service (LOS "C" or better) conditions under the Existing Plus Project scenario. The project does not have any notable impact on the study intersections.

U-TURN AT LEMMON DRIVE / MILITARY ROAD

AutoTURN Analysis

AutoTURN, a vehicle swept path analysis software was used to determine if large passenger vehicles are able to make a U-turn at the Lemmon Drive / Military Road intersection. **Exhibit B** shows the results of this analysis.

Exhibit B. AutoTURN Snapshot

As shown in **Exhibit B**, large passenger vehicles will not have quite enough space to make a U-turn under the existing configuration. It is worth noting that a small vehicle was observed making a U-turn during the video recording. The project should modify the island on the west side of Lemmon Drive to insure that large passenger vehicles can make the northbound to southbound U-turn.

CONCLUSIONS & RECOMMENDATIONS

The following is a list of our key findings and recommendations:

Proposed Project: The project consists of 98 detached single-family residential homes. The project is located on the east side of Lemmon Drive between Sky Vista Parkway and Military Road in Washoe County, NV.

Project Trips: The Lemmon Drive Estates project is anticipated to generate 926 Daily trips, 73 AM peak hour trips, and 97 PM peak hour trips.

Project Access: The project will access Lemmon Drive using two project driveways. Both access points are proposed to have right-in and right-out movements only with side-street STOP control. It is important to note that since there will be only right-in and right-out movements at Lemmon Drive, residents will have to make a U-turn at the Lemmon Drive / Military Road intersection to travel south on Lemmon Drive.

The Access Management Standards (Table E-2) in the 2040 RTP state that right deceleration lanes at driveways are required on a Moderate Access Control arterial roadway if there are more than 60 inbound, right-turn movements during the peak-hour. The proposed project is anticipated to generate 40 or less inbound right-turn movements at each driveway in the PM peak hour. This is below the threshold of 60 inbound right-turn movements, therefore a right-deceleration lane is not required at either driveway.

Existing Level of Service: The Lemmon Drive / Military Road intersection currently operates at acceptable level of service conditions (LOS "C") during the AM and PM peak hours.

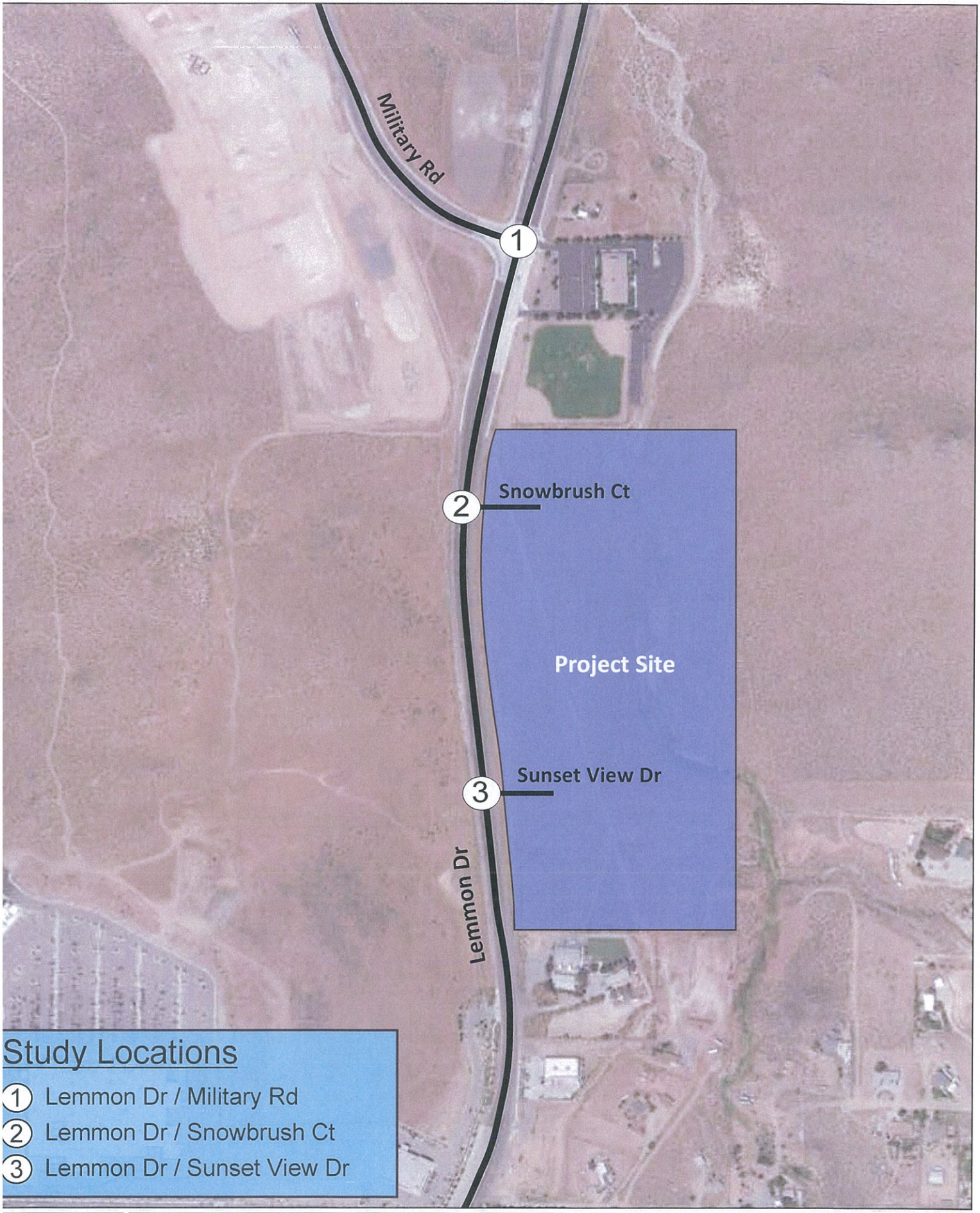
Existing Plus Project Level of Service: With the addition of project traffic, all study intersections are projected to operate at acceptable LOS conditions (LOS "C" or better) under "Existing Plus Project" conditions during both the AM and PM peak hours.

Summary of Proposed Improvements:

The following are proposed improvements for the project:

- The project access driveways should be constructed as right-in/right-out only.
- Right turn deceleration lanes are not required at the project driveways.
- The proposed project should modify the channelizing island on the west side of Lemmon Drive at the Lemmon Drive / Military Road intersection to provide enough space for large passenger vehicles to make northbound to southbound U-turns.
- The project should dedicate right-of-way, if necessary, on Lemmon Drive along the project frontage, to accommodate the planned widening from 4 lanes to 6 lanes as stated in the 2040 RTP. See **Appendix C** for the typical regional roadway cross-section. Any right-of-way dedication and any widening improvements may be eligible for a Regional Road Impact Fee (RRIF) waiver/offset agreement.

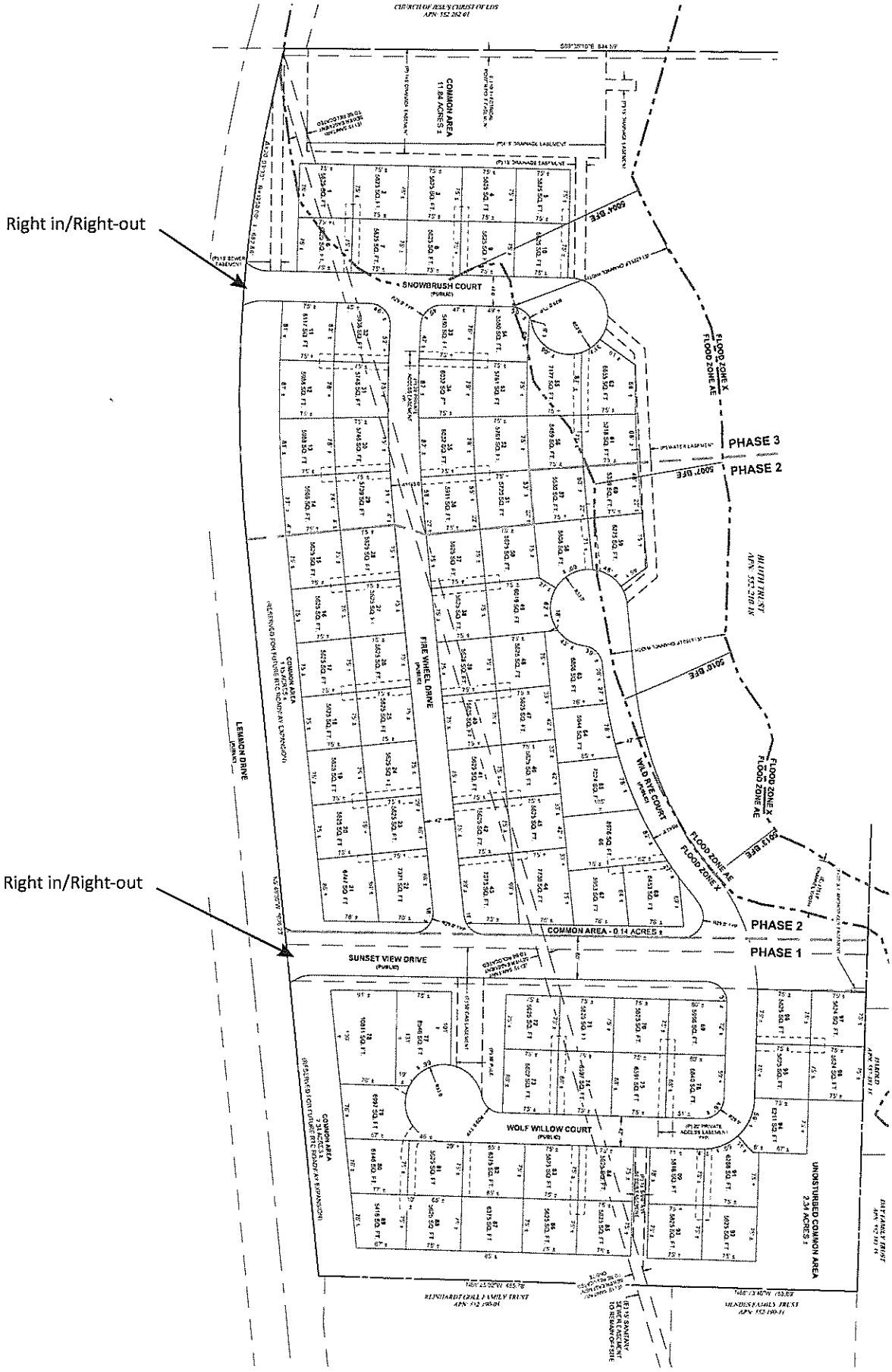
Regional Road Impact Fees: The project's contribution of standard Regional Road Impact Fees will mitigate the minor project effects on the roadway network.



NO SCALE

Figure 1
Lemmon Drive Estates
TRAFFIC IMPACT STUDY
Study Area

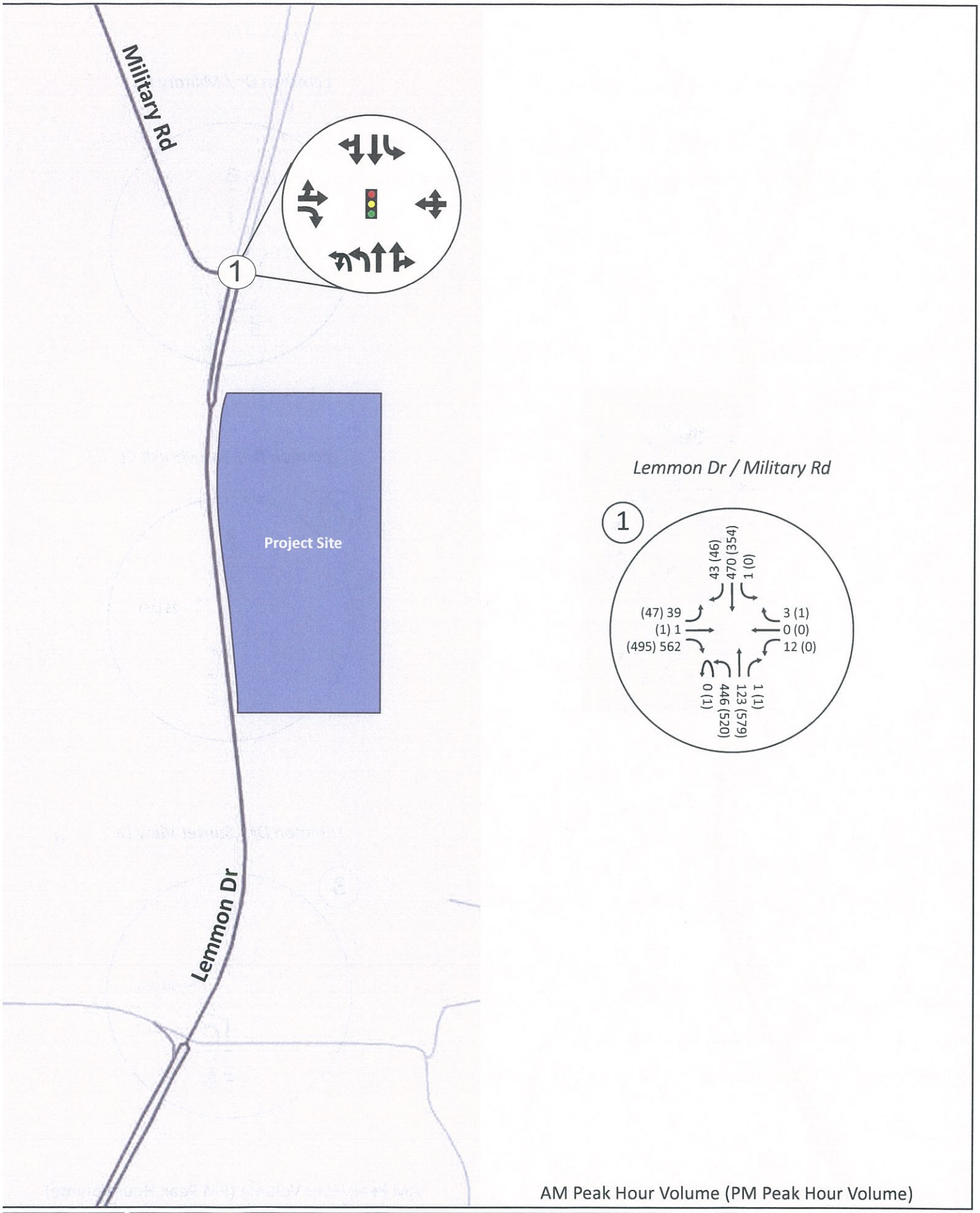
WTM18-004
EXHIBIT G



TRAFFIC WORKS

NO SCALE

Figure 2
Lemmon Drive Estates
TRAFFIC IMPACT STUDY
WTM18-004
EXHIBIT G
Site Plan



AM Peak Hour Volume (PM Peak Hour Volume)

TRAFFIC WORKS

NO SCALE

Figure 3

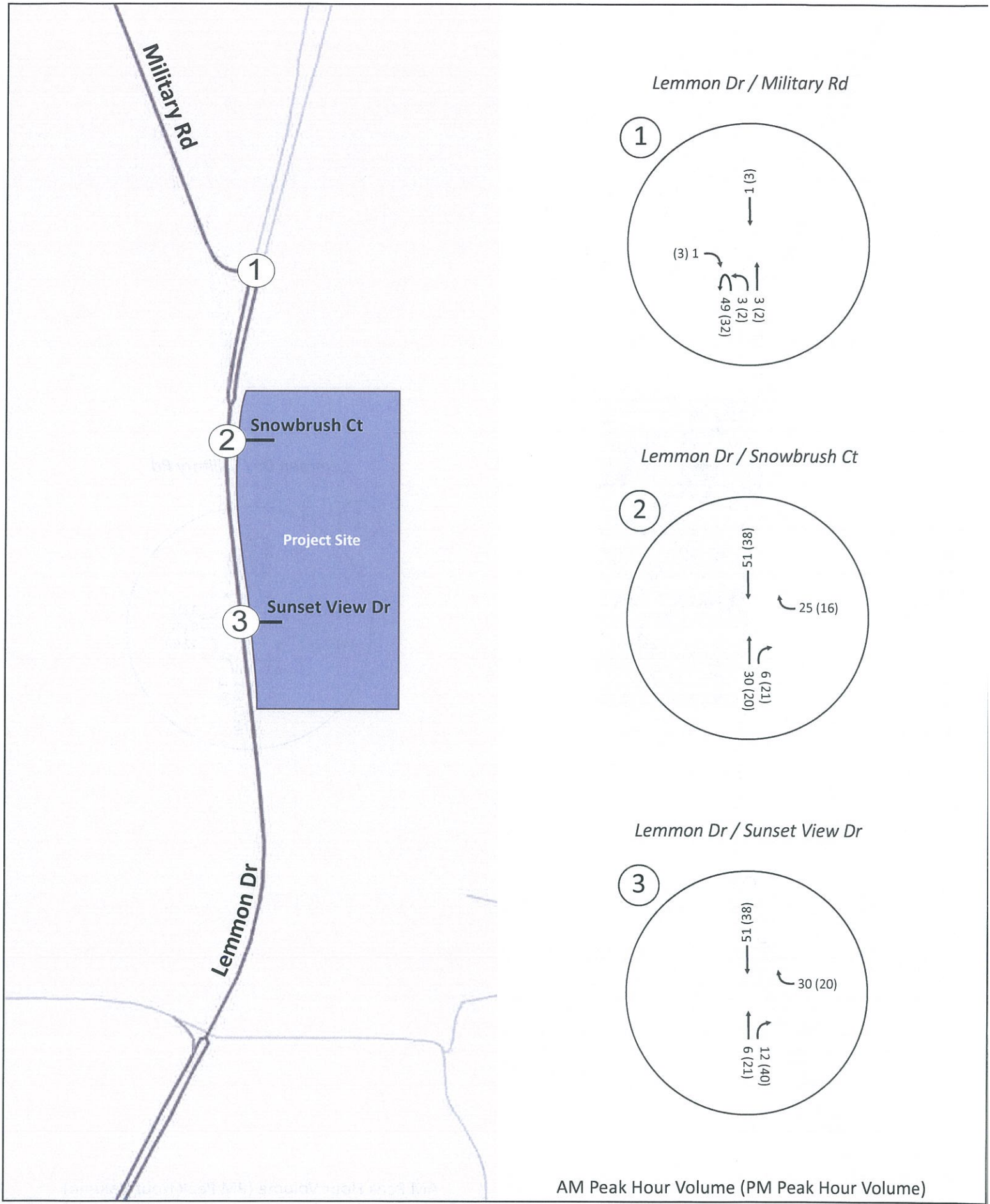
Lemmon Drive Estates

TRAFFIC IMPACT STUDY

Existing Traffic Volumes and Controls

WTM18-004

EXHIBIT G

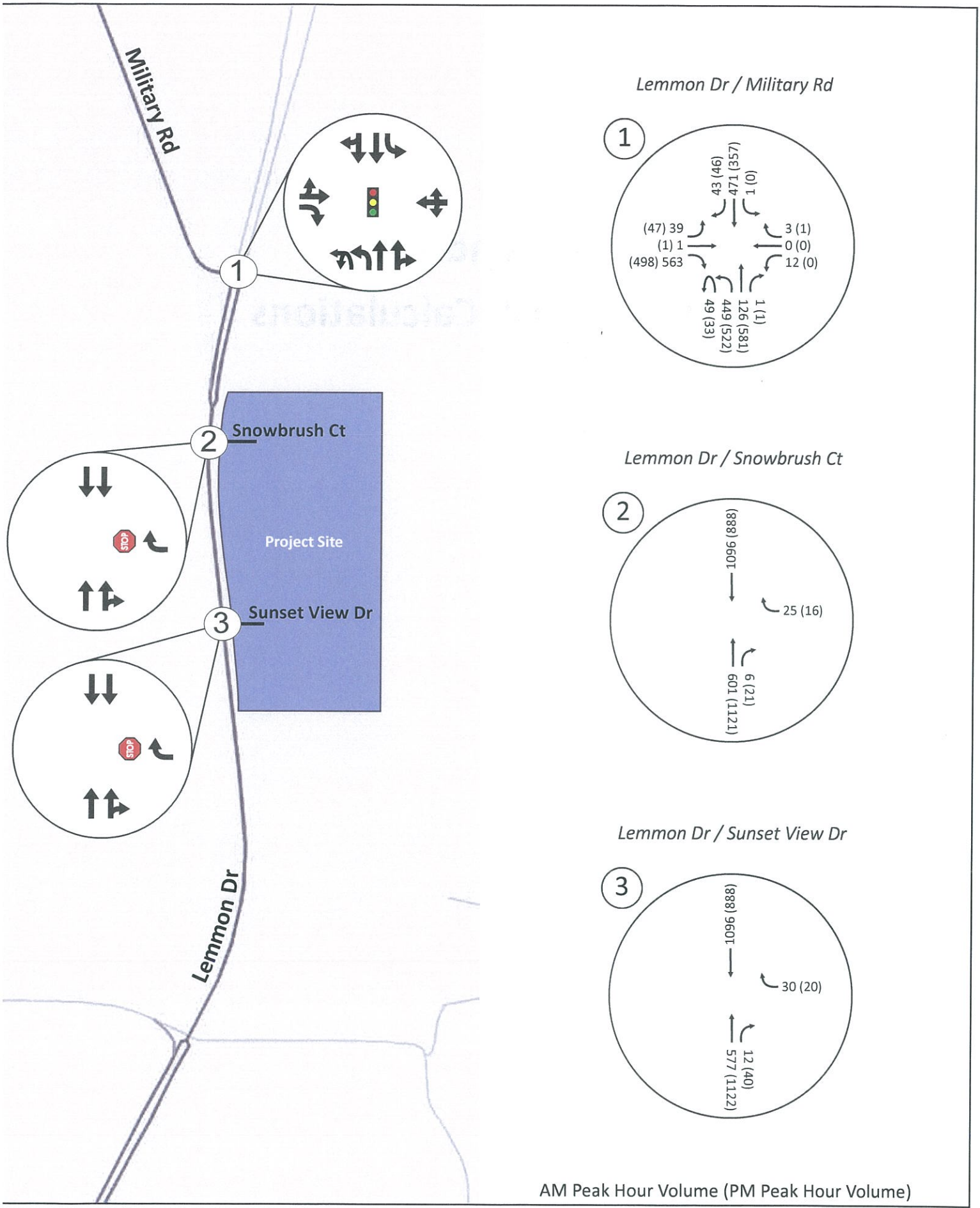


TRAFFIC WORKS

NO SCALE

Figure 4
Lemmon Drive Estates
TRAFFIC IMPACT STUDY
Project Trips

WTM18-004
EXHIBIT G



AM Peak Hour Volume (PM Peak Hour Volume)

NO SCALE

Figure 5
Lemmon Drive Estates
TRAFFIC IMPACT STUDY
Existing Plus Project Traffic Volumes and Controls

WTM18-004
EXHIBIT G

Appendix A
Existing LOS Calculations

Intersection Level Of Service Report
Intersection 1: Lemmon Dr / Military Rd

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.358

Intersection Setup

Name	Lemmon Dr				Lemmon Dr			Military Rd			Church Dwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	1	0	0	0	0	1	0	0	0
Pocket Length [ft]	350.0	100.0	100.0	100.0	215.00	100.00	100.00	100.00	100.00	600.00	100.00	100.00	100.00
Speed [mph]	45.00				45.00			45.00			45.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	Yes				Yes			Yes			Yes		

Volumes

Name	Lemmon Dr				Lemmon Dr			Military Rd			Church Dwy		
Base Volume Input [veh/h]	0	446	123	1	1	470	43	39	1	562	12	0	3
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	446	123	1	1	470	43	39	1	562	12	0	3
Peak Hour Factor	0.920	0.920	0.920	0.920	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	121	33	0	0	128	12	11	0	153	3	0	1
Total Analysis Volume [veh/h]	0	485	134	1	1	511	47	42	1	611	13	0	3
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups													
Lead / Lag	-	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	4	6	0	4	6	0	0	4	0	0	4	0
Maximum Green [s]	0	20	35	0	15	35	0	0	20	0	0	15	0
Amber [s]	0.0	4.1	5.0	0.0	4.0	4.9	0.0	0.0	4.7	0.0	0.0	4.7	0.0
All red [s]	0.0	3.0	1.0	0.0	2.9	1.0	0.0	0.0	2.8	0.0	0.0	2.8	0.0
Split [s]	0	25	40	0	11	26	0	0	39	0	0	39	0
Vehicle Extension [s]	0.0	2.7	3.2	0.0	2.7	3.2	0.0	0.0	3.2	0.0	0.0	1.7	0.0
Walk [s]	0	0	7	0	0	10	0	0	9	0	0	10	0
Pedestrian Clearance [s]	0	0	8	0	0	10	0	0	20	0	0	19	0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	5.1	4.0	0.0	4.9	3.9	0.0	0.0	5.5	0.0	0.0	5.5	0.0
Minimum Recall		No	Yes		No	Yes			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	7.10	6.00	6.00	6.90	5.90	5.90	7.50	7.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	5.10	4.00	4.00	4.90	3.90	3.90	5.50	5.50
g_i, Effective Green Time [s]	16	66	66	0	50	50	3	3
g / C, Green / Cycle	0.18	0.74	0.74	0.00	0.56	0.56	0.03	0.03
(v / s)_i Volume / Saturation Flow Rate	0.16	0.04	0.04	0.00	0.17	0.17	0.03	0.01
s, saturation flow rate [veh/h]	3063	1656	1652	1577	1656	1608	1527	1580
c, Capacity [veh/h]	552	1221	1218	3	924	897	131	127
d1, Uniform Delay [s]	35.95	3.24	3.24	44.88	10.61	10.62	43.15	42.40
k, delay calibration	0.09	0.50	0.50	0.09	0.50	0.50	0.12	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.08	0.09	0.09	57.42	0.86	0.89	1.55	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.06	0.06	0.36	0.31	0.31	0.33	0.13
d, Delay for Lane Group [s/veh]	40.04	3.32	3.32	102.31	11.46	11.51	44.71	42.57
Lane Group LOS	D	A	A	F	B	B	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	5.19	0.24	0.24	0.07	2.76	2.71	0.97	0.34
50th-Percentile Queue Length [ft]	129.82	5.98	5.96	1.63	69.07	67.65	24.18	8.47
95th-Percentile Queue Length [veh]	8.93	0.43	0.43	0.12	4.97	4.87	1.74	0.61
95th-Percentile Queue Length [ft]	223.25	10.76	10.74	2.94	124.33	121.77	43.53	15.24

Movement, Approach, & Intersection Results

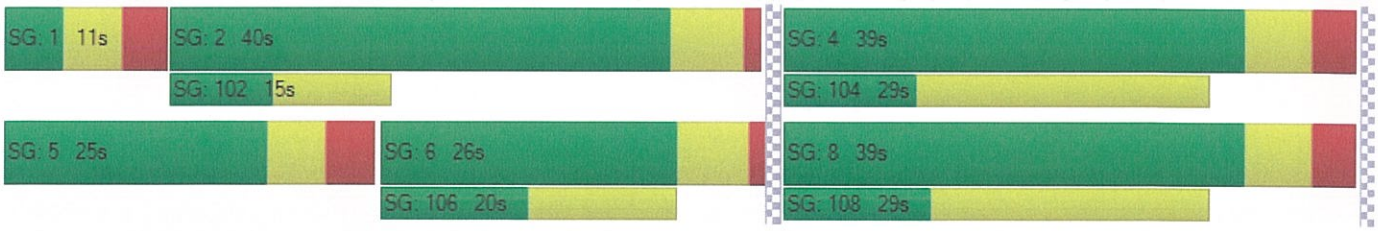
d_M, Delay for Movement [s/veh]	40.04	40.04	3.32	3.32	102.31	11.48	11.51	44.71	44.71	0.00	42.57	42.57	42.57
Movement LOS	D	D	A	A	F	B	B	D	D		D	D	D
d_A, Approach Delay [s/veh]	32.04				11.65			44.71			42.57		
Approach LOS	C				B			D			D		
d_I, Intersection Delay [s/veh]	23.41												
Intersection LOS	C												
Intersection V/C	0.358												

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	14.0	14.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	32.94	32.09	32.09	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.748	2.572	2.435	1.728
Crosswalk LOS	B	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	756	447	700	700
d_b, Bicycle Delay [s]	17.42	27.14	19.01	19.01
l_b,int, Bicycle LOS Score for Intersection	1.671	2.021	1.631	1.586
Bicycle LOS	A	B	A	A

Sequence

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



Intersection Level Of Service Report
Intersection 1: Lemmon Dr / Military Rd

Control Type:	Signalized	Delay (sec / veh):	20.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.358

Intersection Setup

Name	Lemmon Dr				Lemmon Dr			Military Rd			Church Dwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	1	0	0	0	0	1	0	0	0
Pocket Length [ft]	350.0	100.0	100.0	100.0	215.00	100.00	100.00	100.00	100.00	600.00	100.00	100.00	100.00
Speed [mph]	45.00				45.00			45.00			45.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	Yes				Yes			Yes			Yes		

Volumes

Name	Lemmon Dr				Lemmon Dr			Military Rd			Church Dwy		
Base Volume Input [veh/h]	1	520	579	1	0	354	46	47	1	495	0	0	1
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	520	579	1	0	354	46	47	1	495	0	0	1
Peak Hour Factor	0.910	0.910	0.910	0.910	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	143	159	0	0	97	13	13	0	136	0	0	0
Total Analysis Volume [veh/h]	1	571	636	1	0	389	51	52	1	544	0	0	1
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	1				0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1				0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups													
Lead / Lag	-	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	4	6	0	4	6	0	0	4	0	0	4	0
Maximum Green [s]	0	20	35	0	15	35	0	0	20	0	0	15	0
Amber [s]	0.0	4.1	5.0	0.0	4.0	4.9	0.0	0.0	4.7	0.0	0.0	4.7	0.0
All red [s]	0.0	3.0	1.0	0.0	2.9	1.0	0.0	0.0	2.8	0.0	0.0	2.8	0.0
Split [s]	0	25	40	0	11	26	0	0	39	0	0	39	0
Vehicle Extension [s]	0.0	2.7	3.2	0.0	2.7	3.2	0.0	0.0	3.2	0.0	0.0	1.7	0.0
Walk [s]	0	0	7	0	0	10	0	0	9	0	0	10	0
Pedestrian Clearance [s]	0	0	8	0	0	10	0	0	20	0	0	19	0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	5.1	4.0	0.0	4.9	3.9	0.0	0.0	5.5	0.0	0.0	5.5	0.0
Minimum Recall		No	Yes		No	Yes			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	7.10	6.00	6.00	6.90	5.90	5.90	7.50	7.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	5.10	4.00	4.00	4.90	3.90	3.90	5.50	5.50
g_i, Effective Green Time [s]	18	66	66	0	48	48	4	4
g / C, Green / Cycle	0.20	0.73	0.73	0.00	0.53	0.53	0.04	0.04
(v / s)_i Volume / Saturation Flow Rate	0.19	0.19	0.19	0.00	0.13	0.14	0.04	0.00
s, saturation flow rate [veh/h]	3088	1669	1669	1590	1669	1603	1413	762
c, Capacity [veh/h]	614	1215	1214	1	882	847	143	74
d1, Uniform Delay [s]	35.45	4.13	4.13	0.00	11.57	11.59	42.50	41.06
k, delay calibration	0.09	0.50	0.50	0.09	0.50	0.50	0.12	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.12	0.53	0.53	0.00	0.69	0.73	1.73	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.26	0.26	0.00	0.25	0.26	0.37	0.01
d, Delay for Lane Group [s/veh]	41.57	4.66	4.66	0.00	12.26	12.32	44.23	41.09
Lane Group LOS	D	A	A	A	B	B	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	6.30	1.45	1.45	0.00	2.28	2.23	1.19	0.02
50th-Percentile Queue Length [ft]	157.54	36.14	36.13	0.00	57.12	55.79	29.64	0.52
95th-Percentile Queue Length [veh]	10.42	2.60	2.60	0.00	4.11	4.02	2.13	0.04
95th-Percentile Queue Length [ft]	260.46	65.06	65.03	0.00	102.82	100.43	53.36	0.94

Movement, Approach, & Intersection Results

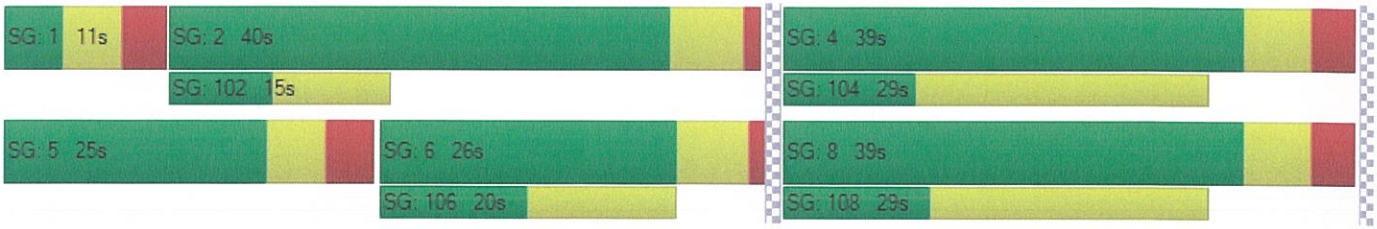
d_M, Delay for Movement [s/veh]	41.57	41.57	4.66	4.66	0.00	12.28	12.32	44.23	44.23	0.00	41.09	41.09	41.09
Movement LOS	D	D	A	A	A	B	B	D	D		D	D	D
d_A, Approach Delay [s/veh]	22.12				12.29			44.23			41.09		
Approach LOS	C				B			D			D		
d_I, Intersection Delay [s/veh]	20.28												
Intersection LOS	C												
Intersection V/C	0.358												

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	14.0	14.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	-21.67	0.00	0.00	-21.67
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	-49.91
d_p, Pedestrian Delay [s]	32.94	32.09	32.09	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.841	2.700	2.455	1.717
Crosswalk LOS	C	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	756	447	700	700
d_b, Bicycle Delay [s]	17.42	27.14	19.01	19.01
l_b,int, Bicycle LOS Score for Intersection	2.086	1.923	1.647	1.561
Bicycle LOS	B	A	A	A

Sequence

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



Appendix B
Existing Plus
Project LOS Calculations

Intersection Level Of Service Report
Intersection 1: Lemmon Dr / Military Rd

Control Type:	Signalized	Delay (sec / veh):	24.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.377

Intersection Setup

Name	Lemmon Dr				Lemmon Dr			Military Rd			Church Dwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	1	0	0	0	0	1	0	0	0
Pocket Length [ft]	350.0	100.0	100.0	100.0	215.00	100.00	100.00	100.00	100.00	600.00	100.00	100.00	100.00
Speed [mph]	45.00				45.00			45.00			45.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	Yes				Yes			Yes			Yes		

Volumes

Name	Lemmon Dr				Lemmon Dr			Military Rd			Church Dwy		
Base Volume Input [veh/h]	0	446	123	1	1	470	43	39	1	562	12	0	3
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	49	3	3	0	0	1	0	0	0	1	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	49	449	126	1	1	471	43	39	1	563	12	0	3
Peak Hour Factor	0.920	0.920	0.920	0.920	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200	0.9200
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	122	34	0	0	128	12	11	0	153	3	0	1
Total Analysis Volume [veh/h]	53	488	137	1	1	512	47	42	1	612	13	0	3
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	0				0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0				0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups													
Lead / Lag	-	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	4	6	0	4	6	0	0	4	0	0	4	0
Maximum Green [s]	0	20	35	0	15	35	0	0	20	0	0	15	0
Amber [s]	0.0	4.1	5.0	0.0	4.0	4.9	0.0	0.0	4.7	0.0	0.0	4.7	0.0
All red [s]	0.0	3.0	1.0	0.0	2.9	1.0	0.0	0.0	2.8	0.0	0.0	2.8	0.0
Split [s]	0	25	40	0	11	26	0	0	39	0	0	39	0
Vehicle Extension [s]	0.0	2.7	3.2	0.0	2.7	3.2	0.0	0.0	3.2	0.0	0.0	1.7	0.0
Walk [s]	0	0	7	0	0	10	0	0	9	0	0	10	0
Pedestrian Clearance [s]	0	0	8	0	0	10	0	0	20	0	0	19	0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	5.1	4.0	0.0	4.9	3.9	0.0	0.0	5.5	0.0	0.0	5.5	0.0
Minimum Recall		No	Yes		No	Yes			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	7.10	6.00	6.00	6.90	5.90	5.90	7.50	7.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	5.10	4.00	4.00	4.90	3.90	3.90	5.50	5.50
g_i, Effective Green Time [s]	18	66	66	0	49	49	3	3
g / C, Green / Cycle	0.20	0.74	0.74	0.00	0.54	0.54	0.03	0.03
(v / s)_i Volume / Saturation Flow Rate	0.18	0.04	0.04	0.00	0.17	0.17	0.03	0.01
s, saturation flow rate [veh/h]	3063	1656	1652	1577	1656	1608	1527	1580
c, Capacity [veh/h]	600	1221	1218	3	898	872	131	127
d1, Uniform Delay [s]	35.36	3.24	3.24	44.88	11.38	11.39	43.15	42.40
k, delay calibration	0.09	0.50	0.50	0.09	0.50	0.50	0.12	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.64	0.09	0.09	57.42	0.92	0.95	1.55	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.06	0.06	0.36	0.32	0.32	0.33	0.13
d, Delay for Lane Group [s/veh]	39.99	3.33	3.33	102.31	12.30	12.34	44.71	42.57
Lane Group LOS	D	A	A	F	B	B	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	5.82	0.24	0.24	0.07	2.91	2.85	0.97	0.34
50th-Percentile Queue Length [ft]	145.54	6.12	6.10	1.63	72.80	71.30	24.18	8.47
95th-Percentile Queue Length [veh]	9.78	0.44	0.44	0.12	5.24	5.13	1.74	0.61
95th-Percentile Queue Length [ft]	244.47	11.01	10.99	2.94	131.03	128.34	43.53	15.24

Movement, Approach, & Intersection Results

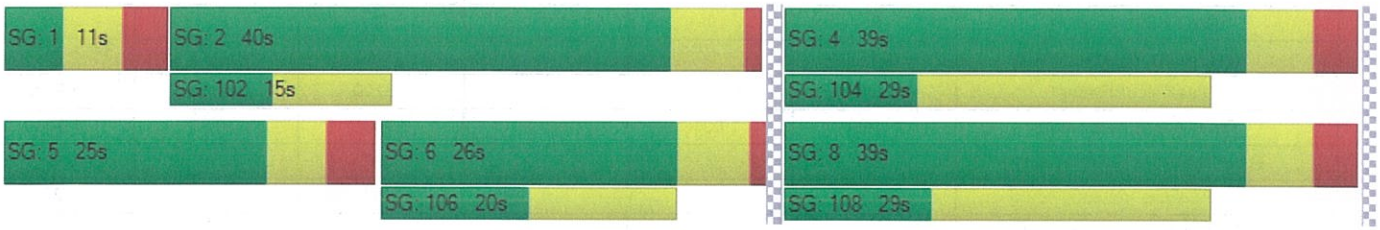
d_M, Delay for Movement [s/veh]	39.99	39.99	3.33	3.33	102.31	12.32	12.34	44.71	44.71	0.00	42.57	42.57	42.57
Movement LOS	D	D	A	A	F	B	B	D	D		D	D	D
d_A, Approach Delay [s/veh]	32.54				12.48			44.71			42.57		
Approach LOS	C				B			D			D		
d_I, Intersection Delay [s/veh]	24.41												
Intersection LOS	C												
Intersection V/C	0.377												

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	14.0	14.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	32.94	32.09	32.09	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.838	2.573	2.436	1.728
Crosswalk LOS	C	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	756	447	700	700
d_b, Bicycle Delay [s]	17.42	27.14	19.01	19.01
l_b,int, Bicycle LOS Score for Intersection	1.717	2.022	1.631	1.586
Bicycle LOS	A	B	A	A

Sequence

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



Intersection Level Of Service Report
Intersection 2: Lemmon Dr / Snowbrush Ct

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.041

Intersection Setup

Name	Lemmon Dr		Lemmon Dr		Snowbrush Ct	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Lemmon Dr		Lemmon Dr		Snowbrush Ct	
Base Volume Input [veh/h]	571	0	0	1045	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	4.00	2.00	4.00	2.00	4.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	30	6	0	51	0	25
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	601	6	0	1096	0	25
Peak Hour Factor	0.9200	0.9200	1.0000	0.9200	1.0000	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	163	2	0	298	0	7
Total Analysis Volume [veh/h]	653	7	0	1191	0	27
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.00	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.69
Movement LOS	A	A		A		B
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.13
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	3.19
d_A, Approach Delay [s/veh]	0.00		0.00		10.69	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.15					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Lemmon Dr / Sunset View Dr

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.049

Intersection Setup

Name	Lemmon Dr		Lemmon Dr		Sunset View Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Lemmon Dr		Lemmon Dr		Sunset View Dr	
Base Volume Input [veh/h]	571	0	0	1045	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	4.00	2.00	4.00	2.00	4.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	6	12	0	51	0	30
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	577	12	0	1096	0	30
Peak Hour Factor	0.9200	0.9200	1.0000	0.9200	1.0000	0.9200
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	157	3	0	298	0	8
Total Analysis Volume [veh/h]	627	13	0	1191	0	33
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.00	0.05
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	10.65
Movement LOS	A	A		A		B
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.16
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	3.88
d_A, Approach Delay [s/veh]	0.00		0.00		10.65	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.19					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 1: Lemmon Dr / Military Rd

Control Type:	Signalized	Delay (sec / veh):	23.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.371

Intersection Setup

Name	Lemmon Dr				Lemmon Dr			Military Rd			Church Dwy		
Approach	Northbound				Southbound			Eastbound			Westbound		
Lane Configuration													
Turning Movement	U-tu	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	2	0	0	0	1	0	0	0	0	1	0	0	0
Pocket Length [ft]	350.0	100.0	100.0	100.0	215.00	100.00	100.00	100.00	100.00	600.00	100.00	100.00	100.00
Speed [mph]	45.00				45.00			45.00			45.00		
Grade [%]	0.00				0.00			0.00			0.00		
Curb Present	No				No			No			No		
Crosswalk	Yes				Yes			Yes			Yes		

Volumes

Name	Lemmon Dr				Lemmon Dr			Military Rd			Church Dwy		
Base Volume Input [veh/h]	1	520	579	1	0	354	46	47	1	495	0	0	1
Base Volume Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	32	2	2	0	0	3	0	0	0	3	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	522	581	1	0	357	46	47	1	498	0	0	1
Peak Hour Factor	0.910	0.910	0.910	0.910	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.000	1.000	1.000	1.000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	143	160	0	0	98	13	13	0	137	0	0	0
Total Analysis Volume [veh/h]	36	574	638	1	0	392	51	52	1	547	0	0	1
Presence of On-Street Parking	No			No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0				0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0				0			0			0		
v_co, Outbound Pedestrian Volume crossing	1				0			0			1		
v_ci, Inbound Pedestrian Volume crossing mi	1				0			0			1		
v_ab, Corner Pedestrian Volume [ped/h]	0				0			0			0		
Bicycle Volume [bicycles/h]	0				0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Isolated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permi	Prote	Permi	Permi	Protecte	Permiss	Permiss	Permiss	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal group	0	5	2	0	1	6	0	0	4	0	0	8	0
Auxiliary Signal Groups													
Lead / Lag	-	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	4	6	0	4	6	0	0	4	0	0	4	0
Maximum Green [s]	0	20	35	0	15	35	0	0	20	0	0	15	0
Amber [s]	0.0	4.1	5.0	0.0	4.0	4.9	0.0	0.0	4.7	0.0	0.0	4.7	0.0
All red [s]	0.0	3.0	1.0	0.0	2.9	1.0	0.0	0.0	2.8	0.0	0.0	2.8	0.0
Split [s]	0	25	40	0	11	26	0	0	39	0	0	39	0
Vehicle Extension [s]	0.0	2.7	3.2	0.0	2.7	3.2	0.0	0.0	3.2	0.0	0.0	1.7	0.0
Walk [s]	0	0	7	0	0	10	0	0	9	0	0	10	0
Pedestrian Clearance [s]	0	0	8	0	0	10	0	0	20	0	0	19	0
Rest In Walk			No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	5.1	4.0	0.0	4.9	3.9	0.0	0.0	5.5	0.0	0.0	5.5	0.0
Minimum Recall		No	Yes		No	Yes			No			No	
Maximum Recall		No	No		No	No			No			No	
Pedestrian Recall		No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

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

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	7.10	6.00	6.00	6.90	5.90	5.90	7.50	7.50
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	2.00
l2, Clearance Lost Time [s]	5.10	4.00	4.00	4.90	3.90	3.90	5.50	5.50
g_i, Effective Green Time [s]	18	66	66	0	48	48	4	4
g / C, Green / Cycle	0.20	0.73	0.73	0.00	0.53	0.53	0.04	0.04
(v / s)_i Volume / Saturation Flow Rate	0.20	0.19	0.19	0.00	0.13	0.14	0.04	0.00
s, saturation flow rate [veh/h]	3088	1669	1669	1590	1669	1603	1413	762
c, Capacity [veh/h]	614	1215	1214	1	882	847	143	74
d1, Uniform Delay [s]	35.99	4.13	4.13	0.00	11.58	11.60	42.50	41.06
k, delay calibration	0.09	0.50	0.50	0.09	0.50	0.50	0.12	0.04
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.08	0.53	0.53	0.00	0.70	0.74	1.73	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.99	0.26	0.26	0.00	0.25	0.26	0.37	0.01
d, Delay for Lane Group [s/veh]	50.07	4.66	4.66	0.00	12.28	12.34	44.23	41.09
Lane Group LOS	D	A	A	A	B	B	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh]	7.46	1.45	1.45	0.00	2.30	2.25	1.19	0.02
50th-Percentile Queue Length [ft]	186.47	36.29	36.27	0.00	57.58	56.24	29.64	0.52
95th-Percentile Queue Length [veh]	11.94	2.61	2.61	0.00	4.15	4.05	2.13	0.04
95th-Percentile Queue Length [ft]	298.45	65.31	65.29	0.00	103.64	101.23	53.36	0.94

Movement, Approach, & Intersection Results

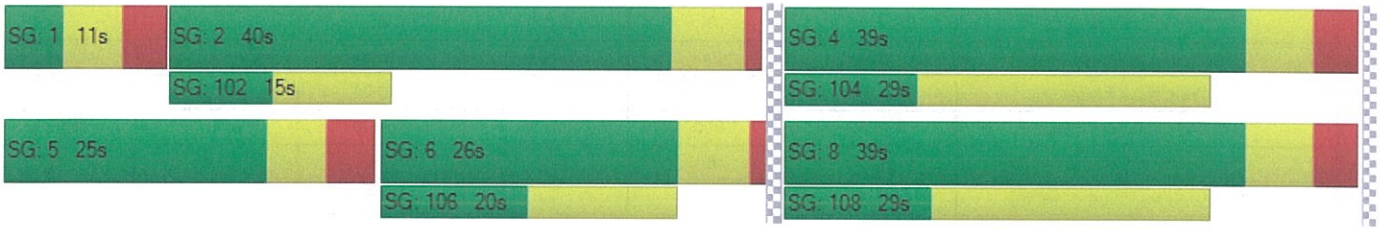
d_M, Delay for Movement [s/veh]	50.07	50.07	4.66	4.66	0.00	12.30	12.34	44.23	44.23	0.00	41.09	41.09	41.09
Movement LOS	D	D	A	A	A	B	B	D	D		D	D	D
d_A, Approach Delay [s/veh]	26.84				12.31			44.23			41.09		
Approach LOS	C				B			D			D		
d_I, Intersection Delay [s/veh]	23.69												
Intersection LOS	C												
Intersection V/C	0.371												

Other Modes

g_Walk,mi, Effective Walk Time [s]	13.0	14.0	14.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	-21.67	0.00	0.00	-21.67
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	-49.91
d_p, Pedestrian Delay [s]	32.94	32.09	32.09	34.67
l_p,int, Pedestrian LOS Score for Intersection	2.902	2.702	2.456	1.717
Crosswalk LOS	C	B	B	A
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	756	447	700	700
d_b, Bicycle Delay [s]	17.42	27.14	19.01	19.01
l_b,int, Bicycle LOS Score for Intersection	2.116	1.925	1.647	1.561
Bicycle LOS	B	A	A	A

Sequence

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



Intersection Level Of Service Report
Intersection 2: Lemmon Dr / Snowbrush Ct

Control Type:	Two-way stop	Delay (sec / veh):	13.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.042

Intersection Setup

Name	Lemmon Dr		Lemmon Dr		Snowbrush Ct	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Lemmon Dr		Lemmon Dr		Snowbrush Ct	
Base Volume Input [veh/h]	1101	0	0	850	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	2.00	3.00	2.00	3.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	20	21	0	38	0	16
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1121	21	0	888	0	16
Peak Hour Factor	0.9100	0.9100	1.0000	0.9100	1.0000	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	308	6	0	244	0	4
Total Analysis Volume [veh/h]	1232	23	0	976	0	18
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.00	0.04
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	13.88
Movement LOS	A	A		A		B
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.13
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	3.32
d_A, Approach Delay [s/veh]	0.00		0.00		13.88	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.11					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 3: Lemmon Dr / Sunset View Dr

Control Type:	Two-way stop	Delay (sec / veh):	14.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.053

Intersection Setup

Name	Lemmon Dr		Lemmon Dr		Sunset View Dr	
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	45.00		45.00		25.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	Lemmon Dr		Lemmon Dr		Sunset View Dr	
Base Volume Input [veh/h]	1101	0	0	850	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	3.00	3.00	2.00	3.00	2.00	3.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	21	40	0	38	0	20
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1122	40	0	888	0	20
Peak Hour Factor	0.9100	0.9100	1.0000	0.9100	1.0000	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	308	11	0	244	0	5
Total Analysis Volume [veh/h]	1233	44	0	976	0	22
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

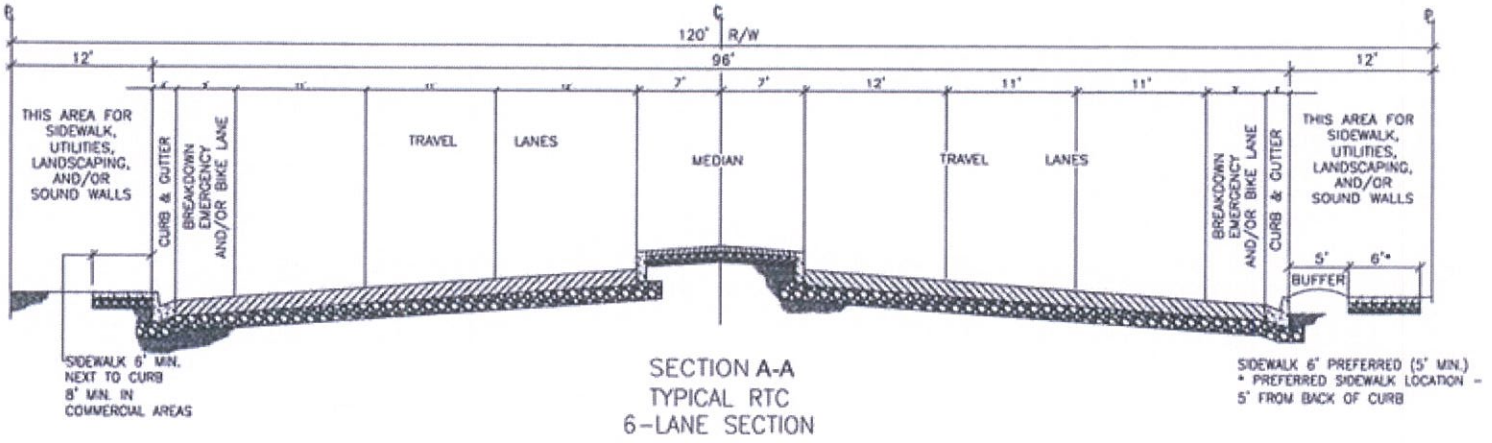
Priority Scheme	Free	Free	Stop
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			No
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.01	0.00	0.05
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	0.00	0.00	14.12
Movement LOS	A	A		A		B
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.00	0.00	0.17
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	0.00	0.00	4.17
d_A, Approach Delay [s/veh]	0.00		0.00		14.12	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.14					
Intersection LOS	B					

Appendix C
Typical Regional Roadway Cross-Section

Appendix C. Typical Roadway Cross-Section



SECTION A-A
TYPICAL RTC
6-LANE SECTION