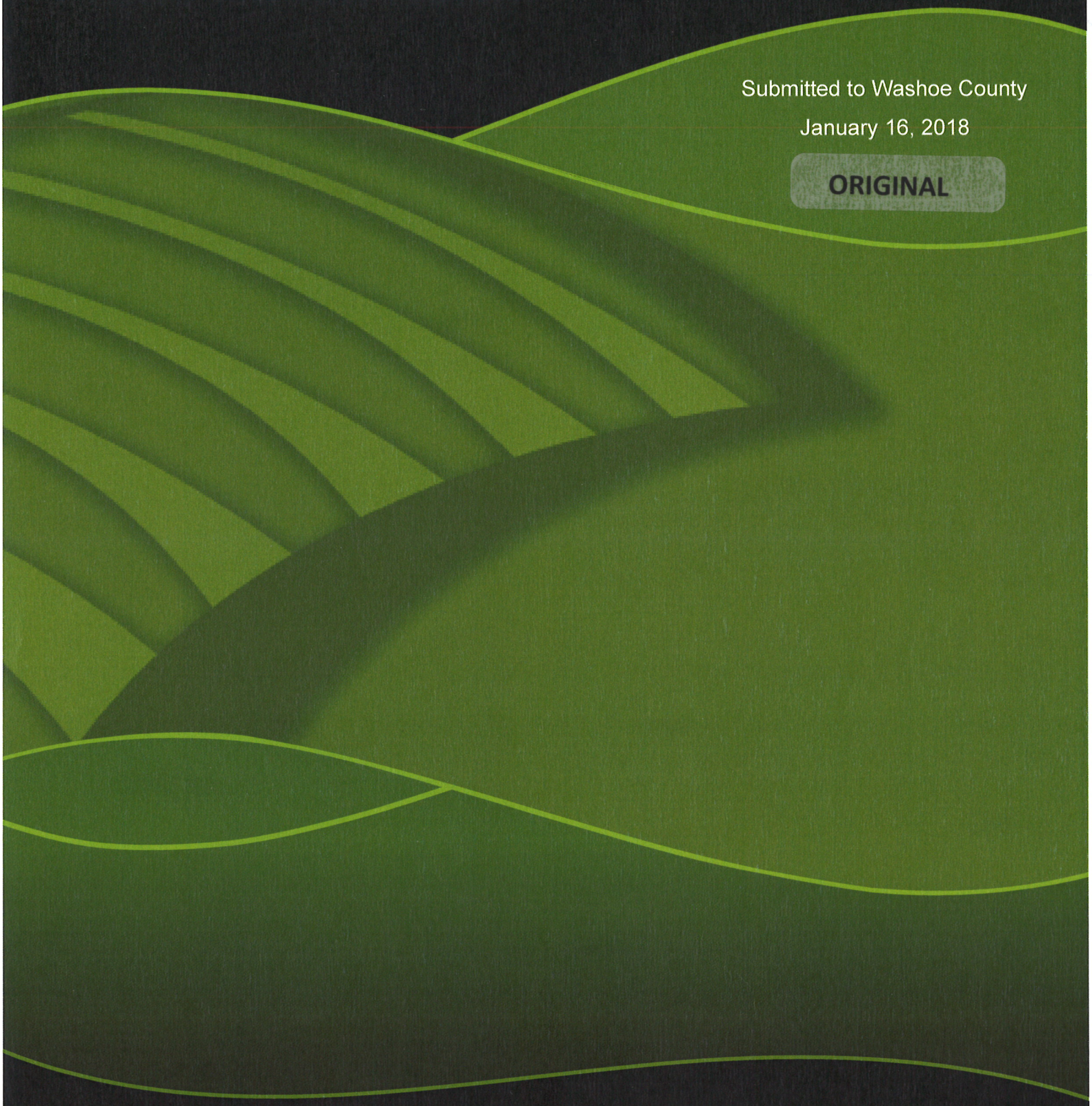
Tentative Subdivision Map Application

Prado Ranch North

Submitted to Washoe County

January 16, 2018

ORIGINAL



Prepared for

Lansing Companies, LLC

12671 High Bluff Drive, Ste. 150

San Diego, CA 92130

Prepared by

WOOD RODGERS

DEVELOPING INNOVATIVE DESIGN SOLUTIONS

1361 Corporate Blvd • Reno, NV 89502 • Tel: 775.823.4068

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Section 1

Washoe County Development Application

Your entire application is a public record. If you have a concern about releasing personal information, please contact Planning and Development staff at 775.328.3600.

Project Information	**Staff Assigned Case No.:** _____
Project Name: Prado Ranch North	
Project Description: A Tentative Map for a 538 lot common open space development with single family residential lots ranging in size from 5,000 - 23,958 square feet.	
Project Address: 0 Lemmon Drive, Washoe County 89506	
Project Area (acres or square feet): ~151.4 acres	
Project Location (with point of reference to major cross streets **AND** area locator): The proposed project is located along the east side of Lemmon Drive between Nectar Street and Tupelo Street in the North Valleys Area Plan/LVS Character Mgmt Area	

Assessor's Parcel No.(s):	Parcel Acreage:	Assessor's Parcel No.(s):	Parcel Acreage:
See Attached List		See Attached List	

Section(s)/Township/Range: S23/T21/R19 and S22/T21/R19

Indicate any previous Washoe County approvals associated with this application:
Case No.(s).

Applicant Information (attach additional sheets if necessary)

Property Owner:	**Professional Consultant:**
Name: North Valleys Investment Group LLC	Name: Wood Rodgers, Inc.
Address: 10345 Professional Circle Suite 100	Address: 1361 Corporate Blvd; Reno, NV
Zip: 89521	Zip: 89502
Phone: 775-789-3234 Fax:	Phone: 775-823-5258 Fax: 823-4066
Email:	Email: shuggins@woodrodgers.com
Cell: Other:	Cell: 775-250-8213 Other:
Contact Person: Dustin Barker	Contact Person: Stacie Huggins
Applicant/Developer: Lansing Companies LLC	**Other Persons to be Contacted:**
Name:	Name: Chris Coombs
Address: 12671 High Bluff Drive, Suite 150, San Diego, CA	Address:
Zip: 92130	Zip:
Phone: 858-523-0719 Fax:	Phone: Fax:
Email: wroberts@lansingcompanies.com	Email: coombs.lansing@gmail.com
Cell: Other:	Cell: 775-815-8425 Other:
Contact Person: Will Roberts	Contact Person: Chris Coombs

For Office Use Only

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

Prado Ranch North - Project Parcels Summary			
APN	**Total Parcel Size (Acres)**	**% of Parcel in Project Area**	**Acreage in Project Area**
080-723-01	40.00	100%	40.00
080-723-02	40.14	90%	36.30
080-723-03	40.05	85%	33.96
080-721-03	43.97	10%	4.21
080-721-04	40.76	78%	31.78
080-721-05	45.07	0%	0.04
Chickadee Drive Right-of -Way	5.11	100%	5.11
TOTAL	255.10	59%	**151.40**

Property Owner Affidavit

Applicant Name: Lansing Companies

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 t hat the application is deemed complete and will be processed.

STATE OF NEVADA)
)
COUNTY OF WASHOE)

I, North Valley Investment Company Group, 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 Development.

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

Assessor Parcel Number(s): 080-723-01, 02, 03, 080-721-03, 04, and 05

North Valley Investment Group, LLC

Printed Name Dustin Barker By Lennar Reno, LLC Its Manager

Signed

Address

Subscribed and sworn to before me this 12th day of January, 2018

Notary Public in and for said county and state

My commission expires: 3-26-2018

(Notary Stamp)

NOLA SPEIGEL
Notary Public, State of Nevada
Appointment No. 10-1640-2
My Appt. Expires Mar 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

WRITTEN CONSENT TO ACTION
BY BOARD OF MANAGERS OF
LENNAR RENO, LLC

OCTOBER 16, 2006

The undersigned, constituting all of the members of the Board of Managers of LENNAR RENO, LLC, a Nevada limited liability company (the "Company"), pursuant to the provisions of the Nevada Revised Statutes, do hereby unanimously agree and consent to the adoption of, and do hereby adopt, the following resolution:

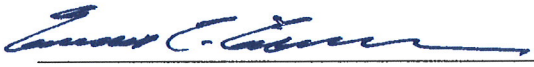
RESOLVED, that the following individuals be, and hereby are, elected **Vice President** of the Company to serve in such capacity, pursuant to the Operating Agreement of the Company, until the next annual meeting of the Board of Managers of the Company, or until their successors are duly elected and qualified or until their earlier resignation or removal from office.

Dustin Barker
Darrin Indart
Michael Nicholls

This Written Consent may be executed in counterparts, and all counterparts executed shall constitute one Written Consent. A facsimile of a signature to this Written Consent shall be deemed as valid as an original signature thereto.

IN WITNESS WHEREOF, the undersigned have executed this Written Consent effective as of the date first written above.

MANAGERS:



Edward C. Giermann

Steven E. Lane

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MANAGERS:

Edward C. Giermann

Steven E. Lane

REQUEST FOR OFFICER ELECTION/REMOVAL

IMPORTANT NOTE: Processing times may vary. Please allow at least five (5) business days to process this request.

1. Date of request:	2. Name of associate submitting request:
10/16/06	Rebecca Caterino

3. Entity legal name (as it appears in formation documents):
LENNAR RENO LLC

X	ELECTION		REMOVAL

4. Basic information of associate being elected/removed:	
4a. Name:	Dustin Barker
4b. Division:	Lennar Reno
4c. Business Address:	10345 Professional Court, Ste. 100, Reno, NV 89521

5. Corporate officer title (Vice President, Assistant Secretary or Authorized Agent):
Vice President
5a. If Authorized Agent, list specific authorities to be granted (see attached list):
6. Descriptive title (i.e. Division President, Division Controller, Director of Sales, etc.)
Regional Vice President of Finance

Effective date (the date the request is submitted will be the effective date of the election unless a future effective date is entered):

Approved by:	
Print name:	Tim Kent
Title:	Division/Regional President

Submit this form to:
Christen M. Llera, Corporate Paralegal, Miami Legal Department
T: 305.229.6429, F: 305.229.6650, E: christen.llera@lennar.com

ROER-05/2006
G:\LAND\All Share\Land\Legal\Lennar Reno, LLC\Business\REQUEST FOR OFFICER ELECTION - Dustin Barker 16OCT2006.doc

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 proposed Prado Ranch North project is located within Washoe County in an area that is commonly referred to as the North Valleys near the intersection of Lemmon and Chickadee Drive. More specifically the project site is bordered by Lemmon Drive to the west, Tupelo Street and undeveloped land to the north, Chesapeake Drive to the east, and Nectar Street to the south.

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

Prado Ranch North

3. Density and lot design:

a. Acreage of project site	151.4 acres
b. Total number of lots	538
c. Dwelling units per acre	3.55 du/acre
d. Minimum and maximum area of proposed lots	5,000 sq. ft. to 23,958 sq. ft.
e. Minimum width of proposed lots	50 feet
f. Average lot size	8,470 sq. ft.

4. Utilities:

a. Sewer Service	Reno-Stead Wastewater Treatment Facility
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 Communications
g. Water Service	TMWA

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

   a. Acreage of common open space:

   10.0+/- acres

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

   Common open space areas provided to address perimeter buffering, on-site drainage channels and pocket parks within each Village. No development constraints exist within the areas proposed for common open space.

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

   min lot size = 5,000+/- sqft; max lot size = 23,958+/- sqft

   d. Average lot size:

   8,470+/- square feet

   e. Proposed yard setbacks if different from standard:

   Setbacks for Prado Ranch North will be 20 feet on the front & rear and 7 feet on the sides, consistent with the zoning setbacks outlined for MDS4.

   The project does propose to vary the minimum lot width from 70 feet to 50 feet.

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

   The varied lot width is proposed in order to achieve a more efficient use of the site while providing open space corridors and buffers around the perimeter. In accordance with Article 408, Section 110.408.25 typical building envelopes have been included on the tentative map for reference. See Sheets G-01 thru G-06 of the tentative map plans.

   g. Identify all proposed non-residential uses:

   The proposed project does not include any non-residential uses at this time.

h. Improvements proposed for the common open space:

The project includes approximately 10 acres of common open space which includes perimeter buffers, drainage channels, and pocket parks within each Village. Specific improvements in common open space areas include meandering paths within the perimeter buffers, 60-100 ft wide drainage channels designed to perpetuate storm flows, and pocket parks in each Village. Refer to Section 2 - Project Description and Section 4 - Drainage Report for additional information.

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

In accordance with the North Valleys Area Plan, the proposed project includes a meandering 8-foot wide DG path located within the 30-foot wide landscape buffer around the project perimeter. This meandering pathwill provide public connectivity in and around the proposed project. In addition, sidewalks will be provided on both sides along roadways.

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

There are currently no known trail systems in the area. However, there is an existing multi-use paved path along the east side of Lemmon Dr. The meandering path proposed within the perimeter common open space will provide an opportunity for the two paths to connect where feasible.

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

There are no ridgelines on the property.

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

Yes, solid privacy fencing will be provided on side and rear lot lines between lots in accordance with Washoe County standards.

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

It is anticipated that a Homeowners Association (HOA), Landscape Maintenance Association (LMA) or equivalent will be established for the overall project and will be responsible for maintenance associated with open space, drainage channels and perimeter buffers.

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?

According to the 1999 Presumed Public Roads map, the project site is bisected by a "presumed public road" known as Chickadee Drive. As a part of the proposed project, Chickadee Dr is proposed to be realigned and improved to arterial standards in accordance with the sections identified on sheet LB-1 of the Tentative Map. This road will continue to provide connectivity to the east where it ultimately connects, via dirt roads, to Eagle Canyon Road.

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? City of Reno

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 special use permits are required for this project.

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

At this time, an archaeological survey has not been conducted.

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

a. Permit #	N/A	acre-feet per year	
b. Certificate #	N/A	acre-feet per year	
c. Surface Claim #	N/A	acre-feet per year	
d. Other #	N/A	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):

The applicant has conducted an Annexation/Discovery analysis with Truckee Meadows Water Authority. The analysis found that the project site is currently outside of the TMWA retail service territory and will require annexation by TMWA prior to a water service agreement. According to the TMWA Discovery, supply to the project can be met from the Fish Springs Ranch supply via TMWA's high pressure supply main in Matterhorn Boulevard.

For additional information, refer to TMWA Annexation/Discovery in Section 4 of this submittal packet.

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

To address energy conservation, homes are anticipated to be constructed using any of the following: smart or programmable thermostats, high efficiency heating and cooling systems, efficient lighting and appliances, energy efficient windows, and water protection systems.

13. Is the subject property in an area identified Planning and Development 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:

No.

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

The proposed project does not include any private roads or gates. All roads proposed with this project will be designed to meet Washoe County street standards and safe pedestrian access will be provided with sidewalks and parkway strips through the project site.

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:

Yes, since the proposed project is surrounded by existing residential lots, a 30-foot wide common open space buffer with an 8-foot wide DG pedestrian path has been provided around the entire perimeter. To further mitigate impacts of new development adjacent to existing development, lots proposed adjacent to existing residents (around the project perimeter) will be a minimum of 15,000 square feet. These design elements are in conformance with the Lemmon Valley Character Management Area found in the North Valleys Area Plan.

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?

Goal 6 of the North Valleys Area Plan includes several policies that relate to this project. Specifically, Policy NV6.1 includes requirements specific to new single family subdivisions on properties designated MDS4. As designed and previously discussed, this project complies with these standards specifically addressing residential adjacency buffers, frontage only on new roads, and minimize street lighting. Refer to Section 2 - Project Description for additional information.

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?

Section 110.208.10 Residential Subdivision Landscaping requires the use of climatic adaptive landscaping in the front yard of each new residential lot. As part of the proposal all new lots will be subject to this modifier. Additionally there are no signs proposed in this project, however, any new sign will be subject to Section 110.208.20 of the WC development code.

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

The project is expected to be completed in multiple phases. Initial development is planned to stay outside of the 100-year flood zone boundary with future phases pending a regional drainage solution.

A preliminary phasing plan has been included in Section 3 of this application.

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?

0 cubic yards will be excavated on-site

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?

The project will require approximately 1 million cubic yards of import.

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?

Yes. The proposed development will be visible from all directions. A 30 foot landscaped buffer with trees will be provided adjacent to all existing lots to mitigate visual impacts. Additionally, fencing will be provided along all side and rear lot lines to further mitigate visual impacts.

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?

Slopes associated with the proposed development will not exceed 3:1 maximum. Where necessary, erosion control matting or equivalent may be utilized until such revegetation is established.

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 as a part of this project.

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?

Due to topography, it is likely that walls will be required along the southwest portion of the site. Where necessary, walls will not exceed 9 feet in height and will likely be manufactured block or equivalent.

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

No. The proposed project does not require removal of any trees.

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?

Specific seed mix for revegetation areas will be determined during final design, however, the applicant does not anticipating using mulch.

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

The proposed project does not include temporary irrigation. Dust control on flatter areas of the graded site will be provided through the use of dust palliative or other acceptable, non-irrigated means.

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

No.

Request to Reserve New Street Name(s)

The Applicant is responsible for all sign costs.

Applicant Information

Name: Lansing Companies, LLC

Address: 12671 High Bluff Dr. Ste 150
San Diego, CA 92130

Phone : 858-523-0719 Fax: _____

☒ 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.)

See Attached Sheet for Names	

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

Location

Project Name: Prado Ranch North

☐ Reno ☐ Sparks ☒ Washoe County

Parcel Numbers: See attached list

☒ 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 Geographic Information Services
Post Office Box 11130 - 1001 E. Ninth Street
Reno, NV 89520-0027
Phone: (775) 328-2325 - Fax: (775) 328-6133

PRADO RANCH – AREA 4 – PROPOSED STREET NAMES

Prado Ranch Parkway – ***Main Parkway between Village 1 & 4***

Cul-De-Sac Streets:
Dusty Stable Court
Dusty Corral Court
Chicken Coop Court
Hen House Circle
Crazy Cactus Court

Alternate: Pasture Place

Basic Streets:
Green Orchard Drive
Golden Hay Way
Windy Trail Lane
Golden Pasture Drive
Sunset Garden Way
Rustic Horseshoe Drive
Sunset Spur Dive
Cattle Ranch Drive
Rolling Barrel Lane
Watering Hole Way
Breeders Barn Drive
Highland Hills Dive
Rolling Hay Lane
Happy Harvest Lane
Rustic Root Way
Pitching Fork Road
Rocky Ranch Road
Ship Lap Lane
Water Tower Way
Ridged Lasso Lane
Weedy Field Way
Perching Hen Lane
Muddy Trails Lane
Dinner Bell Drive

Alternates:
Rustic Ranch Way
Pickett Fence Way
Garden View Lane
Slippery Saddle Drive
Bucking Boot Drive
Flying Ax Way

Legal Description For
Prado Ranch North
Tentative Map

All that certain real property situate within portions of the East One-Half (E 1/2) of Section Twenty-Two (22) and the West One-Half (W 1/2) of Section Twenty-Three (23), Township Twenty-One (21) North, Range Nineteen (19) East, Mount Diablo Base and Meridian, City of Reno, Washoe County, State of Nevada, being Parcel 28 and portions of Parcels 25, 26, 27 and 29 as shown on Land Map No. 79, recorded September 19, 1985 as File No. 1023013, in the Official Records of Washoe County, Nevada being more particularly described as follows:

BEGINNING at the Southeast corner of said Parcel 29 being on the North right-of-way of Nectar Way;

THENCE departing said Southeast corner and along the southerly boundary of said Parcel 29 the following five (5) courses:

1) North 89°44'21" West, 1457.76 feet to the beginning of a tangent curve to the left;
2) 76.73 feet along the arc of a 540.00 foot radius curve through a central angle of 08°08'29";
3) North 07°52'50" West, 216.15 feet;
4) North 89°43'08" West, 21.20 feet;
5) South 70°53'22" West, 415.39 feet to the northeasterly right-of-way of Lemmon Drive and the southwesterly line of said Parcel 29;

THENCE along said northeasterly right-of-way and said southwesterly boundary, North 19°06'38" West, 319.07 feet;

THENCE departing said northeasterly right-of-way and said southwesterly boundary and along the following three (3) courses:

1) North 70°53'22" East, 494.00 feet;
2) North 19°06'38" West, 1070.14 feet;
3) South 68°01'58" West, 494.61 feet to the aforementioned northeasterly right-of-way of Lemmon Drive, also being on the southwesterly boundary of Parcel 27 and the beginning of a non-tangent curve to the left;

THENCE along said northeasterly right-of-way and southwesterly boundary of Parcels 27 and 25, from a radial line which bears South 71°05'10" West, 1162.38 feet along the arc of a 2439.26 foot radius curve through a central angle of 27°18'11"; to the westerly corner of Parcel 25;

THENCE along said northwesterly boundary, North 24°47'32" East, 342.47 feet;

THENCE continuing along said northwesterly boundary, North 18°31'28" East, 472.50 feet to the northwesterly corner of Parcel 25;

THENCE departing said northwesterly corner and along said northerly boundary, the following three (3) courses:

1) South 71°28'32" East, 463.76 feet to the beginning of a tangent curve to the left;
2) 152.67 feet along the arc of a 525.00 foot radius curve through a central angle of 16°39'41";
3) South 88°08'13" East, 171.18 feet;

THENCE departing said northerly boundary and along the following eight (8) courses:

1) South 61°00'36" East, 153.52 feet
2) South 88°08'13" East, 245.21 feet;
3) South 41°20'50" East, 625.15 feet;
4) South 52°54'47" East, 50.00 feet to the beginning of a non-tangent curve to the left;
5) from a radial line which bears North 52°17'33" West, 191.90 feet along the arc of a 1999.00 foot radius curve through a central angle of 05°30'01";
6) North 32°12'26" East, 580.44 feet;
7) South 57°47'34" East, 366.04 feet to the beginning of a non-tangent curve to the left;
8) from a radial line which bears North 32°11'30" East, 478.85 feet along the arc of a 1201.61 foot radius curve through a central angle of 22°49'59" to the right-of-way of Chickadee Drive as shown on said Land Map No. 79;

THENCE along said easterly right-of-way and the easterly boundary of Parcel 28, South 00°21'14" West, 2621.327 feet to the aforementioned Southeast corner of said Parcel 29 and the **POINT OF BEGINNING.**

Containing 146.29 acres of land, more or less.

BASIS OF BEARINGS:

Nevada State Plane Coordinate System, West Zone, North American Datum of 1983/1994, High Accuracy Reverence Network (NAD 83/94-HARN), as determined using real time kinematic (RTK) GPS observations with corrections transmitted by the Northern Nevada Cooperative Real Time Network GPS (NNCRN GPS).

Prepared by:

Wood Rodgers, Inc.

1361 Corporate Boulevard

Reno, NV 89502

Daniel A. Bigrigg, P.L.S.
Nevada Certificate No. 19716

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

Washoe County Treasurer
Tammi Davis

Bill Detail

Back to Account Detail | Change of Address | Print this Page

Washoe County Parcel Information

Parcel ID	Status	Last Update
08072301	Active	1/10/2018 2:06:23 AM

Current Owner:
NORTH VALLEYS INVESTMENT GROUP LLC
10345 PROFESSIONAL CIR STE 100
RENO, NV 89521-3100

SITUS:
0 CHICKADEE DR
WCTY NV

Taxing District

Geo CD:

Legal Description

SubdivisionName _UNSPECIFIED Range 19 Township 21 Lot 28

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	$218.63	$0.00	$0.00	$218.63
		Total Due:	**$218.63**	**$0.00**	**$0.00**	**$218.63**

Tax Detail

	Gross Tax	Credit	Net Tax
State of Nevada	$57.13	($11.24)	$45.89
Truckee Meadows Fire Dist	$181.46	($35.71)	$145.75
Washoe County	$467.65	($92.06)	$375.59
Washoe County Sc	$382.58	($75.29)	$307.29
Total Tax	**$1,088.82**	**($214.30)**	**$874.52**

Payment History

Tax Year	Bill Number	Receipt Number	Amount Paid	Last Paid
2017	2017084739	B17.101684	$218.63	9/25/2017
2017	2017084739	B17.191168	$218.63	12/31/2017
2017	2017084739	B17.81953	$218.63	8/29/2017

Pay By Check

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WASHOE COUNTY TREASURER

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P.O. Box 30039
Reno, NV 89520-3039

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

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Reno, NV 89520-3039

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

Washoe County Treasurer
Tammi Davis

Bill Detail

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Washoe County Parcel Information

Parcel ID	Status	Last Update
08072302	Active	1/10/2018 2:06:23 AM

Current Owner:
NORTH VALLEYS INVESTMENT GROUP LLC
10345 PROFESSIONAL CIR STE 100
RENO, NV 89521-3100

SITUS:
0 LEMMON DR
WCTY NV

Taxing District

Geo CD:

Legal Description

Range 19 Township 21 Lot 27 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	$219.39	$0.00	$0.00	$219.39
		Total Due:	**$219.39**	**$0.00**	**$0.00**	**$219.39**

Tax Detail

	Gross Tax	Credit	Net Tax
State of Nevada	$57.33	($11.28)	$46.05
Truckee Meadows Fire Dist	$182.09	($35.84)	$146.25
Washoe County	$469.29	($92.37)	$376.92
Washoe County Sc	$383.92	($75.57)	$308.35
Total Tax	**$1,092.63**	**($215.06)**	**$877.57**

Payment History

Tax Year	Bill Number	Receipt Number	Amount Paid	Last Paid
2017	2017084792	B17.101685	$219.39	9/25/2017
2017	2017084792	B17.191171	$219.39	12/31/2017
2017	2017084792	B17.81954	$219.40	8/29/2017

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

Washoe County Treasurer
Tammi Davis

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Washoe County Parcel Information

Parcel ID	Status	Last Update
08072303	Active	1/10/2018 2:06:23 AM

Current Owner:
NORTH VALLEYS INVESTMENT GROUP LLC
10345 PROFESSIONAL CIR STE 100
RENO, NV 89521-3100

SITUS:
0 LEMMON DR
WCTY NV

Taxing District

Geo CD:

Legal Description
SubdivisionName _UNSPECIFIED Range 19 Township 21 Lot 29

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	$218.87	$0.00	$0.00	$218.87
		Total Due:	**$218.87**	**$0.00**	**$0.00**	**$218.87**

Tax Detail

	Gross Tax	Credit	Net Tax
State of Nevada	$57.19	($11.26)	$45.93
Truckee Meadows Fire Dist	$181.66	($35.75)	$145.91
Washoe County	$468.17	($92.13)	$376.04
Washoe County Sc	$382.99	($75.38)	$307.61
Total Tax	**$1,090.01**	**($214.52)**	**$875.49**

Payment History

Tax Year	Bill Number	Receipt Number	Amount Paid	Last Paid
2017	2017084149	B17.101686	$218.87	9/25/2017
2017	2017084149	B17.191173	$218.87	12/31/2017
2017	2017084149	B17.81955	$218.88	8/29/2017

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Reno, NV 89520-3039

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

Washoe County Treasurer
Tammi Davis

Bill Detail

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Washoe County Parcel Information

Parcel ID	Status	Last Update
08072103	Active	1/10/2018 2:06:23 AM

Current Owner:
NORTH VALLEYS INVESTMENT GROUP LLC
10345 PROFESSIONAL CIR STE 100
RENO, NV 89521-3100

SITUS:
0 CHICKADEE DR
WCTY NV

Taxing District

Geo CD:

Legal Description
Township 21 Lot 26 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	$240.28	$0.00	$0.00	$240.28
		Total Due:	**$240.28**	**$0.00**	**$0.00**	**$240.28**

Tax Detail

	Gross Tax	Credit	Net Tax
State of Nevada	$62.78	($12.36)	$50.42
Truckee Meadows Fire Dist	$199.43	($39.25)	$160.18
Washoe County	$513.99	($101.17)	$412.82
Washoe County Sc	$420.47	($82.75)	$337.72
Total Tax	**$1,196.67**	**($235.53)**	**$961.14**

Payment History

Tax Year	Bill Number	Receipt Number	Amount Paid	Last Paid
2017	2017084075	B17.101679	$240.29	9/25/2017
2017	2017084075	B17.191157	$240.28	12/31/2017
2017	2017084075	B17.81946	$240.29	8/29/2017

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Washoe County Parcel Information

Parcel ID	Status	Last Update
08072104	Active	1/10/2018 2:06:23 AM

Current Owner:
NORTH VALLEYS INVESTMENT GROUP LLC
10345 PROFESSIONAL CIR STE 100
RENO, NV 89521-3100

SITUS:
0 LEMMON DR
WCTY NV

Taxing District

Geo CD:

Legal Description
Township 21 Lot 25 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	$222.77	$0.00	$0.00	$222.77
		Total Due:	**$222.77**	**$0.00**	**$0.00**	**$222.77**

Tax Detail

	Gross Tax	Credit	Net Tax
State of Nevada	$58.21	($11.46)	$46.75
Truckee Meadows Fire Dist	$184.90	($36.39)	$148.51
Washoe County	$476.51	($93.77)	$382.74
Washoe County Sc	$389.82	($76.72)	$313.10
Total Tax	**$1,109.44**	**($218.34)**	**$891.10**

Payment History

Tax Year	Bill Number	Receipt Number	Amount Paid	Last Paid
2017	2017084038	B17.101680	$222.78	9/25/2017
2017	2017084038	B17.191160	$222.77	12/31/2017
2017	2017084038	B17.81947	$222.78	8/29/2017

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Email: tax@washoecounty.us

Washoe County Treasurer
Tammi Davis

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Washoe County Parcel Information

Parcel ID	Status	Last Update
08072105	Active	1/10/2018 2:06:23 AM

Current Owner:
NORTH VALLEYS INVESTMENT GROUP LLC
10345 PROFESSIONAL CIR STE 100
RENO, NV 89521-3100

SITUS:
0 MATTERHORN BLVD
WASHOE COUNTY NV

Taxing District

Geo CD:

Legal Description
Range 19 Block Township 21 Lot 24 Section 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	$246.30	$0.00	$0.00	$246.30
		Total Due:	**$246.30**	**$0.00**	**$0.00**	**$246.30**

Tax Detail

	Gross Tax	Credit	Net Tax
State of Nevada	$64.36	($12.67)	$51.69
Truckee Meadows Fire Dist	$204.42	($40.23)	$164.19
Washoe County	$526.86	($103.72)	$423.14
Washoe County Sc	$430.99	($84.81)	$346.18
Total Tax	**$1,226.63**	**($241.43)**	**$985.20**

Payment History

Tax Year	Bill Number	Receipt Number	Amount Paid	Last Paid
2017	2017083901	B17.101681	$246.30	9/25/2017
2017	2017083901	B17.191162	$246.30	12/31/2017
2017	2017083901	B17.81948	$246.30	8/29/2017

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Reno, NV 89512-2845

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Section 2

Project Description

Location

The Prado Ranch North project is located at the intersection of Lemmon and Chickadee Drive within Washoe County in an area that is commonly referred to as the North Valleys. The project area consists of 151.4± acres and includes all of Washoe County Assessor Parcel Number (APN) of 080-723-01 and portions of APN's 080-723-02, & 03, and 080-721-03, 04 & 05. The property is generally surrounded by undeveloped/vacant land and single-family residences and is more specifically bordered by Lemmon Drive and Matterhorn Blvd to the west, Tupelo Street and undeveloped land to the north, undeveloped land and Chesapeake Drive to the east, and Nectar Street to the south, (*Refer to Vicinity Map, Assessor's Parcel Map and Site Aerial in Section 3 of this submittal packet).*

Site Characteristics

The project site is in a nearly flat area with gentle sloping from east to west. The entire site is free of steep slopes with no slope over 15%. The site is divided by two roads running east to west, Chickadee Drive and Sand Pit Road. Chickadee Drive is a paved road that provides access to Lemmon Drive and the existing residential development to the east. Sand Pit Road is a dirt road providing access to a sand pit northeast of the site. The site is characterized by native vegetation (primarily native shrubs, sagebrush, and grasses). The southwestern portion of the site is within the FEMA flood hazard zone AE.

Zoning and Master Plan Designations

The project site is located within the Lemmon Valley Suburban Character Management Area (LVSCMA) of the North Valleys Area Plan (NVAP). The Master Plan designation is Suburban Residential and the zoning designation is Medium Density Suburban 4 (MDS4) *(Refer to Existing Zoning Map, Existing Master Plan Map Exhibits in Section 3 of this submittal packet).*

Character Management Area

Goal six of the North Valleys Area Plan includes several policies that apply to the Lemmon Valley Suburban Character Management Area. Policy NV 6.1 applies to new single family residential developments on properties zoned MDS4. Specifically, the following proposed project is in conformance with the following policies:

NV6.1(a) – 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.

RESPONSE: There are existing single-family residences to the northwest and southeast of the project area. In accordance with the Policy, proposed parcels adjacent to existing development have been designed as 15,000 square foot minimum lots and 30-foot landscape buffer with an 8-foot wide DG path. Furthermore, in addition to these standards, additional open space and drainage facilities have been provided along/adjacent to roads to further help minimize visual impacts to the existing residences and to be in compliance with the requirements in the LVSCMA.

NV6.1 (b) – 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.

RESPONSE: Although house plans have not yet been formalized for this project, the Applicant understands and will restrict perimeter housing when adjacent to or across a street from existing residential to single story homes.

NV6.1 (d) – In regulatory zones LDS 1, LDS2; MDS3; and LDS4, new residential parcels shall not front on existing streets.

RESPONSE: As designed, all proposed lots front onto new streets within the proposed development. No lots associated with Prado Ranch North will have direct access to existing streets in the area.

NV6.1 (h) – Minimize the use of street lighting. Any lighting proposed must show how it is consistent with current best practice "dark-sky" standards.

RESPONSE: The proposed project does not include street lighting with the exception of at main street intersections. Where street lights are proposed at intersections, they will not exceed 15 feet in height and will include refractors to direct lighting down toward the street.

Current Request

The current request is to develop a 538-lot common open space single family residential development on approximately 151.4± acres. To meet the common open space (COS) requirements, the proposed project has been designed with a mix of lot sizes ranging from 5,000 square feet to 23,960 square feet with an average lot size of 8,470± square feet. The overall density is 3.55 units per acre and is in accordance with the allowed maximum density of 4.0 units per acre as outlined in the NVAP. The project includes 10.0± acres of common area, open space and neighborhood parks and is in accordance with Article 408 of the Washoe County Development Code.

The request is summarized as follows:

- A **Tentative Subdivision Map** to permit development of a 538-lot single-family subdivision on 151.4± acres through the Common Open Space Development Standards.

Tentative Map Design

The Prado Ranch North project is an appropriate use for the project site. The proposed project is a conforming use within the zoning designation and is generally surrounded by existing residential lots. The lots adjacent to the existing residential, along with the rest of the proposed project has been designed in accordance with the policies outlined in the NVAP Lemmon Valley Suburban Character Management Area and other pertinent Washoe County Development Code regulations.

The project is divided into four Villages and includes a newly proposed major arterial road, Prado Ranch Parkway, which will extend off of Lemmon Drive and run to the northeast. This road will replace the existing Chickadee Drive between Lemmon Drive and Chesapeake Drive and will be the main access point to a majority of the project. Villages 1, 2, and 3 will be located to the south of Prado Ranch Blvd. and Village 4 will be located to the north. Each Village will have a pocket park and will vary in lot sizes with the exception of lots adjacent to existing residential. All lots adjacent to existing development will be a minimum of 15,000 square feet.

A breakdown of lot sizes associated with each Village include:

- Village 1 (5,000 SF – 50x100) = ±108 Lots (0-15,000 SF Lots)
- Village 2 (6,000 SF – 60x100) = ±148 Lots (29-15,000 SF Lots)
- Village 3 (7,000 SF – 70x100) = ±131 Lots (14-15,000 SF Lots)
- Village 4 (6,000 SF – 60x100) = ±151 Lots (13-15,000 SF Lots)

Density calculations for the total number of lots permitted are as follows:

- Medium Density Suburban – 4.0 units per acre minimum (151.4± acres x 4.0 = 605.6 lots allowed; 538 lots proposed)

Based on the number of proposed lots, the overall density of the project will be 3.55 dwelling units per acre, which is in conformance with the master plan and zoning which allows up to 4 du/ac. It should be noted that the minimum lot size in the MDS4 zoning designation is 9,000 square feet but through the Common Open Space development standards, lot sizes can be modified through clustering as long as the overall project is within the minimum number of dwelling units per acre. While a majority of the site will be developed with single family lots, the project includes approximately 10.0± acres of common open space and is in conformance with the allowable dwelling units per acre (*Refer to Tentative Map Plan Set in Section 3 and Map Pocket of this submittal packet).*

Minimum lot sizes, widths and setbacks for the tentative map are proposed as follows:

Minimum Lot Size: 5,000± square feet
Minimum Lot Width: 50 feet
Minimum Building Envelope: 2,100 square feet

Minimum Setbacks:
Front Yard Setback = 20 feet
Side Yard Setback = 7 feet
Rear Yard Setback = 20 feet

It should be noted that approximately 12± acres along Lemmon Drive have been reserved for "Future Development" and is not a part of this tentative map application. This area was not included in the Single-Family subdivision in order to provide flexibility and options for future use, which may include Commercial uses as allowed in the MDS 4 zoning district when market demands warrant such development.

House Design

Homes within each village are proposed to be one and two-story designs with minimum two car garages. As previously mentioned, house plans have not yet been formalized for this project, however, the Applicant understands and will restrict perimeter housing when adjacent to or across a street from existing residential to single story homes.

Grading

The project site grading is such that the site is virtually all fill. As any portion of the project that falls within the AE flood hazard zone will need to be raised to an elevation in accordance with Section 110.416.65 of the Washoe County Development Code, much of the western edge of the site must be raised above existing ground. Due to minimum street slope requirements within Washoe County Code, the grading on site is unable to generate any onsite cut to offset fill, and therefore the site will require importation of approximately 1,000,000 cubic yards to complete onsite grading. *(Refer to Tentative Map Plan Set in Section 3 and Map Pocket of this submittal packet)*

Drainage

A drainage system consisting of two open channels will collect offsite sheet flows from the undeveloped land and the surrounding residential units to the north and east and convey it through the property to the west and into Swan Lake. The main channel will range in size from 60-100 feet wide and will carry offsite flows as well as flows from Villages 1 and 3 and convey them to the west. The main channel will convey these flows along the south side of the proposed Prado Ranch Blvd, under Lemmon Drive through pipes and into a retention basin located within the City of Reno. A smaller channel approximately 60 feet wide will feed into the main channel. This will run north to south and will collect offsite flows north of the site as well as onsite flows from portions of Village 4 and convey them south under Prado Ranch Blvd and into the main channel.

Onsite sheet flows from the Villages and streets will flow into gutters which will convey the storm water into drop inlets and underground storm pipes. The storm pipes will then convey to the open channel ditches and be conveyed through the site, under Lemmon Drive, and into an offsite retention basin. Onsite flows from Village 2 will be conveyed under Lemmon Drive and into the retention basin. There will be no negative impacts to adjacent or downstream properties as a result of the proposed development during the 5-year and 100-year storms due to the implementation of the proposed mitigation/retention basin. This retention basin will be located across the street from Lemmon Drive on APN 080-722-03 within the City of Reno, *(Refer to Tentative Map Plan set in Section 3 and Preliminary Drainage Report in Section 4 and Map Pocket of this submittal packet).*

Any fill placed within the flood hazard zone will be mitigated as required by County Code, in addition to the increase in storm water volume to the flood hazard area due to development of the project. The mitigation area is proposed on APN 080-722-03 which is located within the City of Reno limits across the street of Lemmon Drive. In accordance with the Preliminary Hydrology Report in Section 4 of this application it is anticipated that up to 247,000 cubic yards will be removed from this parcel as mitigation for the fill that will occur within the AE flood hazard zone in the project area, in addition to mitigation for increase in storm water volume due to development. Any permits required to provide this mitigation will be obtained through the City of Reno. Disturbed areas will be landscaped and/or revegetated with native vegetation and stabilized in accordance with Washoe County requirements, *(Refer to Tentative Map Plan Set in Section 3 and Map Pocket of this submittal packet).*

Traffic and Circulation

There will be several access points into the proposed project with the main entrance being the newly proposed Prado Ranch Blvd accessed off of Lemmon Drive and will be located approximately 1,600 feet north of Nectar Street and approximately 1,000 feet south of Tupelo Street. Prado Ranch Blvd is referred to as the major arterial on Sheet LB-1 of the tentative map plans and will extend off Lemmon Drive, run northeasterly through the site and terminate at the project's northeast boundary. Prado Ranch Parkway will replace the existing segment of Chickadee Drive between Lemmon Drive and Chesapeake Drive. As

part of the project, a new segment of Chickadee Drive will be constructed between Chesapeake Drive and Prado Ranch Parkway near the project's northeast boundary. Access to the four villages will be provided from two access roads intersecting Prado Ranch Parkway and one access road intersecting Nectar Street and Chickadee Drive.

Prado Ranch Blvd will act as the backbone road and provide several points of access to the north and south subdivisions as well as connectivity to the existing Chickadee Drive. From Prado Ranch Blvd several collectors will provide access into the various villages ultimately connecting with a network of local streets providing connectivity throughout the project.

In accordance with Washoe County standards for Major Arterials, Prado Ranch Blvd is proposed as a 100-foot right-of-way with four travel lanes, bike lanes, a 16-foot landscape median with a minimum 5-foot wide sidewalk and parkway strips on both sides. All collectors and major local streets will be a 68-foot right-of-way with two travel lanes and a 4-foot wide park strip and 5-foot wide sidewalk on both sides. The minor local streets will have the smallest right-of-way at 42 feet and will consist of two travel lanes with a minimum 4-foot wide sidewalk on both sides, *(Refer to Tentative Map Plan Set in Section 3 and Map Pocket of this submittal packet).*

A Traffic Report was prepared by Solaegui Engineers based on the proposed project layout. The Study found that the project is anticipated to generate 4,939 average daily trips with 386 AM peak trips and 478 PM peak trips occurring. In order to mitigate the increased traffic resulting from the proposed project the following improvements will be provided:

- Lemmon Drive/Nectar Street intersection should include an exclusive right turn lane at the south approach containing 245 feet of storage/deceleration length with a 100-foot taper.
- Lemmon Drive/Prado Ranch Parkway intersection should include stop sign control and separate left and right turn lanes at the east approach and an exclusive right turn lane at the south approach containing 245 feet of storage/deceleration length with a 100-foot taper.
- Access to Nectar Street will align with most easterly north-south **FUTURE ROAD X.** Where this road connects with **FUTURE ROAD Y**, it will be designed as a collector street.

A copy of the full Traffic Report prepared by Solaegui Engineers is provided in Section 4 of this application for reference.

Common Areas

A total of 10.0± acres (6.6%) of the project will be dedicated to common open space. This includes 5.87± acres of open channel drainage, 3.90± acres of open space, and 3.41± acres of pocket parks. The open space around the perimeter will consist of a 30-foot buffer with a minimum 8-foot wide multi-use trail. The purpose of this open space is to buffer the existing residential from the proposed new residential that will be along the boundary. This is in conformance with the residential adjacency standards found within Goal Six of the NVAP.

In addition to the open space around the perimeter of the project and the open space associated with drainage channels, the project includes a pocket park in each Village. These parks range in size from 0.7± to 1.0± acres and will be maintained by an HOA or LMA, or equivalent.

All open space will be landscaped and/or revegetated with a native vegetation mix and all parks will receive formal landscaping and/or park amenities. All areas dedicated to common area will be maintained by a future Home Owners Association (HOA) or Landscape Maintenance Association (LMA)

or equivalent *(Refer to Preliminary Landscaping Plan in Section 3 and the Map Pocket of this submittal packet).*

Landscaping

In accordance with Section 110.412.35 all front, rear or side yards that adjoin a public street include a minimum of one tree for every fifty linear feet of street frontage. Where lots abut a proposed arterial, collector, or major local the project includes a 5-foot wide buffer strip with a minimum of one tree per every 50 feet. *Refer to Preliminary Landscaping Plan in Section 3 and the Map Pocket of this submittal packet.*

Front yard landscaping will also be provided for each lot in accordance with Washoe County Code including Section 110.208.10 which requires the use of climatic adaptive landscaping in the front yard of each new residential lot.

Fencing

With construction of the homes, standard, 6-foot high, solid fencing will be provided along rear and side lot lines throughout the development.

Project Signage

Signage is not proposed at this time. However, it is likely that monument style entry sign(s) maybe located near each Village entry point. Materials will be consistent with the style of the future homes. Lighting of the sign(s) will be indirect.

Water, Sewer and Utilities

Utilities are currently stubbed near the site in Lemmon Drive and Nectar Street.

The applicant has conducted an Annexation/Discovery analysis with Truckee Meadows Water Authority. The analysis found that the project site is currently outside of the TMWA retail service territory and will require annexation by TMWA prior to a water service agreement. According to the TMWA Discovery, supply to the project can be met from the Fish Springs Ranch supply via TMWA's high pressure supply main in Matterhorn Boulevard. For additional information, refer to TMWA Annexation/Discovery in Section 4 of this submittal packet.

Sewer service will be provided by the City of Reno with treatment at the Reno-Stead Wastewater Treatment Plant. The proposed project is anticipated to generate approximately 462,074 gallons per day at peak flow.

NV Energy will provide gas and electrical service to the project. Telephone service will be provided by AT&T while cable service will be from Charter Communications.

Schools

Students residing in the project area will attend Lemmon Valley Elementary School; O'Brien Middle School and North Valleys High School.

Police and Fire Service

Police will be provided by Washoe County and fire service will be provided by the City of Reno. The closest fully staffed fire station is Reno Station 9 which is located approximately 4.3 miles away, near the Reno/Stead Airport. A volunteer Washoe County fire department is located adjacent to the property and

is referred to as Truckee Meadows Fire Station 223 located at 130 Nectar Street just west of the intersection of Nectar Street and Redpine Road.

Parks

The project is approximately 1,500 feet to the west of Lemmon Valley Horseman's Arena which is considered a special use park. The project is generally in an area that is considered underserved by park amenities by the Washoe County Regional Parks and Open Space. The proposed project includes four pocket parks as well as a trail system around the exterior boundary that will help to serve this underserved area as well as provide connectivity to the surrounding open space. Other special use parks include the Swan Lake Nature Study Area southwest of the project that provides a trail system and educational amenities.

Development Statistics Summary

The following is a summary of the development statistics of the site:

Total Site Area:	151.4± acres
Total Dwelling Units:	538 single family residences
Gross Density:	3.55± d.u./acre
Total Lot Area:	104.6± acres (69%±)
Total Right of Way Area:	36.7± acres (24%±)
Total Common Area/Open Space	10.0± acres (6%±)

Section 3

0 ½ 1
MILES

Vicinity Map

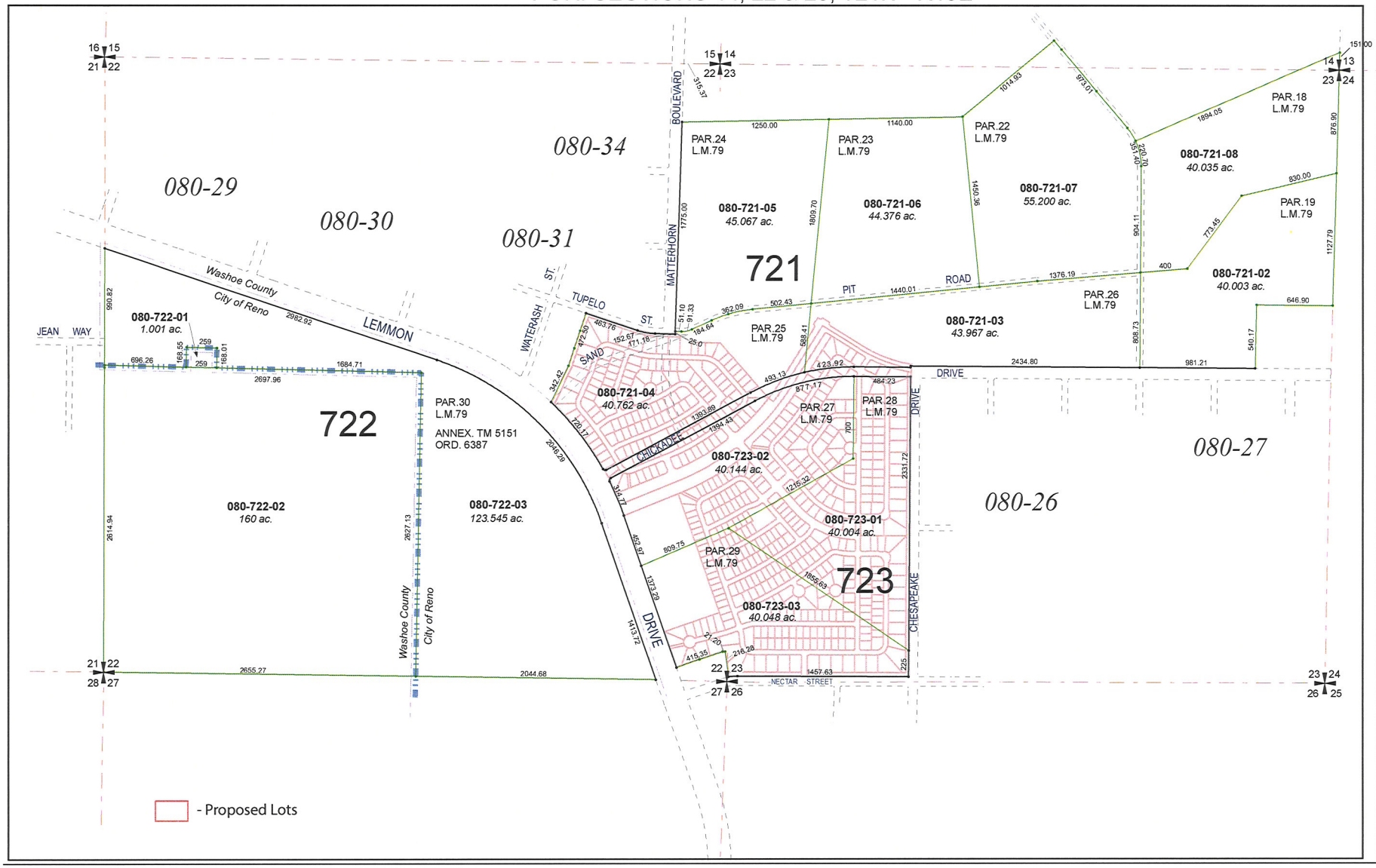
Prado Ranch North

January, 2018

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

MAP OF DIVISION INTO LARGE PARCELS #79

POR. SECTIONS 14, 22 & 23, T21N - R19E



Assessor's Map Number

080-72

STATE OF NEVADA

WASHOE COUNTY

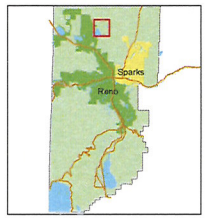
ASSESSOR'S OFFICE

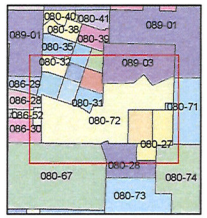
Michael E. Clark, Assessor

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

Feet
0 200 400 600 800

1 inch = 800 feet





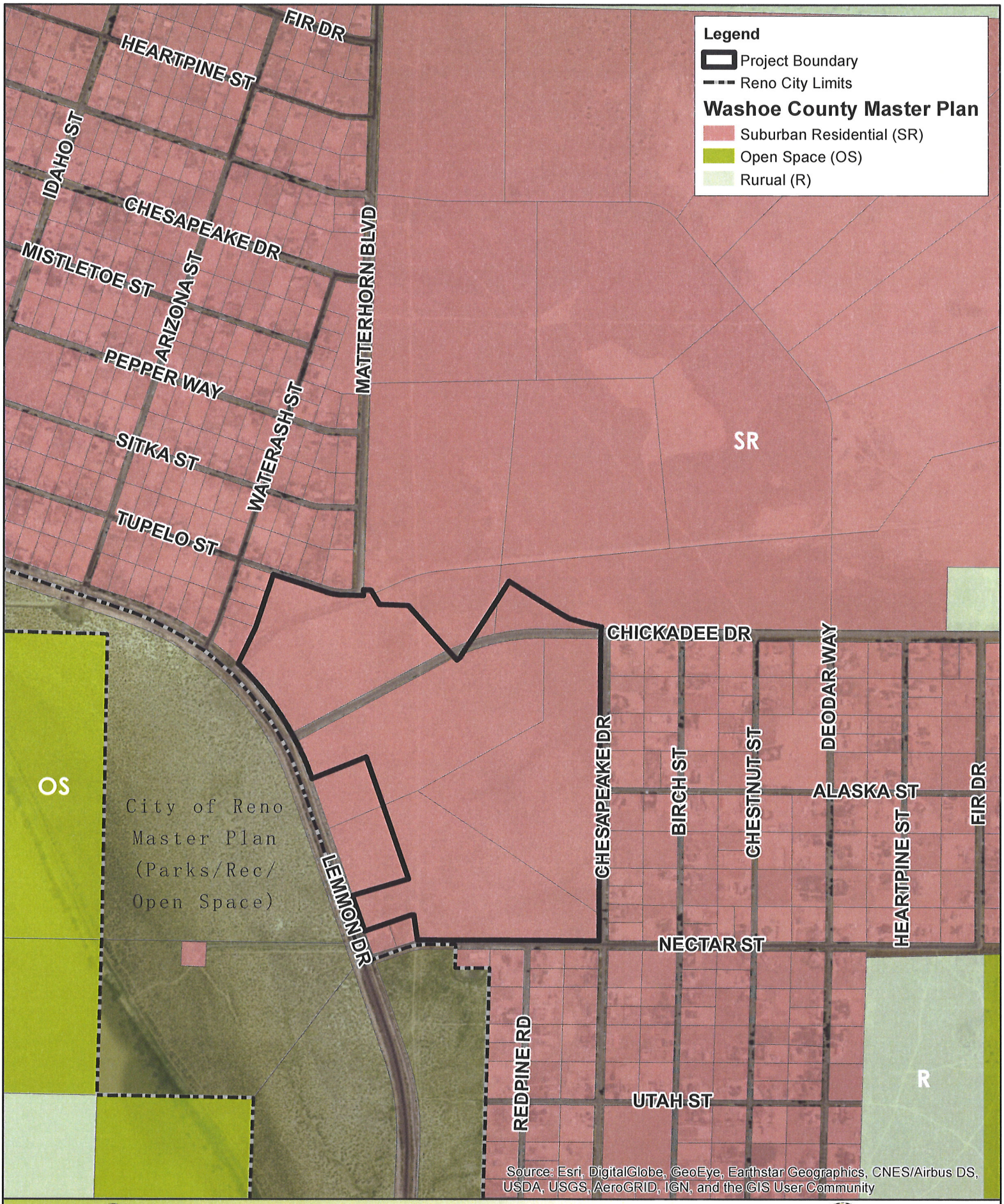
created by: CFB 12/19/2011

last updated: CFB 7/08/15 KSB 4/15/16

area previously shown on map(s)

080-67

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.



Existing Master Plan

Prado Ranch North

January, 2018

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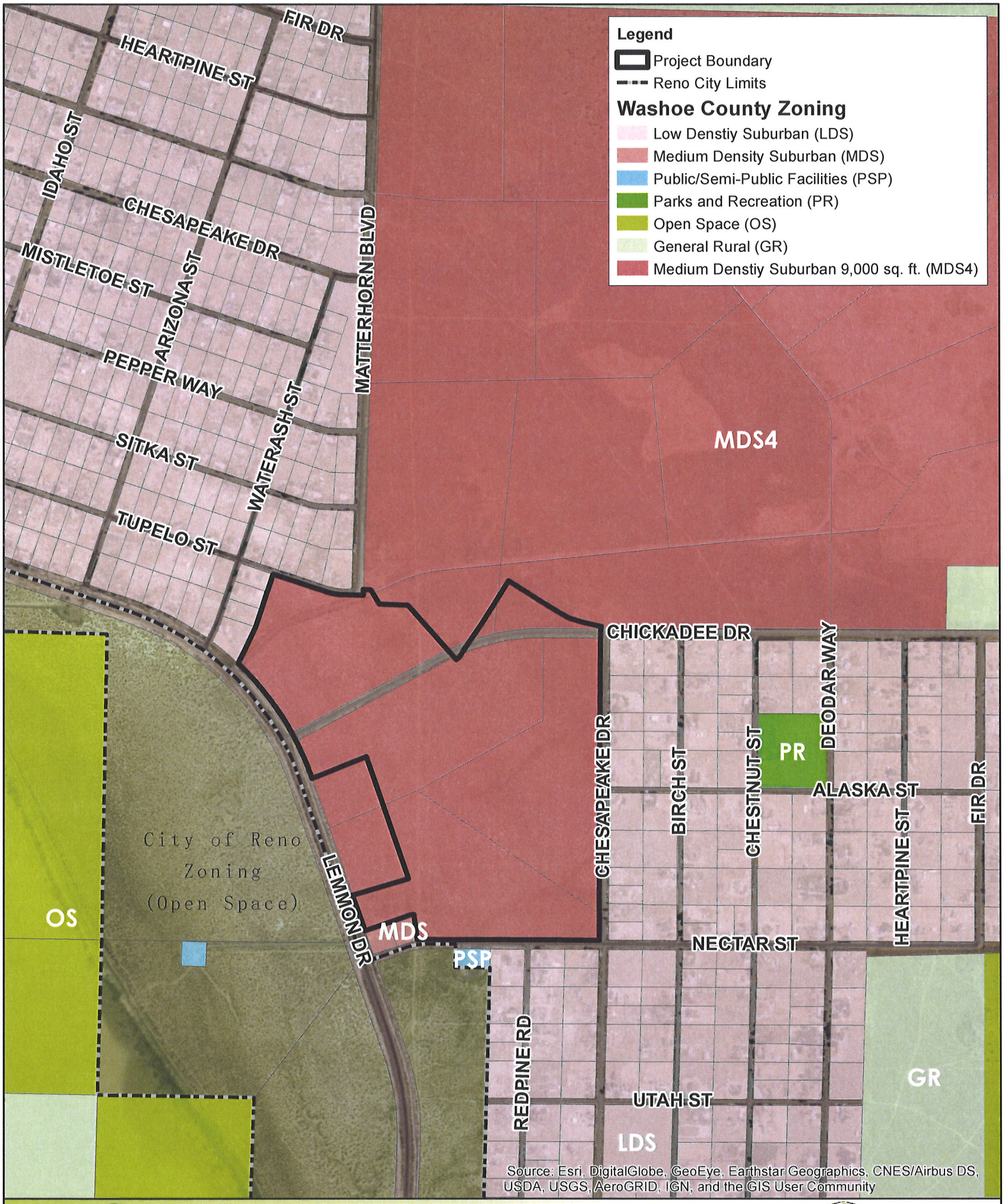

0 0.125 0.25

MILES

Zoning Map

Prado Ranch North

January, 2018

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Aerial Map

Prado Ranch North

January, 2018

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OVERALL SITE PLAN

PRADO RANCH NORTH

WASHOE COUNTY, NEVADA
JANUARY, 2018

DEVELOPMENT STATS

VILLAGE 1 (5,000 SF - 50x100) = ±109 LOTS (0-15,000 SF LOTS)

VILLAGE 2 (6,000 SF - 60x100) = ±147 LOTS (29-15,000 SF LOTS)

VILLAGE 3 (7,000 SF - 70x100) = ±131 LOTS (14-15,000 SF LOTS)

VILLAGE 4 (6,000 SF - 60x100) = ±151 LOTS (13-15,000 SF LOTS)

TOTAL LOTS = ±538
±146 ACRES = 3.7 DU/AC

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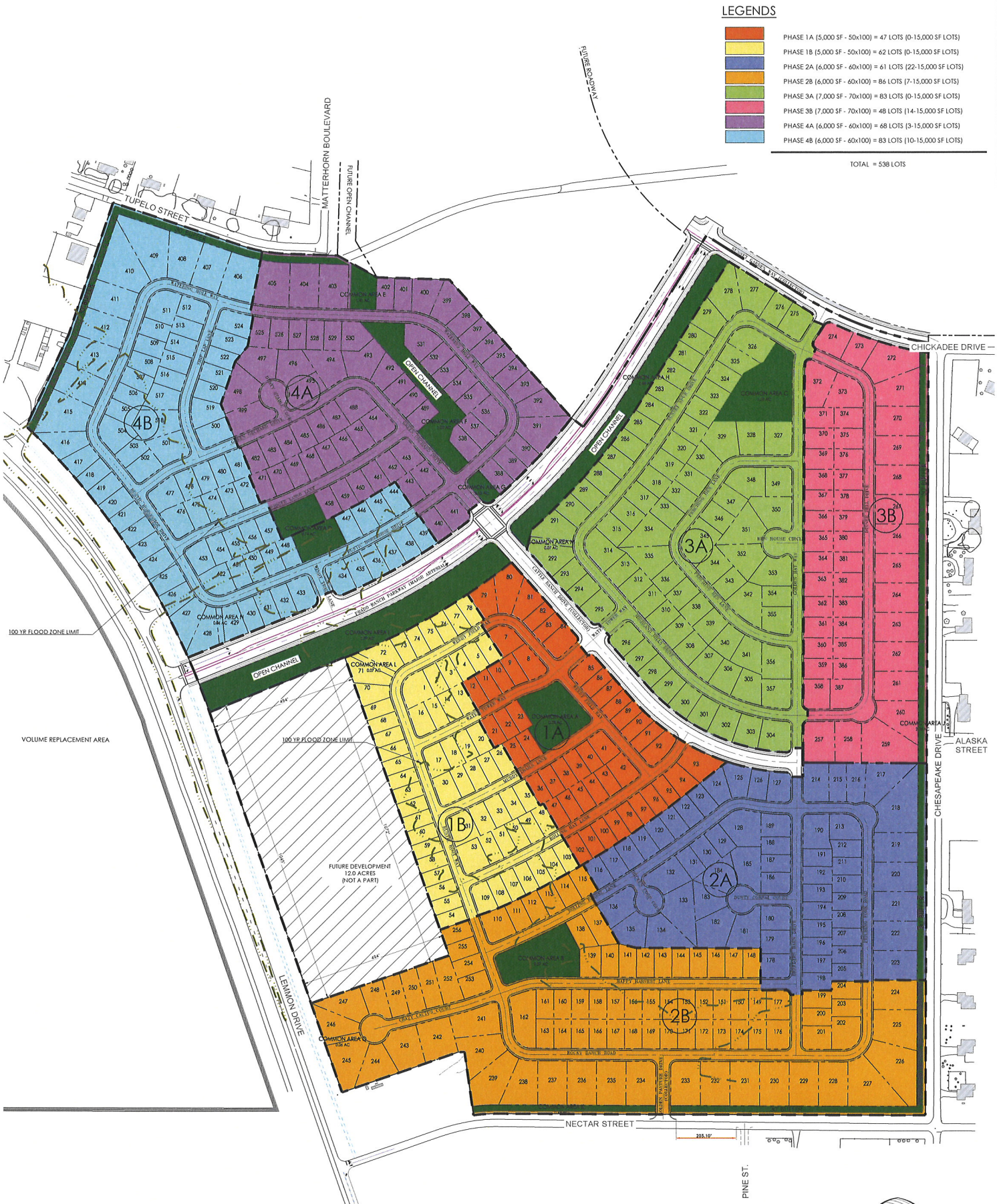
PHASING PLAN
PRADO RANCH NORTH

WASHOE COUNTY, NEVADA
JANUARY, 2018



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PRADO RANCH NORTH

TENTATIVE MAP

TITLE SHEET

OWNER:

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

DEVELOPER:

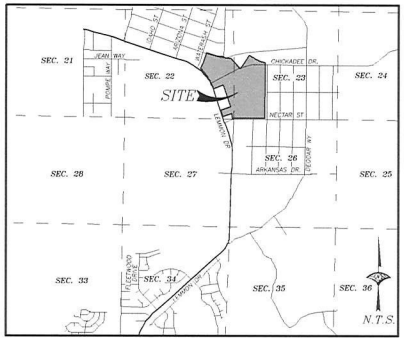
LANSING COMPANIES
12671 HIGH BLUFF DRIVE, SUITE 150
SAN DIEGO, CA 92130

BASIS OF BEARINGS

NEVADA STATE PLANE COORDINATE SYSTEM, WEST ZONE, NORTH AMERICAN DATUM OF 1983/1994, HIGH ACCURACY REFERENCE NETWORK (NAD 83/94-HARN), AS DETERMINED USING REAL TIME KINEMATIC (RTK) GPS OBSERVATIONS WITH CORRECTIONS TRANSMITTED BY THE NORTHERN NEVADA COOPERATIVE REAL TIME NETWORK GPS (NNCRN GPS). THE BEARING BETWEEN GPS REFERENCE STATION "ESTEAD" - N22SMD1032 AND "5582" - 5525MI0000 IS TAKEN AS SOUTH 84°59'47" EAST. ALL DIMENSIONS SHOWN ARE GROUND DISTANCES. COMBINED GRID-TO-GROUND FACTOR = 1.000197939.

BASIS OF ELEVATION

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



VICINITY MAP

SITE PLAN
NOT TO SCALE

SITE INFORMATION:

SITE PLAN STATISTICS:
- TOTAL NUMBER OF LOTS = 538
- OVERALL AREA = 151.4± AC
- LOT AREA = 104.6± AC
- ROADWAY AREA = 36.7± AC
- COMMON AREA/OPEN SPACE = 10.0± AC
- LAND USE = MDS 4
- ZONING = MDS 4

PROJECT DENSITY:
- GROSS DENSITY = 3.55± DU/AC
- NET DENSITY = 5.14± DU/AC

LOT SUMMARY:
- MINIMUM LOT SIZE = 5,000 S.F.
- MAXIMUM LOT SIZE = 23,960 S.F.
- AVERAGE LOT SIZE = 8,470 S.F.

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

ENGINEERS STATEMENT:

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

TODD W. GAMMELL, P.E. #13693

SHEET INDEX

TITLE SHEET
PRADO RANCH NORTH

WOOD RODGERS
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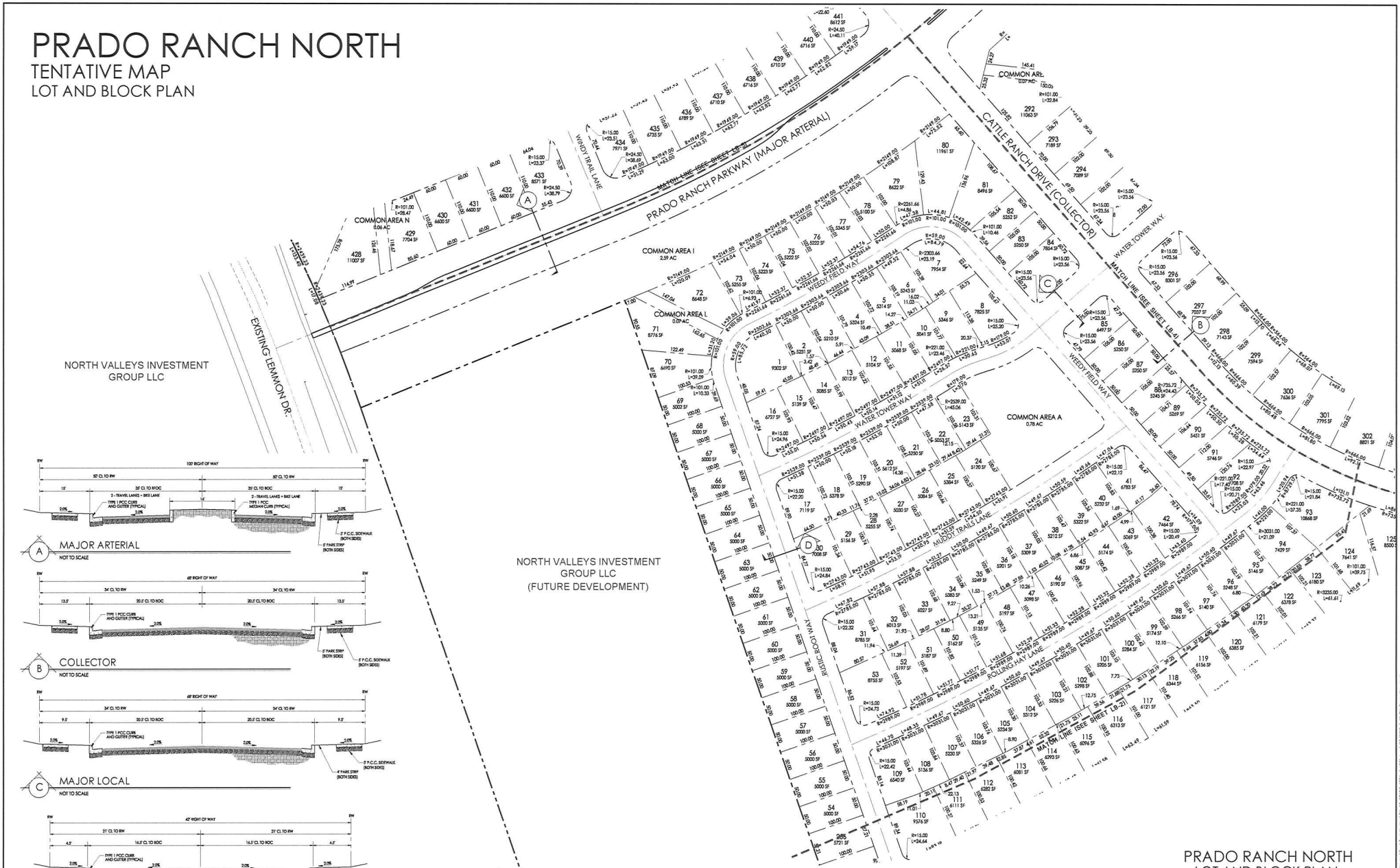
1669011 JANUARY, 2018

PRADO RANCH NORTH

TENTATIVE MAP

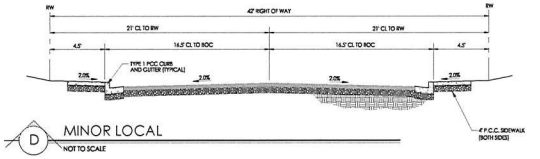
LOT AND BLOCK PLAN



A MAJOR ARTERIAL
NOT TO SCALE

B COLLECTOR
NOT TO SCALE

C MAJOR LOCAL
NOT TO SCALE



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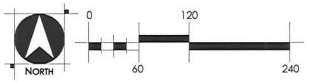

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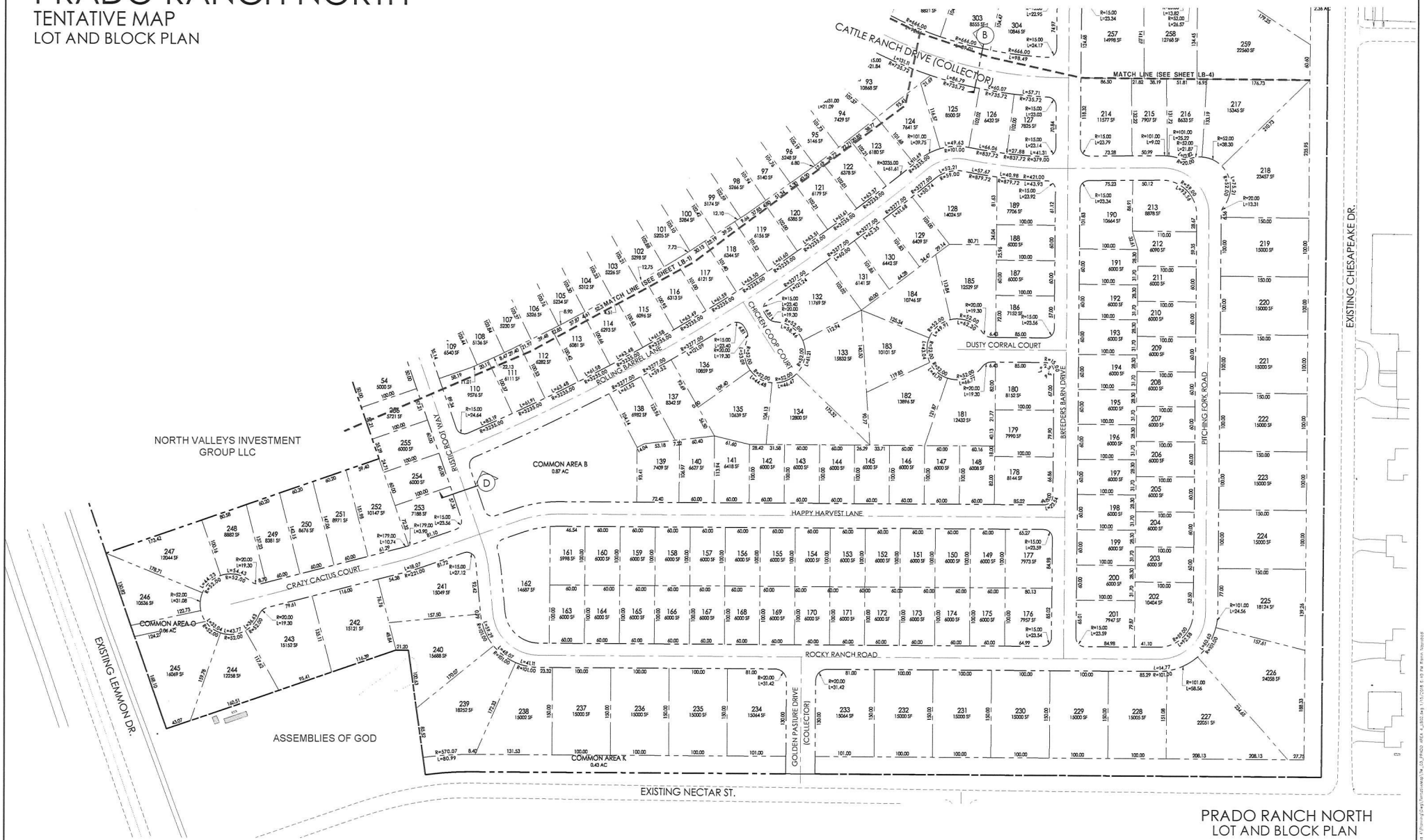

NORTH

0 120

60 240

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LOT AND BLOCK PLAN

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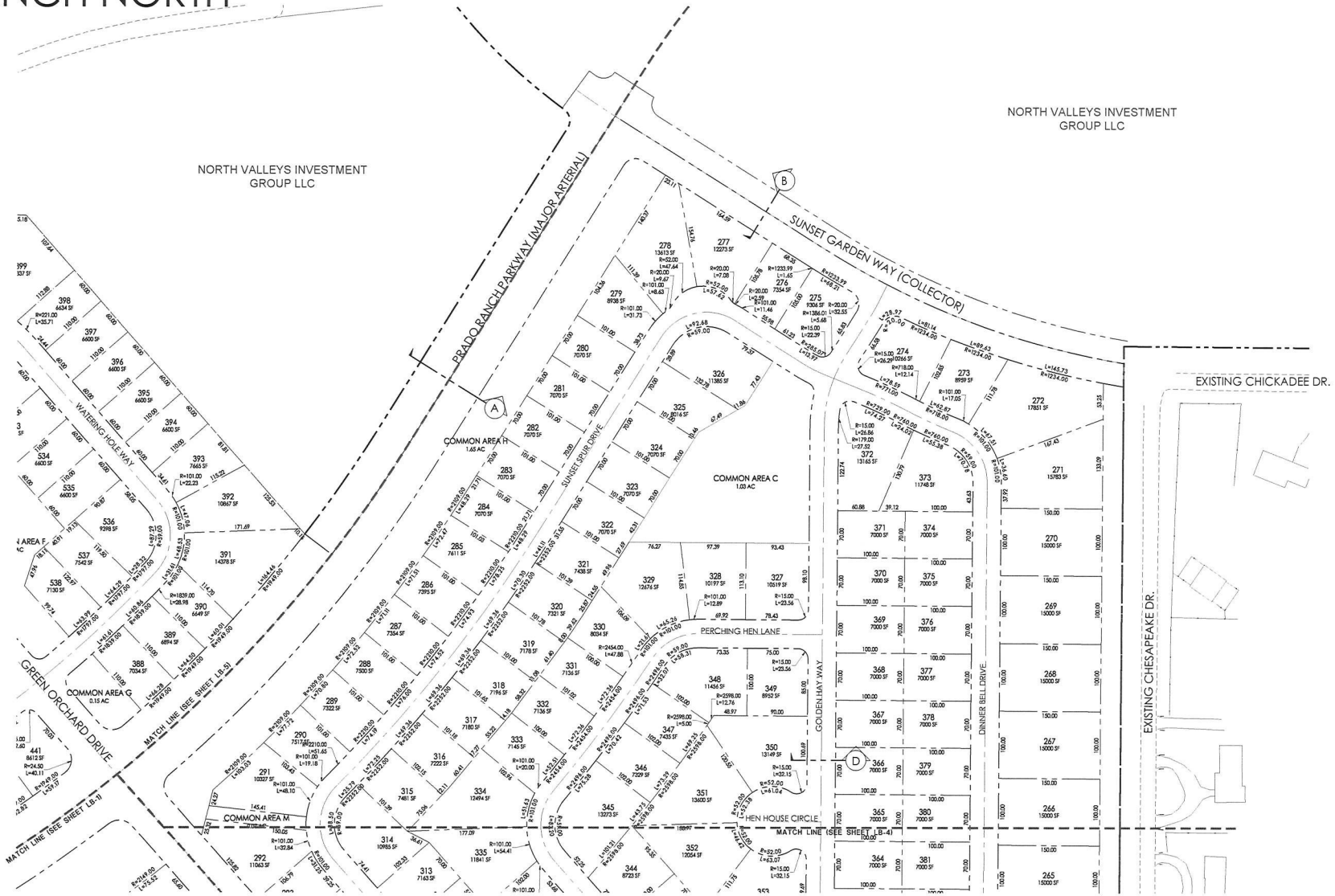

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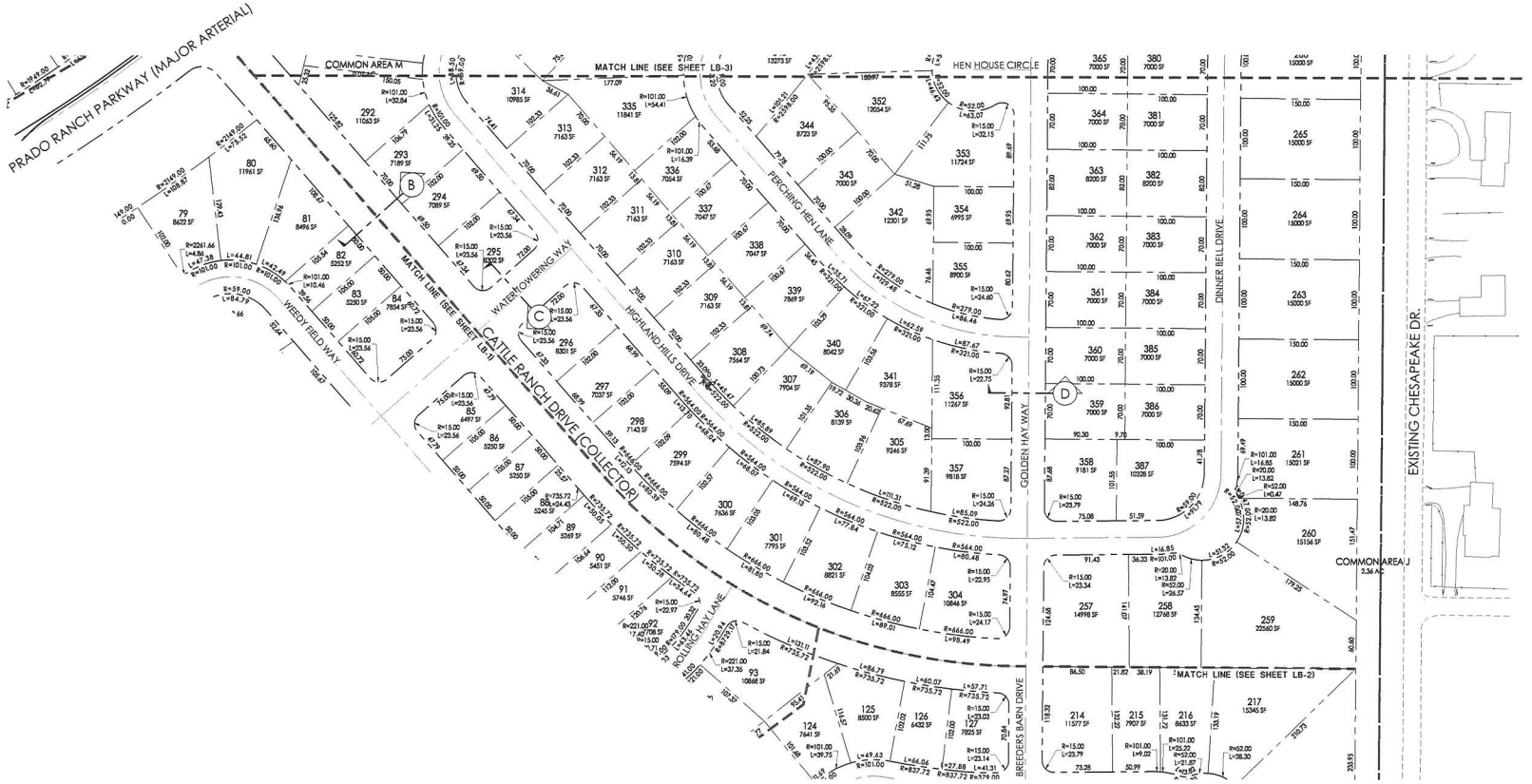
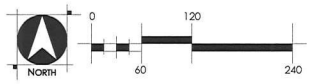
NORTH 0 120 60 240

PRADO RANCH NORTH

TENTATIVE MAP

LOT AND BLOCK PLAN





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PRADO RANCH NORTH

TENTATIVE MAP

LOT AND BLOCK PLAN

NORTH 0 60 120 240

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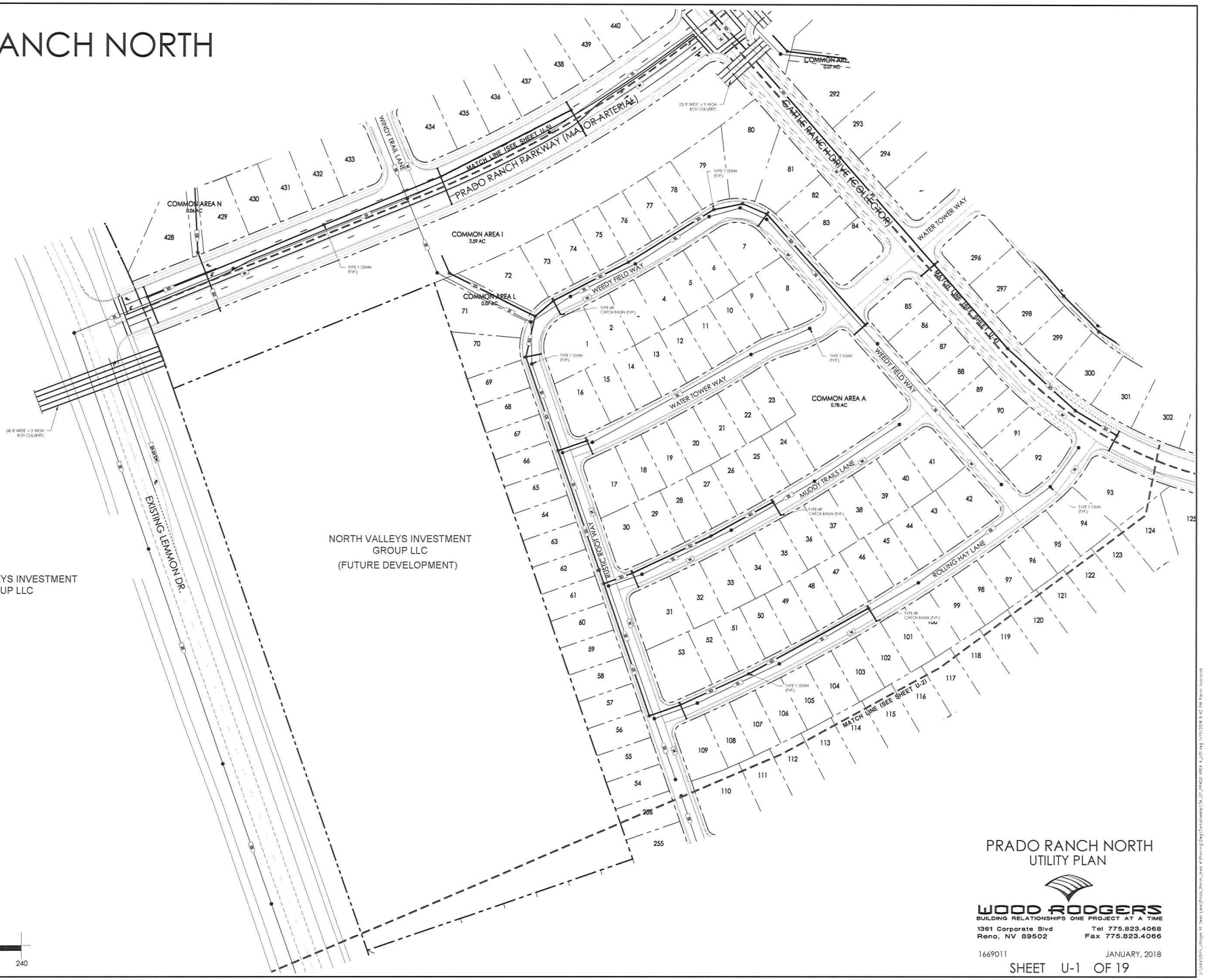
PRADO RANCH NORTH

TENTATIVE MAP

UTILITY PLAN



NORTH 0 60 120 240

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UTILITY PLAN

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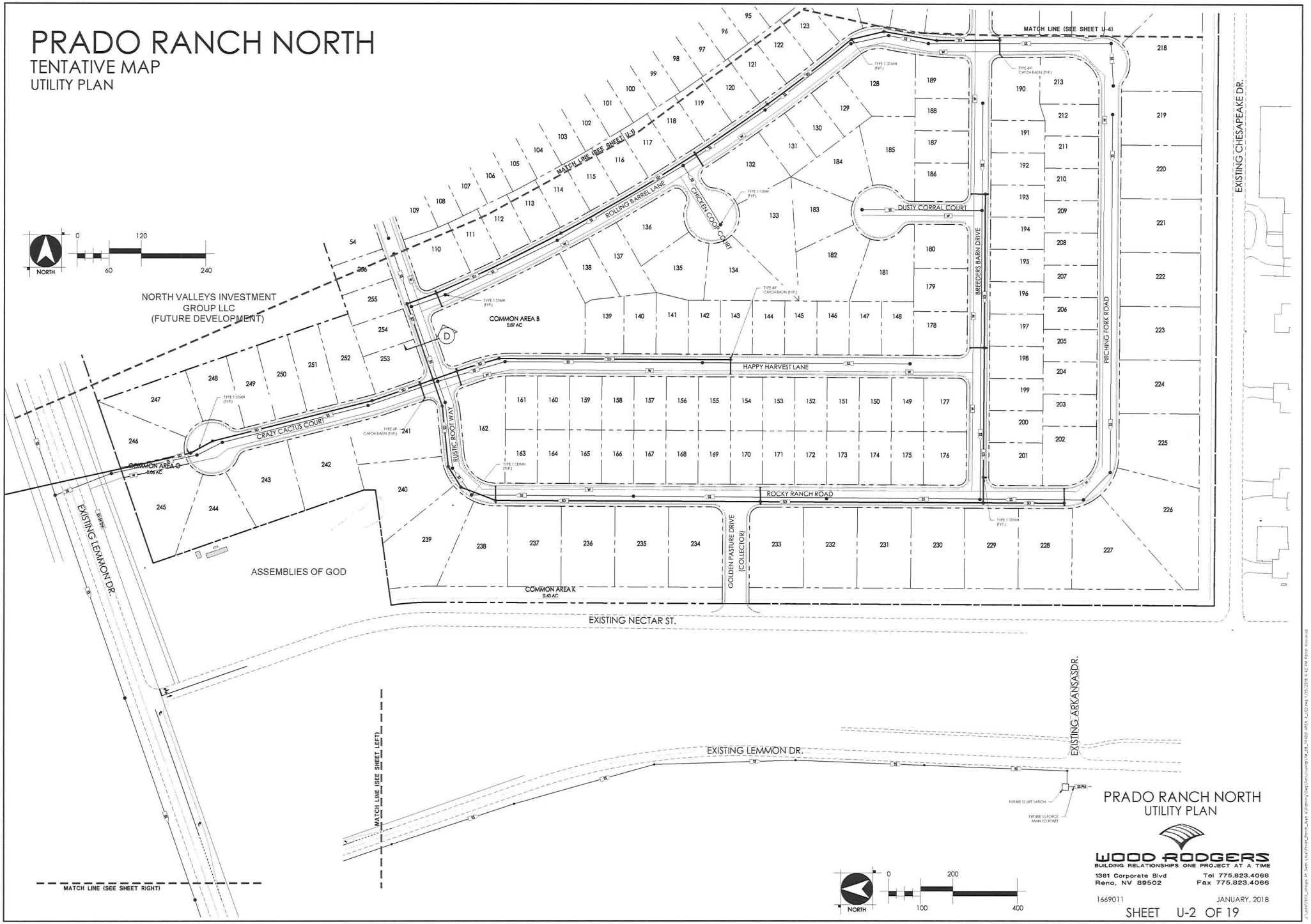
SHEET U-1 OF 19

PRADO RANCH NORTH

TENTATIVE MAP

UTILITY PLAN



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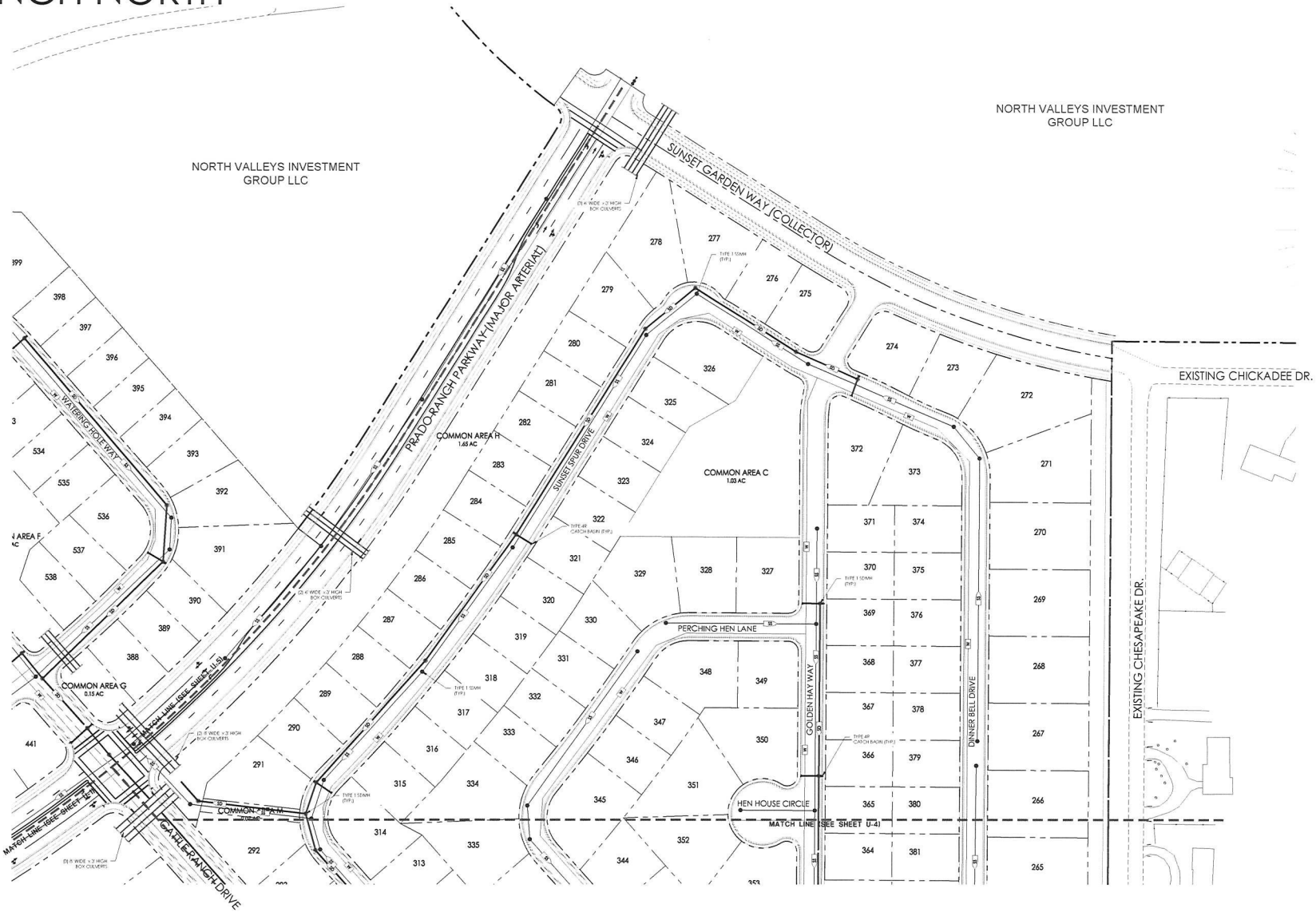

NORTH

0 60 120 240

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UTILITY PLAN

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JANUARY, 2018

SHEET U-3 OF 19

PRADO RANCH NORTH

TENTATIVE MAP

UTILITY PLAN

NORTH

0 60 120 240

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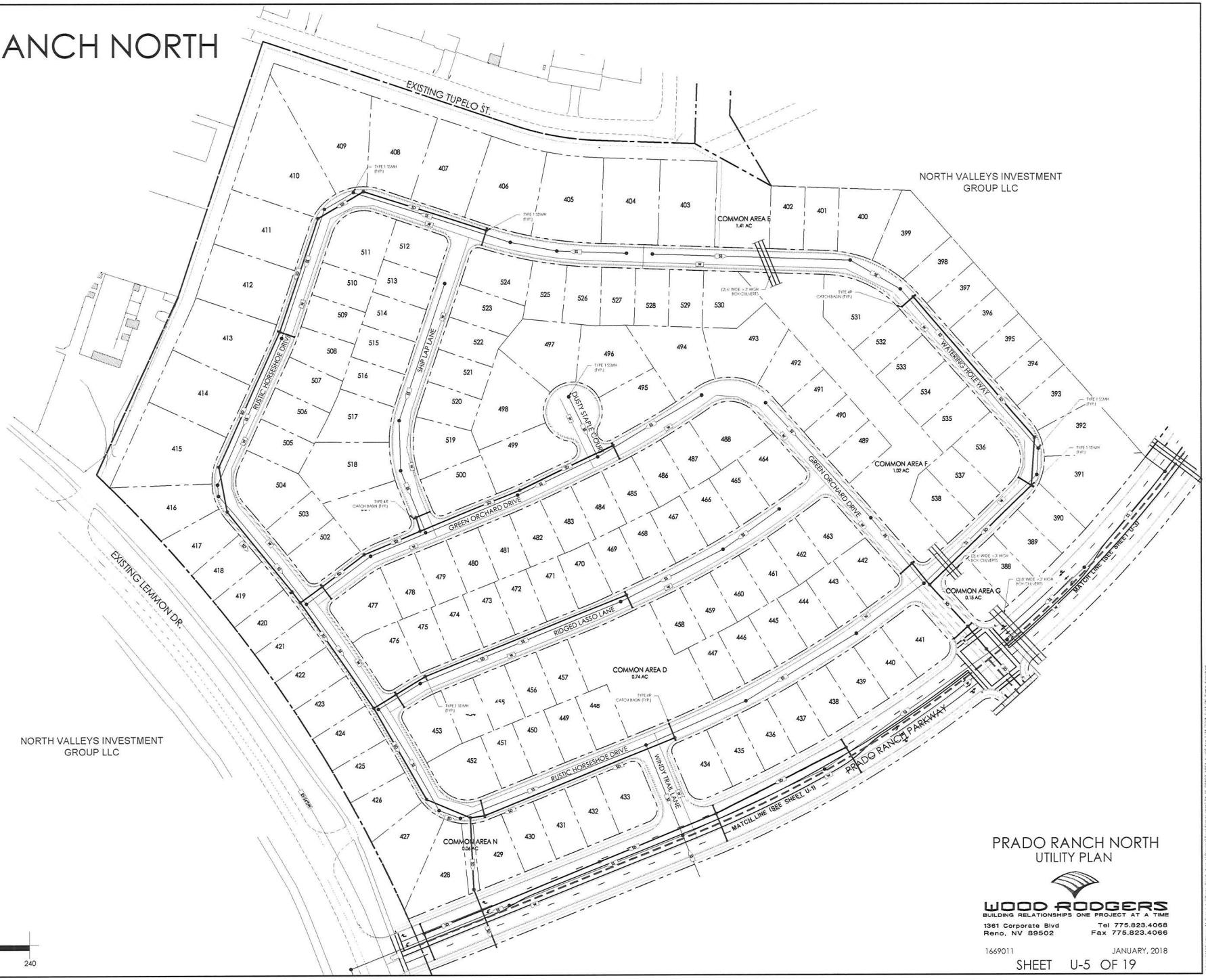

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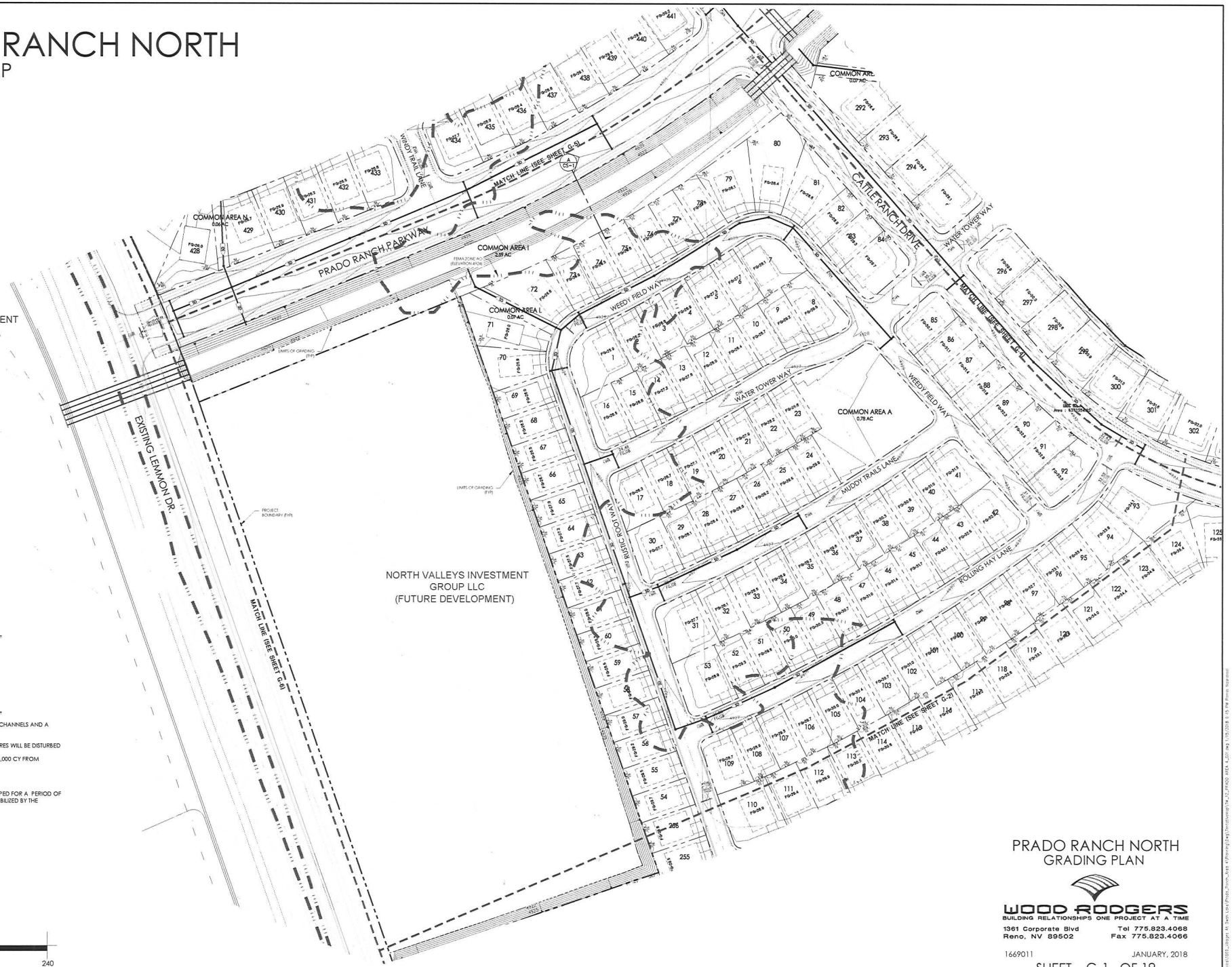
PRADO RANCH NORTH

TENTATIVE MAP

GRADING PLAN



LEGEND:

100 YEAR FLOOD LIMIT LINE

GRADING NOTES:

1. CUT AREAS: VOLUME REPLACEMENT AREA, CHANNELS AND A PORTION OF STREET J
2. FILL AREAS: REMAINDER OF THE SITE
3. DISTURBED AREAS: APPROXIMATELY 225 ACRES WILL BE DISTURBED
4. APPROXIMATE CUT AND FILL
   APPROXIMATE CUT: 35,000 CY ON-SITE, 246,000 CY FROM VOLUME REPLACEMENT AREA
   APPROXIMATE FILL: 1,070,000 CY
   EXPORT NEEDED: NONE
   IMPORT NEEDED: 789,000 CY
5. ALL AREAS DISTURBED AND LEFT UNDEVELOPED FOR A PERIOD OF MORE THAN THIRTY (30) DAYS SHALL BE STABILIZED BY THE APPLICATION OF DUST PALLIATIVE

NORTH 0 60 120 240

PRADO RANCH NORTH
GRADING PLAN

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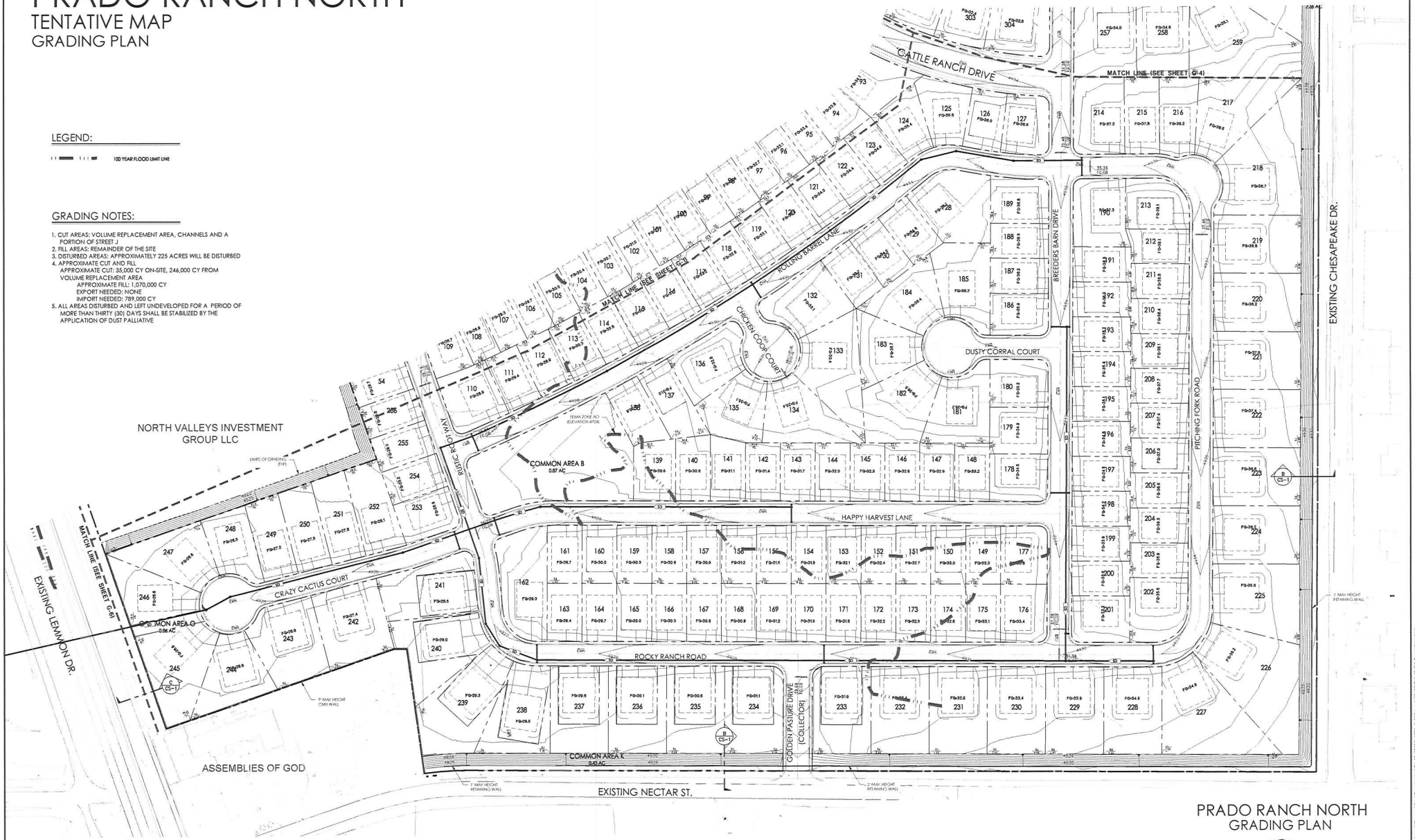

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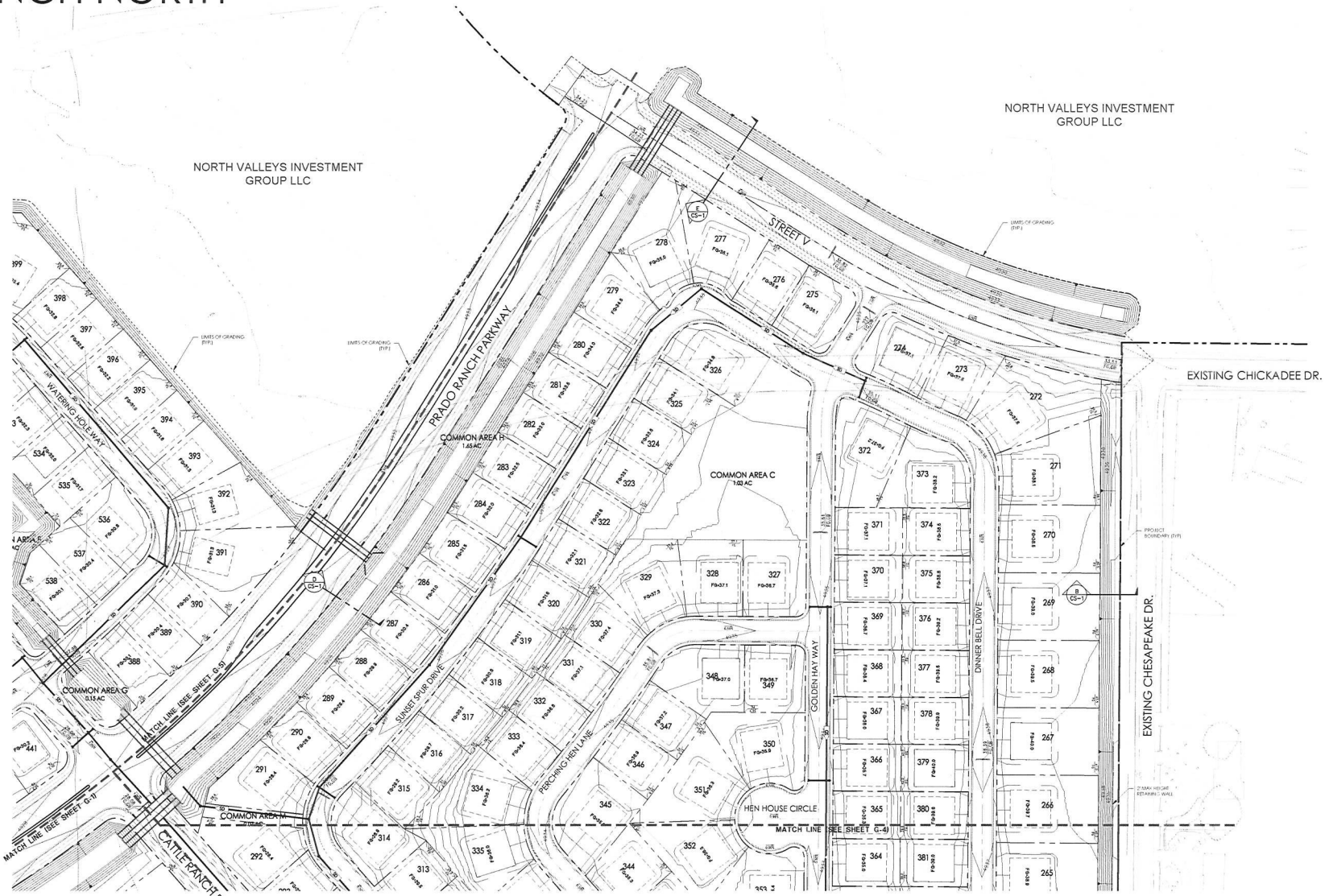

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GRADING PLAN

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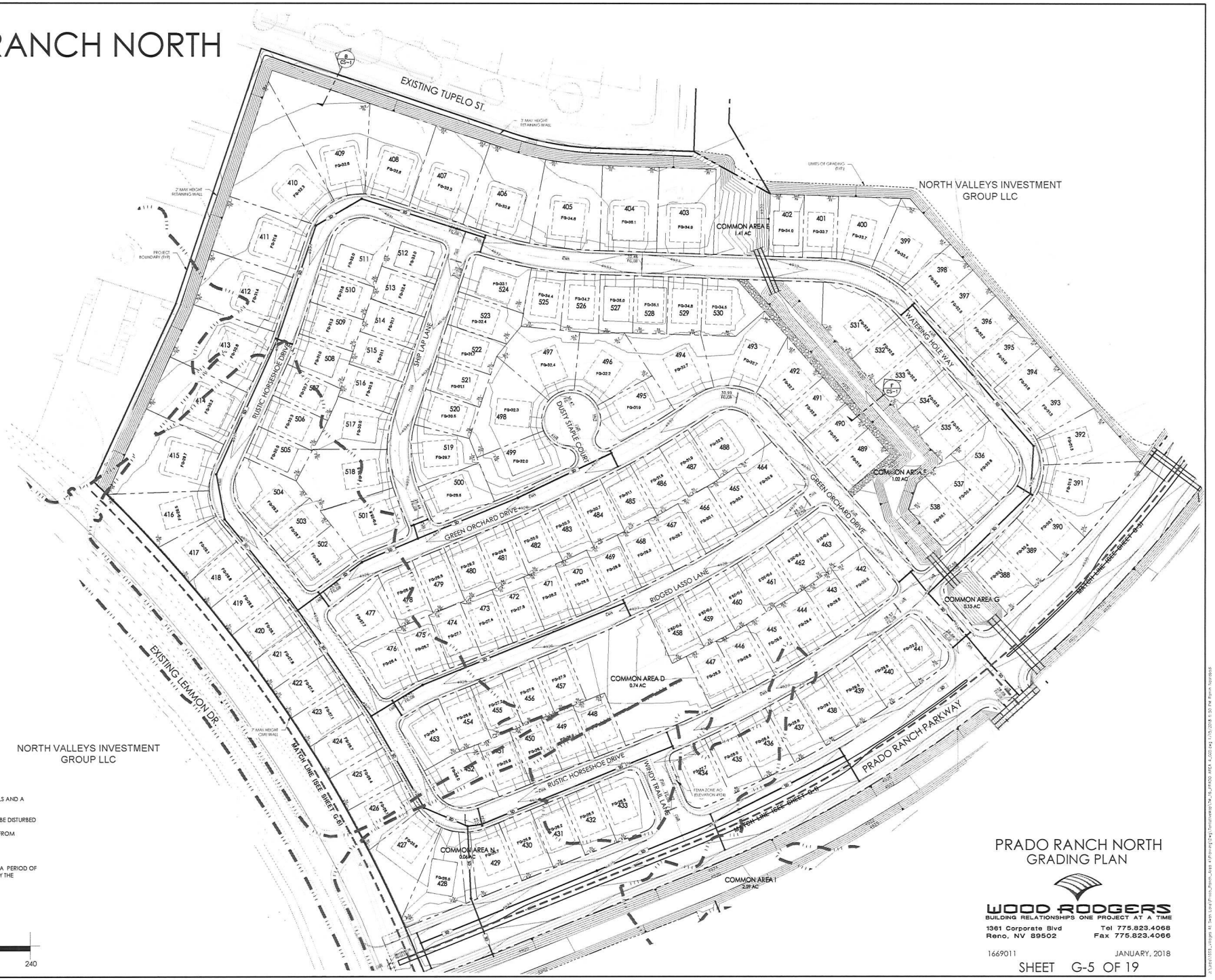
1669011 JANUARY, 2018

PRADO RANCH NORTH

TENTATIVE MAP

GRADING PLAN



LEGEND:

100 YEAR FLOOD LIMIT LINE

GRADING NOTES:

1. CUT AREAS: VOLUME REPLACEMENT AREA, CHANNELS AND A PORTION OF STREET J
2. FILL AREAS: REMAINDER OF THE SITE
3. DISTURBED AREAS: APPROXIMATELY 225 ACRES WILL BE DISTURBED
4. APPROXIMATE CUT AND FILL
   APPROXIMATE CUT: 35,000 CY ON-SITE, 246,000 CY FROM VOLUME REPLACEMENT AREA
   APPROXIMATE FILL: 1,070,000 CY
   EXPORT NEEDED: NONE
   IMPORT NEEDED: 789,000 CY
5. ALL AREAS DISTURBED AND LEFT UNDEVELOPED FOR A PERIOD OF MORE THAN THIRTY (30) DAYS SHALL BE STABILIZED BY THE APPLICATION OF DUST PALLIATIVE

NORTH 0 60 120 240

PRADO RANCH NORTH
GRADING PLAN

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

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PRADO RANCH NORTH

TENTATIVE MAP

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NORTH

0 100 200 400

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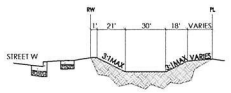
JANUARY, 2018

PRADO RANCH NORTH

TENTATIVE MAP

PRELIMINARY CROSS SECTIONS



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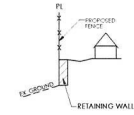
NOT TO SCALE



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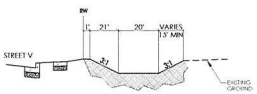

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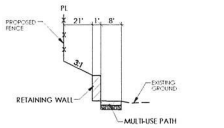

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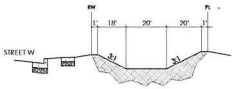

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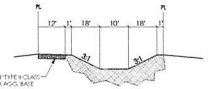

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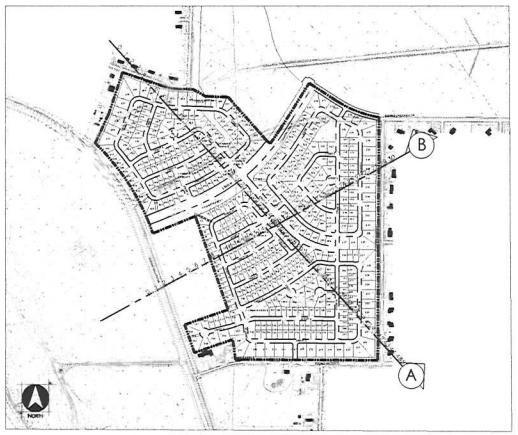
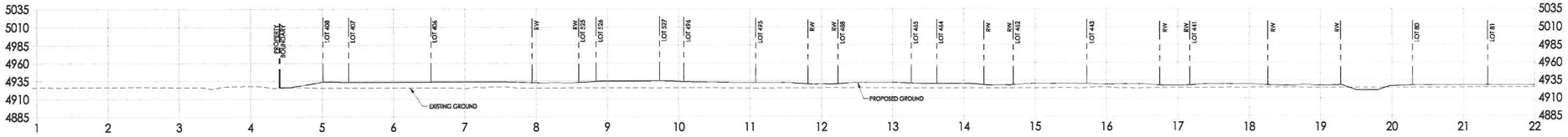


SITE PLAN
NOT TO SCALE



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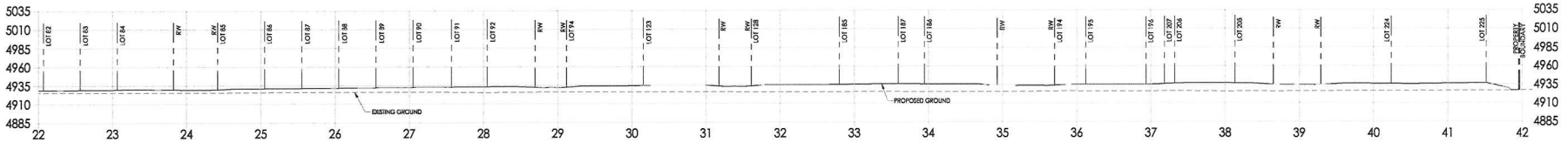
1"=60' VERT.



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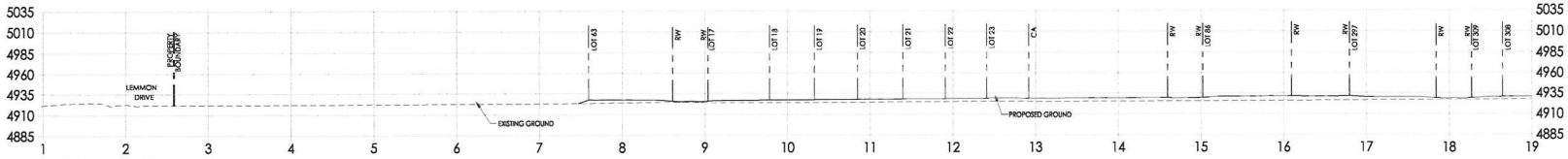
1"=60' VERT.



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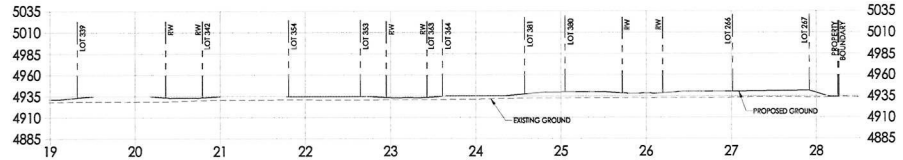

CROSS SECTION B
SCALE: 1"=60' HORZ.
1"=60' VERT.

PRELIMINARY CROSS SECTIONS
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Tel 775.823.4068
Fax 775.823.4066

1669011 JANUARY, 2018

SHEET CS-1OF19

LANDSCAPE LEGEND/REQUIREMENTS

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

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

COMMON AREA LANDSCAPE

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

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

L.A. StudioNevada
the landscape architecture studio
1552 C Street Sparks, NV 89431 (775) 323-2223 NV RLA #440
www.lastudionevada.com

PRADO RANCH NORTH

Wood Rodgers

Washoe County Unincorporated Nevada

Preliminary Landscape Plan

No.	Revision Date

RLA No. 022-###-11-17
Designed: RMH
Drawn: LA
Checked: RMH
Date: 1/12/18

Sheet L1 of 1

December 28, 2017

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

RE: Prado Ranch North
Preliminary Geotechnical Update

REF: Preliminary Geotechnical Investigation
Lemmon Valley Parcels
Reno, Washoe County, Nevada
James Edward Engineering Inc., Project No.: 1124.01
August 5, 2005

Wood Rodgers, Incorporated is pleased to present this preliminary geotechnical update letter of the Prado Ranch North development for a tentative map submittal. Figure 1 presents the aerial map of Prado Ranch North. Area 6 and a portion of area 7 of the referenced geotechnical report contains the proposed development, and the report is attached to this letter for ease of reference. These preliminary recommendations and discussions are still valid to the current date. However, the seismic design values are required to be updated due to an update in the International Residential Code (IRC) since the referenced 2005 report was issued. The USGS Design Maps Detailed Report has been attached to this letter. In accordance with the 2012 IRC and the Northern Nevada Amendments, Site Class D has been assigned to the project. For the representative latitude and longitude of the site (39.669°N, -119.826°E), the USGS seismic design values based on ASCE 7-10 were obtained, and are presented in Table 1.

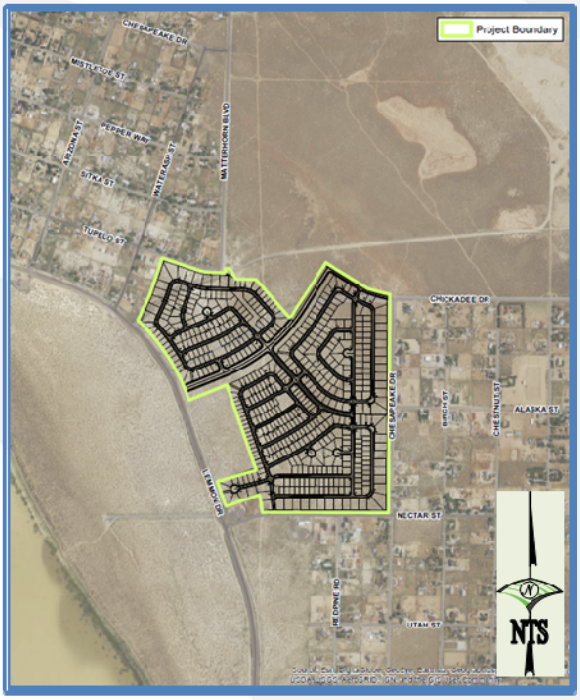


FIGURE 1 - PROJECT DEVELOPMENT AREA

Table 1 - Summary of ASCE 7-10 Seismic Design Values

Lat.	Lon.	S_S	S_1	SDC	F_a	F_v	S_{MS}	S_{M1}	S_{DS}	S_{D1}	F_{PGA}	PGA_M
39.669	-119.827	1.555	0.507	D2	1.0	1.5	1.555	0.761	1.037	0.507	1.0	0.599

We appreciate the opportunity to provide our geotechnical services for you. Please contact our office should you have any related questions or comments.

Sincerely,
WOOD RODGERS, INCORPORATED

James G. Smith, PE
Principal

Justin M. McDougal, PE
Geotechnical Manager
RE Number: 24474
Expires: 12/31/2019

12/28/17

JGS:JMM:da
Enclosures

USGS Design Maps Detailed Report

ASCE 7-10 Standard (39.66902°N, 119.82662°W)

Site Class D – "Stiff Soil", Risk Category I/II/III

Section 11.4.1 — Mapped Acceleration Parameters

Note: Ground motion values provided below are for the direction of maximum horizontal spectral response acceleration. They have been converted from corresponding geometric mean ground motions computed by the USGS by applying factors of 1.1 (to obtain S_S) and 1.3 (to obtain S_1). Maps in the 2010 ASCE-7 Standard are provided for Site Class B. Adjustments for other Site Classes are made, as needed, in Section 11.4.3.

From Figure 22-1 [1]	S_S = 1.555 g
From Figure 22-2 [2]	S_1 = 0.507 g

Section 11.4.2 — Site Class

The authority having jurisdiction (not the USGS), site-specific geotechnical data, and/or the default has classified the site as Site Class D, based on the site soil properties in accordance with Chapter 20.

Table 20.3–1 Site Classification

Site Class	$\overline{v}_s$	$\overline{N}$ or $\overline{N}_{ch}$	$\overline{s}_u$
A. Hard Rock	>5,000 ft/s	N/A	N/A
B. Rock	2,500 to 5,000 ft/s	N/A	N/A
C. Very dense soil and soft rock	1,200 to 2,500 ft/s	>50	>2,000 psf
D. Stiff Soil	600 to 1,200 ft/s	15 to 50	1,000 to 2,000 psf
E. Soft clay soil	<600 ft/s	<15	<1,000 psf
	Any profile with more than 10 ft of soil having the characteristics: • Plasticity index *PI* > 20, • Moisture content *w* ≥ 40%, and • Undrained shear strength $\overline{s}_u$ < 500 psf		
F. Soils requiring site response analysis in accordance with Section 21.1	See Section 20.3.1		

For SI: 1ft/s = 0.3048 m/s 1lb/ft² = 0.0479 kN/m²

Section 11.4.3 — Site Coefficients and Risk–Targeted Maximum Considered Earthquake (MCE_R) Spectral Response Acceleration Parameters

Table 11.4–1: Site Coefficient F_a

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at Short Period				
	$S_S \leq 0.25$	$S_S = 0.50$	$S_S = 0.75$	$S_S = 1.00$	$S_S \geq 1.25$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_S

For Site Class = D and S_S = 1.555 g, F_a = 1.000

Table 11.4–2: Site Coefficient F_v

Site Class	Mapped MCE_R Spectral Response Acceleration Parameter at 1–s Period				
	$S_1 \leq 0.10$	$S_1 = 0.20$	$S_1 = 0.30$	$S_1 = 0.40$	$S_1 \geq 0.50$
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.7	1.6	1.5	1.4	1.3
D	2.4	2.0	1.8	1.6	1.5
E	3.5	3.2	2.8	2.4	2.4
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of S_1

For Site Class = D and S_1 = 0.507 g, F_v = 1.500

Equation (11.4–1): $S_{MS} = F_a S_S = 1.000 \times 1.555 = 1.555$ g

Equation (11.4–2): $S_{M1} = F_v S_1 = 1.500 \times 0.507 = 0.761$ g

Section 11.4.4 — Design Spectral Acceleration Parameters

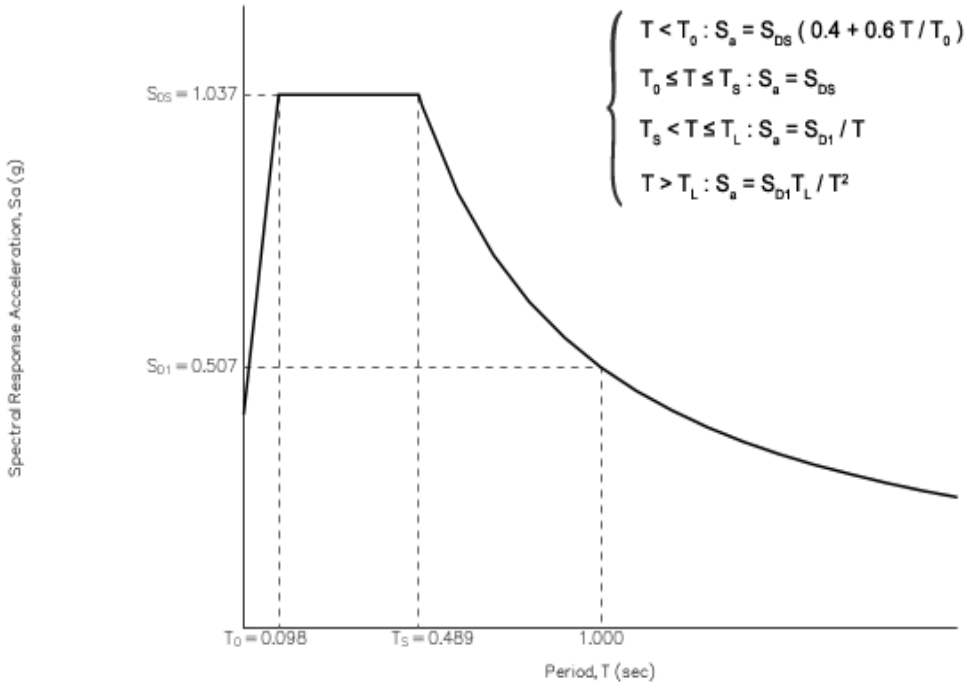
Equation (11.4–3): $S_{DS} = \frac{2}{3} S_{MS} = \frac{2}{3} \times 1.555 = 1.037$ g

Equation (11.4–4): $S_{D1} = \frac{2}{3} S_{M1} = \frac{2}{3} \times 0.761 = 0.507$ g

Section 11.4.5 — Design Response Spectrum

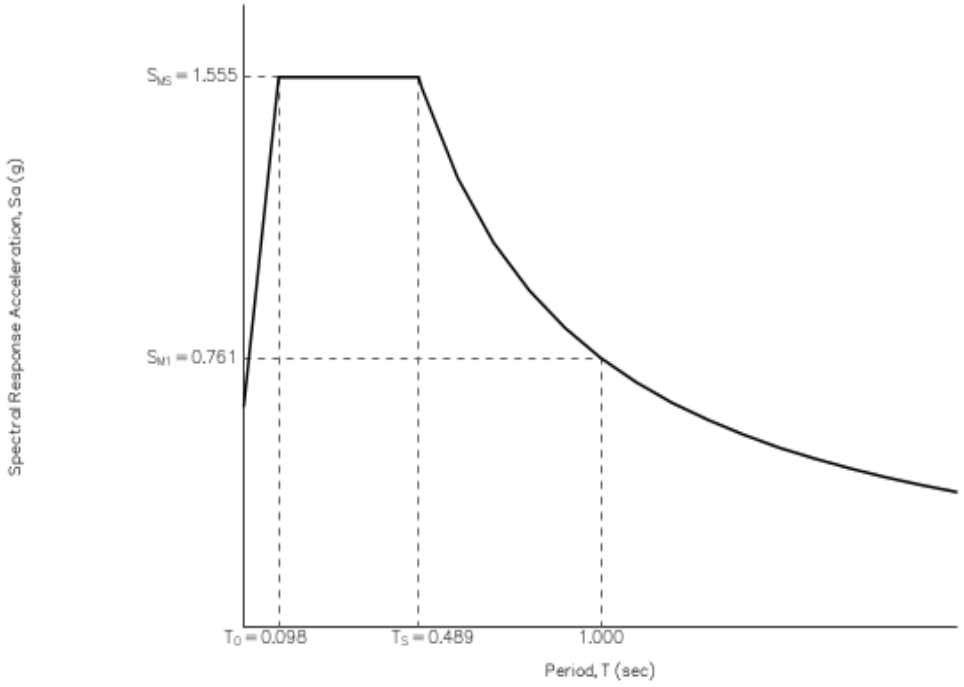
From Figure 22-12 [3] $T_L = 6$ seconds

Figure 11.4–1: Design Response Spectrum



Section 11.4.6 — Risk-Targeted Maximum Considered Earthquake (MCE_R) Response Spectrum

The MCE_R Response Spectrum is determined by multiplying the design response spectrum above by 1.5.



Section 11.8.3 — Additional Geotechnical Investigation Report Requirements for Seismic Design Categories D through F

From Figure 22-7 [4] PGA = 0.599

Equation (11.8–1): $PGA_M = F_{PGA}PGA = 1.000 \times 0.599 = 0.599$ g

Table 11.8–1: Site Coefficient F_{PGA}

Site Class	Mapped MCE Geometric Mean Peak Ground Acceleration, PGA				
	PGA ≤ 0.10	PGA = 0.20	PGA = 0.30	PGA = 0.40	PGA ≥ 0.50
A	0.8	0.8	0.8	0.8	0.8
B	1.0	1.0	1.0	1.0	1.0
C	1.2	1.2	1.1	1.0	1.0
D	1.6	1.4	1.2	1.1	1.0
E	2.5	1.7	1.2	0.9	0.9
F	See Section 11.4.7 of ASCE 7				

Note: Use straight–line interpolation for intermediate values of PGA

For Site Class = D and PGA = 0.599 g, F_{PGA} = 1.000

Section 21.2.1.1 — Method 1 (from Chapter 21 – Site-Specific Ground Motion Procedures for Seismic Design)

From Figure 22-17 [5] C_{RS} = 0.920

From Figure 22-18 [6] C_{R1} = 0.932

Section 11.6 — Seismic Design Category

Table 11.6-1 Seismic Design Category Based on Short Period Response Acceleration Parameter

VALUE OF S_{DS}	RISK CATEGORY		
	I or II	III	IV
$S_{DS} < 0.167g$	A	A	A
$0.167g \le S_{DS} < 0.33g$	B	B	C
$0.33g \le S_{DS} < 0.50g$	C	C	D
$0.50g \le S_{DS}$	D	D	D

For Risk Category = I and S_{DS} = 1.037 g, Seismic Design Category = D

Table 11.6-2 Seismic Design Category Based on 1-S Period Response Acceleration Parameter

VALUE OF S_{D1}	RISK CATEGORY		
	I or II	III	IV
$S_{D1} < 0.067g$	A	A	A
$0.067g \le S_{D1} < 0.133g$	B	B	C
$0.133g \le S_{D1} < 0.20g$	C	C	D
$0.20g \le S_{D1}$	D	D	D

For Risk Category = I and S_{D1} = 0.507 g, Seismic Design Category = D

Note: When S_1 is greater than or equal to 0.75g, the Seismic Design Category is **E** for buildings in Risk Categories I, II, and III, and **F** for those in Risk Category IV, irrespective of the above.

Seismic Design Category ≡ "the more severe design category in accordance with Table 11.6-1 or 11.6-2" = D

Note: See Section 11.6 for alternative approaches to calculating Seismic Design Category.

References

1. *Figure 22-1*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-1.pdf
2. *Figure 22-2*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-2.pdf
3. *Figure 22-12*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-12.pdf
4. *Figure 22-7*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-7.pdf
5. *Figure 22-17*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-17.pdf
6. *Figure 22-18*: https://earthquake.usgs.gov/hazards/designmaps/downloads/pdfs/2010_ASCE-7_Figure_22-18.pdf

PRELIMINARY
GEOTECHNICAL INVESTIGATION
LEMMON VALLEY PARCELS
RENO, WASHOE COUNTY, NEVADA

PREPARED FOR:

North Valley Investment Group, LLC
Mr. Greg Peek
9345 Lemmon Drive
Reno, Nevada 89506

August 2005

JAMES EDWARD ENGINEERING
I N C O R P O R A T E D

August 5, 2005
Project No.: 1124.01

Mr. Greg Peek
NORTH VALLEY INVESTMENT GROUP, LLC
9345 Lemmon Drive
Reno, NV 89506

RE: PRELIMINARY GEOTECHNICAL INVESTIGATION
LEMMON VALLEY PARCELS
RENO, WASHOE COUNTY, NEVADA

Dear Mr. Peek:

James Edward Engineering, Inc. is pleased to submit the following geotechnical report for the proposed multi-subdivision development to be located in the Lemmon Valley area of Reno, Washoe County, Nevada. The project consists of developing a 2,000-lot single-family multi-subdivision. The proposed residences will be one to two-story wood-framed structures with either raised floor or post-tensioned (PT) concrete slab-on-grade construction.

The project is broken down into several areas consisting of Areas 2, 4, 5, 6, 7, 8, B, and C. The soil profile varied across the project area with granular soils covering Area 7, Area 8, the northern portion of Area 6, and the eastern portion of Area 4. Clay soils were encountered across Area 5, Area 2, Area B, Area C, and the western portion of Area 4. Ground water was not encountered during our field exploration; however, shallow ground water may be encountered within the project within Areas 2 and B.

The predominant construction constraint is the presence of high plastic clay soils within several areas of the project. Depending on final grades, clay soils may require overexcavation and replacement with structure fill below structural areas.

We appreciate the opportunity to provide these services for you. Please do not hesitate to contact our office should you have any related questions or comments.

Sincerely,

JAMES EDWARD ENGINEERING
I N C O R P O R A T E D

Mischelle J. Smith, PE
Engineering Manager
RE Number 6972
Expires 6/30/06

MJS:MLM:mlm

Margie L. Mann, EI
Geotechnical Department

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APPENDICES

PRELIMINARY GEOTECHNICAL INVESTIGATION
LEMMON VALLEY PARCELS
RENO, WASHOE COUNTY, NEVADA

INTRODUCTION

Presented herein are the results of James Edward Engineering, Incorporated's preliminary geotechnical investigation for the proposed multi-subdivision to be located in the Lemmon Valley area of Reno, Washoe County, Nevada. These recommendations are based on surface and subsurface conditions encountered in our explorations, and on details of the proposed project as described in this report. The objectives of this investigation were to:

1. Determine general soil and ground water conditions pertaining to design and construction of the proposed project.

2. Provide recommendations for design and construction of the project, as related to these geotechnical conditions.

The project vicinity is shown on Figure 1 below. Our study included field exploration, laboratory testing and engineering analyses to identify the physical and mechanical properties of the various on-site materials. Results of our field exploration and testing programs are included in this report and form the basis for all conclusions and recommendations.

PROJECT DESCRIPTION

The project consists of developing a 2000-lot single-family multi-subdivision in the central portion of Lemmon Valley.

The proposed residences will consist of one to two-story wood-framed structures with either raised floor or post-tensioned (PT) concrete slab-on-grade construction. Foundation loads are anticipated to be light. Appurtenant construction will consist of dedicated residential streets, sidewalk, curb and gutter, and underground utilities.

No grading improvements were available at the time this report was written, however, due to the relatively level topography, cuts and fills are anticipated to be minor.

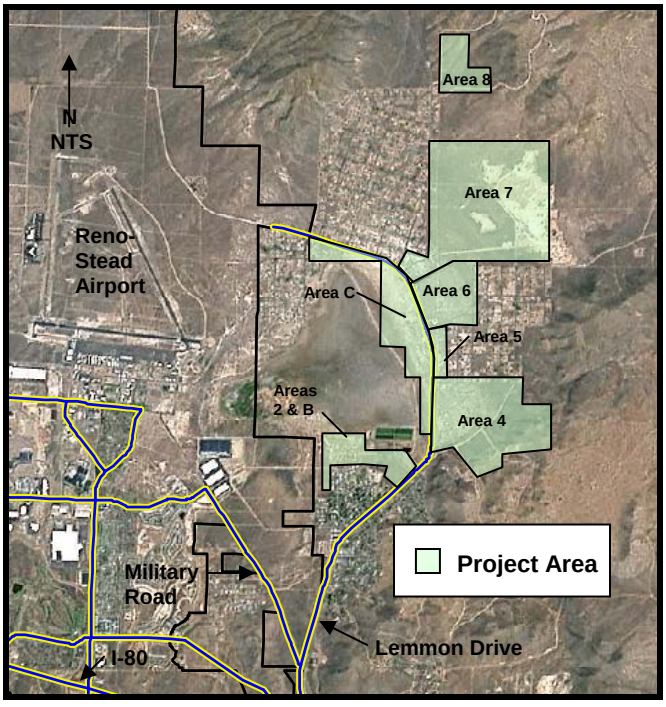

Figure 1 – Vicinity Map

SITE DESCRIPTION

The project covers approximately 1,500 acres situated east of the Lemmon Valley Playa in the central portion of Lemmon Valley. The subject properties are generally undeveloped. Vegetation throughout the project consists of sagebrush, rabbit brush, and other native shrubs from 1 to 4 feet in height, and scattered grasses. The project is broken down into several areas consisting of Areas 2, 4, 5, 6, 7, 8, B, and C. The entire project is contained within portions of Sections 11, 14, 15, 22, 23, 26, 27, 33, 34, and 35 of Township 21 North, Range 19 East, MDB&M.

Areas 2 and B

Areas 2 and B comprise about 117 acres and are located west of the intersection of Lemmon Drive and Patrician Drive. Area B borders Area 2 to the west. Lemmon Valley Elementary school is situated south of Area 2. Single-family residences are located south and southeast of Areas 2 and B with undeveloped land situated to the north and west. Possible abandoned water treatment ponds were observed north of Area 2. Topography across the two areas is generally level with a gradient of less than 1 percent to the south and an approximate elevation differential of 10 feet. Areas 2 and B are entirely contained in the northern portion of Section 34.

Area C

Area C consists of about 260 acres situated between the Lemmon Valley Playa and Lemmon Drive. The area is bordered by undeveloped land to the west, east, and south. Single-family residences are located north of the northwest area boundary. Possible abandoned water treatment ponds are located southwest of the southern area boundary. The site is generally level with an approximate gradient of less than 2 percent to the east-northeast. Area C is contained within Sections 22 and 27.

Area 4

Area 4 consists of approximately 317 acres situated east of the intersection of Lemmon Drive and Deodor Way. Lemmon Drive borders the area to the west and Arkansas Drive borders the area to the north. A residential subdivision is situated to the north with scattered single-family residences with vacant land bordering the area to the east and south. Topography slopes to the west with an approximate average gradient of 2 percent. The approximate elevation differential across the area is 40 feet. Area 4 is contained in Sections 26 and 35.

Areas 5

Area 5 comprises approximately 38 acres located directly north of Area 4 within Section 26. Nectar Way extends along the northern area boundary with Arkansas Drive to the south and Lemmon Drive. A residential subdivision borders Areas 5 to the east. The area is generally flat and slopes to the southwest.

Area 6

Area 6 consists of about 120 acres and is situated north of Area 5 within Sections 22 and 23. Nectar Way borders the area to the south with Chickadee Drive to the north and Lemmon Drive to the west. A residential subdivision borders Area 6 to the east. The area is generally flat and slopes to the southwest.

Area 7

Area 7 covers approximately 700 acres located north of Area 6 and is contained in Sections 14, 15, 22, and 23. The site is generally undeveloped with the exception of the Sha Neva Pit situated in the eastern portion of the area. Single-family residences border the area to the west and south with vacant land to the north and east. The northeast portion of the area slopes at approximately 4½ percent to the southwest and the remainder of the site has a gradient of less than 1 percent to the southwest.

Area 8

Area 8 is located entirely in Section 11 and comprises approximately 120 acres. Two unpaved roads, Hungry Mountain Drive and Oregon Boulevard, traverse through the area. Based on a review of the Reno NE USGS 7½ Minute Quadrangle, the site has an approximate slope of 9 percent in a southwesterly direction.

EXPLORATION

The site was explored in February 2005 by excavating a series of 24 test pits using a Caterpillar 420D backhoe. The approximate exploration locations are shown on Plate A-2 – Site Map and Approximate Exploration Locations. The maximum depth of excavation was 12 feet below the existing ground surface. Bulk samples for index testing were collected from the trench walls at specific depths in each soil horizon. Pocket Penetrometer testing was performed in fine-grained soil strata to provide an indication of in-place unconfined compressive strength.

In addition to the test pits, two test borings were drilled within Areas 4 and 7 to provide information for liquefaction analysis. The depth of exploration was 41½ feet below the existing ground surface. The borings were advanced by mud rotary drilling methods consisting of advancing a 3 1/8-inch mud rotary bit with a water/bentonite drilling fluid and a truck-mounted CME 55 soil sampling drill rig. The rotary bit decreases sample disturbance at the bottom of the borehole and the drilling fluid prevents sloughing of the borehole sidewalls. The in situ soils were sampled every 2½ feet using a standard 2-inch OD split-spoon sampler dirve by a standard 140-pound drive hammer with a 30-inch drop. The number of blows to drive the sampler the final 12 inches of an 18-inch penetration, Standard Penetration Test (SPT) (ASTM D 1586), into undisturbed soil is an indication of the density and consistency of the material.

James Edward Engineering, Inc. personnel examined and classified all soils in the field in general accordance with ASTM D 2488 (Description and Identification of Soils – Visual Manual Procedure). The test pit logs and boring logs represent our interpretation of the subsurface conditions based on our field observations and the indicated laboratory test results. The lines designating the interface between various strata on the test boring records represent the approximate positions of the interface. The actual transition between the strata may be gradual.

During exploration, representative samples were placed in sealed containers and returned to our Reno, Nevada, laboratory for testing. Additional soil classification and verification of the field logs was performed in accordance with ASTM 2487 (Unified Soil Classification System [USCS]) upon completion of laboratory testing. Logs of test borings are presented as Plate A-3 – Logs of Test Borings and logs of the test pits are presented as Plate A-4 – Logs of Test Pits. A USCS chart has been included as Plate A-6 – Unified Soil Classification Chart and Key to Soil Descriptions.

LABORATORY TESTING

All soil testing performed in the James Edward Engineering, Inc. soils' laboratory is conducted in general accordance with ASTM Standards, specifically Volume 4.08 (Soil and Rock; Dimension Stone; Geosynthetics). Samples of significant soil types were analyzed to determine their in situ moisture content (ASTM D 2216), grain size distribution (ASTM D 422), and plasticity index (ASTM D 4318), with the results of these tests shown on Plate A-5 – Summary of Test Results. Results of these tests were used to classify the soils according the USCS (ASTM D 2487) and to verify the field logs, which were then updated as necessary. This testing provides an indication of the soil's mechanical properties, which can then be correlated published design charts (Bowles, 1996; NAVFAC, 1986) to evaluate bearing capacity, lateral earth pressures, and settlement potential.

GEOLOGIC CONDITIONS

Based on a review of the Reno NE Quadrangle, a majority of the subject property overlies Quaternary playa deposits, sheetwash and stream channel deposits, clay dunes, and alluvium. Portions of Area 4 and 8 overlie Mesozoic granodiorite. Refer to Plate A-2 – Geologic Map for the geologic units present within each area.

GENERAL SOIL AND GROUND WATER CONDITIONS

Area 2 & B

Soils encountered within Areas 2 and B generally consisted of clayey sand and silty clayey sand overlying lean clay with sand and fat clay with sand. No groundwater was encountered during exploration, however, based on a review of the Nevada Division of Water Resources Well Log Database, static water levels within Areas 2 and B at depths as shallow as 2 feet and 7 feet, respectively.

Area C

The site soils encountered within Area C consisted of fat clay. No groundwater was encountered during exploration and is expected to lie at a depth that will not affect construction.

Area 4

The soils encountered within the eastern portion of Area 4 generally consist of silty sand. The western portion of the site overlies fat clay. Soils were encountered in a dry to moist condition. No groundwater was encountered during exploration and is expected to lie at a depth that will not affect construction.

Areas 5 & 6

The soils observed within the northern portion of Area 5 and the southern portion of Area 6 generally consisted of sandy lean clay overlying silty sand. Soils encountered within the northern portion of Area 6 consisted of clayey sand overlying poorly graded sand with silt and sandy lean clay. Soils were encountered in a dry to moist condition. No groundwater was encountered during exploration and is expected to lie at a depth that will not affect construction.

Area 7

Soils encountered during exploration generally consisted of silty sand and poorly graded sand with silt within the eastern portion of Area 7. Soils in the western portion of the site generally consisted of clayey sand, silty sand, and sandy lean clay. Soils were encountered in a dry to moist condition. No groundwater was encountered during exploration and is expected to lie at a depth that will not affect construction.

Area 8

The site soils within Area 8 generally consisted of silty sand and clayey sand overlying weathered granodiorite bedrock. Soils were encountered in a dry to moist condition. No groundwater was encountered during exploration and is expected to lie at a depth that will not affect construction.

Groundwater levels may fluctuate due to changes in precipitation, seasonal variations, irrigation practices, or other conditions not noted at the time of our investigation. Therefore, the groundwater conditions observed during our exploration program may be different from conditions and elevations encountered during construction.

SEISMIC HAZARDS

The Lemmon Valley area lies along the eastern base of the Sierra Nevada within the Western extreme of the Basin and Range. The Basin and Range physiographic province is bounded to the east by the seismically active zones of the Wasatch Front to the east, and the eastern front of the Sierra Nevada Mountains to the west. As such, the project is located within an area with a strong potential for ground shaking.

Based on a review of the Reno NE Quadrangle Earthquake Hazards Map (Cordy, 1985), no faults trend through the project. An early to mid-Pleistocene fault (approximately 100,000 years to 1.8 million years before the present) was observed trending northeast-southwest along the west portion of the valley west of the Lemmon Valley Playa. A mid- to late Pleistocene fault (approximately 12,000 years to 100,000 years before the present) was observed approximately 700 feet west of the western-most portion of Area C.

A criteria for evaluating earthquake faults has been formulated by a professional committee for the State of Nevada Seismic Safety Council, but has not yet been adopted by the State or Counties. The guidelines present that faults with evidence of movement within the past 10,000 years (Holocene time) are considered Holocene Active. Faults with evidence of displacement within the last 130,000 years are considered Late Quaternary Active and faults with movement within the last 1.6 million years are considered Quaternary Active. The faults in the project vicinity are considered Late Quaternary Active to Quaternary Active.

Liquefaction Potential

The project is located in an area with possible severe shaking during a seismic event. Liquefaction is a loss of soil shear strength that can occur during a seismic event, as cyclic shear stresses cause excessive pore water pressure between the soil grains. This phenomenon is generally limited to unconsolidated, clean to silty sand (up to 35 percent non-plastic fines) lying below the ground water table. A liquefaction analysis was performed as an overall general assessment of the project's susceptibility to liquefaction during a seismic event.

Based on the results of liquefaction exploration, due to the soil types encountered during exploration and the depth to groundwater, the site soils are not considered to be susceptible to liquefaction. In addition, there is no specific policy in Nevada which requires structures to be designed to resist liquefaction. Such designs tend to be very costly and are usually limited to those structures with a public safety function, such as, fire and police facilities and hospitals or buildings with high occupancy, such as, large commercial, retail, office and manufacturing facilities, schools, municipal or major governmental buildings.

Seismic Design Parameters

The site is defined as a Site Class D (stiff soil profile) listed in Table 1615.1 of the 2003 International Building Code. Based on the average latitude and longitude of the project, the mapped spectral response accelerations for the 0.2 seconds (S_s) and 1 second (S_1) periods are 1.33 and 0.5, respectively (USGS Earthquake Hazards Program). Based on these mapped spectral response accelerations, the Site Coefficients F_a and F_v, as a function of site class, are 1.0 and 1.5, respectively.

FLOOD HAZARDS

The Federal Emergency Management Agency (FEMA) has determined the subject parcels lie within several flood zones as shown on the Flood Insurance Rate Maps (FIRMs). Areas B, C, 2, 4, 5, and 6 lie within both Zone X (*areas determined to be outside 500-year floodplain*) and Zone AE (*special flood hazard areas inundated by 100-year flood, base flood elevations determined*). Area 7 is located within Zone X and Zone A (*special flood hazard areas inundated by 100-year flood, no base flood elevations determined*). Area 8 is located entirely within Zone X.

DISCUSSION AND RECOMMENDATIONS

The soil profile varied across the project with granular soils covering the northern portion of Area 6, Area 7, Area 8, and the eastern portion of Area 4. Clay soils were encountered across Area 2, Area 5, Area B, Area C, and the western portion of Area 4. Clay soil areas as encountered in our exploration are shown on Plate A-1 – Site Map and Approximate Exploration Locations. Ground water was not encountered during our field exploration; however, shallow ground water may be encountered within the project within Areas 2 and B.

The predominant construction constraint is the presence of high-plastic clay soils. Clay soils can shrink or swell in response to moisture changes as a result of seasonal variations in precipitation, poor site drainage, landscape irrigation, leaking underground pipes, capillary action, or from other sources. Volume changes within clay soil due to moisture variations can cause differential movement within structural elements supported by these sols. Once the site is developed, moisture changes occur within subsurface soils, typically due to irrigation practices, modifications in surface drainage, and precipitation.

One construction method to reduce the potential for differential movement is to separate structural elements from the clay soil with either structural fill or native granular soils. The structural fill layer provides a surcharge on the clay soil, distributes any movement in the underlying clay soil over a wider area, and reduces the potential for moisture changes, and subsequent volume changes within the soil. Also, post-tensioned (PT) slabs-on-grade can be utilized in place of standard foundations. If PT slabs are to be utilized for the project, recommendations for PT slabs will be provided in the final geotechnical report.

General Information

For purposes of this project, the following definitions shall be utilized:

- Fine-grained soil is defined as soil with more than 40 percent by weight passing the number 200 sieve and a plasticity index lower than 15.
- Clay soil is defined as soil with more than 30 percent passing the number 200 sieve and a plasticity index greater than 15.
- Granular soil is defined as soil not meeting the above criteria with a maximum particle size of less than 12-inches.

Structural areas referred to in this report include all areas of buildings, concrete slabs, asphalt pavements, as well as pads for any minor structures. All compaction requirements presented in this report are relative to ASTM D 1557 [1].

The recommendations provided herein, are intended to reduce risks of structural distress related to consolidation or expansion of native soils and/or structural fills. These recommendations, along with proper design and construction of the planned structure and associated improvements, work together as a system to improve overall performance. If any aspect of this system is ignored or poorly implemented, the performance of the project will suffer. Sufficient quality control should be performed to document that the recommendations presented in this report are followed.

The test pits were excavated by backhoe at the approximate locations shown on the site plan. Locations were determined in the field by approximate means. All test pits were backfilled upon completion of the field portion of our study. The backfill was compacted to the extent possible with the equipment on hand. However, the backfill was not compacted to the requirements presented herein under **Grading and Filling**. ***If structures, concrete flatwork, pavement, utilities or other improvements are to be located in the vicinity of any of the test pits, the backfill should be removed and re-compacted in accordance with the requirements contained in the soils report. Failure to properly compact backfill could result in excessive settlement of improvements located over test pits.***

Any evaluation of the site for the presence of surface or subsurface hazardous substances is beyond the scope of this study. When suspected hazardous substances are encountered during routine geotechnical investigations, they are noted in the exploration logs and reported to the client. No such substances were identified during our exploration.

Site Preparation

All vegetation and topsoil should be stripped and grubbed from structural areas and removed from the site or deposited in non-structural areas. A stripping depth of 0.4 to 0.5 feet is anticipated. Stripping depth will vary depending on the vegetation present within the development area.

All areas to receive structural fill or structural loading should be densified to a minimum depth of 8 inches and densified to at least 90 percent relative compaction. Soils should have moisture contents of plus or minus 2 percent of optimum moisture prior to densification. Higher moisture contents will be acceptable if the soil horizon is stable and density can be achieved in subsequent structural fill lifts. Clay soils should be scarified to a minimum depth of 12 inches, and moisture conditioned to 5 percent over optimum, prior to compaction. It is mandatory that periodic surface wetting or other methods maintain this moisture content until the surface is covered by at least, one lift of fill. After moisture conditioning, clay subgrade soils shall be compacted to not less than 88 percent and no more than 93 percent relative compaction.

Grading and Filling

Structural fill is defined as any material placed below structural elements, such as; foundations, concrete slabs-on-grade, pavements, or any structure that derives support from the underlying soils. Structural fill shall be free of vegetation, organic matter, and other deleterious material. Import structural fill should meet the specifications outlined in Table 1.

[1] Relative compaction refers to the ratio (percentage of the in-place density of a soil divided by the same soil's maximum dry density) as determined by the ASTM D 1557 laboratory test procedure. Optimum moisture content is the corresponding moisture content of the same soil at its maximum dry density.

TABLE 1 - GUIDELINE SPECIFICATIONS FOR STRUCTURAL FILL		
Sieve Size	**Percent by Weight Passing**	
6 Inch	100	
¾ Inch	70 – 100	
No. 40	15 – 70	
No. 200	5 – 35	
Percent Passing No. 200 Sieve	**Maximum Liquid Limit**	**Maximum Plastic Index**
5 – 20	40	15
21 – 35	35	10

Adjustments to the recommended limits presented in Table 1 can be provided to allow the use of other suitable material. Any such adjustments must be made and approved by the geotechnical engineer, in writing, prior to placing fill in structural areas.

Structural fill should be placed in maximum 12-inch thick (loose) level lifts or layers and densified to at least 90 percent relative compaction. The required moisture content of the soils prior to densification depends on the soil type and the moisture-density relationship test results (ASTM D1557). However, soils should have moisture contents of at least plus or minus 2 percent of optimum moisture (ASTM D1557). Higher moisture contents are acceptable if the soil lift is stable and required relative compaction can be attained in the soil lift and succeeding soil lifts.

Foundations can bear directly on native soils (granular or fine-grained) or structural fill. A separation layer consisting of either native granular or fine-grained soils or structural fill is recommended below structural elements overlying clay soils. The potential expansiveness of the clay soil depends primarily on moisture content, plasticity index, and percent of clay fines. Soils with higher plasticity indexes generally will have a higher potential for expansion. Based on our laboratory test results, soils with plastic indices ranging from 15 to 42 were encountered.

Where the soil's Plasticity Index exceeds ranges between 16 and 20, a separation layer between bottom of footing and slabs-on-grade of 2 feet and 1½ feet, respectively, is required. This separation layer should e increased to 3 feet and 2 feet for footings and slabs-on-grade, respectively, where the soils plasticity index exceeds 20. If over-excavation is required to achieve the designated separation thickness, the over-excavation should extend laterally from the edge of the foundation at least the depth of the over-excavation. For concrete slabs-on-grade, the over-excavation should extend at least 1-foot beyond the edge of the slab. Prior to the placement of structural fill or structural loading, soils should be prepared in accordance with the Site Preparation section of this report.

Trenching and Excavations

Excavations will require shoring or laying back of sidewalls to maintain adequate stability. Regulations amended in Part 1926, Volume 54, Number 209 of the Federal Register (Table B-1, October 31, 1989) require that the temporary sidewall slopes be no greater than those presented in Table 2 on the following page.

TABLE 2 - MAXIMUM ALLOWABLE TEMPORARY SLOPES

Soil or Rock Type	Maximum Allowable Slopes[1] For Deep Excavations Less Than 20 Feet Deep[2]
Stable Rock	Vertical (90 degrees)
Type A[3]	3H:4V (53 degrees)
Type B	1H:1V (45 degrees)
Type C	3H:2V (34 degrees)

NOTES:
1. Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.
2. Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer.
3. A short-term (open 24 hours or less) maximum allowable slope of 1H:2V (63 degrees) is allowed in excavations in Type A soil that are 12 feet or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet in depth shall be 3H:4V (53 degrees).

These regulations, including the classification system and the maximum slopes, have been adopted and are strictly enforced by the State of Nevada, Department of Industrial Relations, Division of Occupational Safety and Health. In general, Type A soils are cohesive, non-fissured soils, with an unconfined compressive strength of 1.5 tons per square foot (tsf) or greater. Type B are cohesive soils with an unconfined compressive strength between 0.5 and 1.5 tsf, while those designated as Type C have an unconfined compressive strength below 0.5 tsf. Numerous additional factors and exclusions are included in the formal definitions and should be reviewed if additional clarification is needed.

On the basis of our exploration program, it is our opinion that the bulk of the native site soils appear to be predominately Type B grading into weathered bedrock. Fill soils will be considered Type C. In any case bank stability will remain the responsibility of the contractor, who is present at the site, able to observe changes in ground conditions, and has control over personnel and equipment. All trenching and excavations should be performed and stabilized in accordance with local, state, and OSHA standards.

Foundations

Conventional shallow spread footings may be utilized for this project. Provided the foundation soils have been prepared in accordance with the recommendations of this report, the bearing pressures presented in Table 3 can be utilized for design.

TABLE 3 –ALLOWABLE FOUNDATION BEARING PRESSURES

Loading Conditions	Maximum Soil Net Allowable Bearing Pressures (1) (pounds per square foot)
Dead Loads plus full time live loads	2,000
Dead Loads plus live loads, plus transient wind, or seismic loads.	2,700

NOTE:
(1) The net allowable bearing pressure is that pressure at the base of the footing in excess of the adjacent overburden pressure.

For frost protection, footings should be set at least two feet below adjacent outside or unheated interior finish grades. Footings not located within frost prone areas should be placed at least 12 inches below surrounding ground. Regardless of loading, continuous spread foundations should be at least 18 and 12 inches wide, respectively, or as required by code.

Total settlements are anticipated to be on the order of ¾ of an inch. Differential settlement between adjacent columns/varying foundations is anticipated to be about ½ an inch.

Lateral loads, such as wind or seismic, may be resisted by passive soil pressure and friction on the bottom of the footing. The following design values are based on footings bearing on native granular soils or structural fill. The recommended coefficient of base friction is 0.37, which has been reduced by a factor of 1.5 on the ultimate strength. Design values for active and passive equivalent fluid pressures are 35 and 350 pounds per square foot per foot of depth, respectively.

PT slabs can be evaluated as an option when performing the design level geotechnical report.

Concrete Slabs

All concrete slabs should be directly underlain by imported, granular material with a minimum R-value of 60. Type 2, Class B aggregate base is the preferred alternative. However, other material types, such as decomposed granite, meeting the R-Value requirement are acceptable within private improvements such as floor slabs, patios, private walks, and driveways. Private flatwork shall be underlain by not less than 4 inches of compacted base. Within dedicated improvements, the base layer shall meet the City of Reno minimum requirements.

Interior concrete slabs-on-grade with moisture sensitive coatings or finishes shall be underlain by a moisture vapor barrier system. This system may consist of a 10-mil Stego-Wrap, or equivalent, placed on the pad subgrade immediately beneath the base course. The moisture vapor barrier must be installed in strict accordance with the manufacturer's instructions.

The Reno area is a region with exceptionally low relative humidity. As a consequence, concrete flatwork is prone to excessive shrinking and curling. Concrete mix proportions and construction techniques, including the addition of water and improper curing, can adversely affect the finished quality of the concrete and result in cracking, curling, and spalling of slabs. We recommend that all placement and curing be performed in accordance with procedures outlined by the American Concrete Institute. Special considerations should be given to accordance with procedures and cured during hot and cold weather conditions. Proper control joints and reinforcing should be provided to minimize any damage resulting from shrinkage.

Site Drainage

Adequate surface drainage must be constructed and maintained away from the structures. The permanent finish slopes away from the structure should be sufficient to allow water to drain away quickly from and prevent any ponding of water adjacent to the structure. All runoff should be collected within permanent drainage paths that can convey water off the property. A system of roof gutters and downspouts is recommended to collect roof drainage and direct it away from the foundations.

Crawl space moisture is commonly associated with raised floor construction. Introduction of this moisture is due to several sources including, but not limited to: excessive landscape irrigation, poor site drainage, excessive precipitation, or leakage pools, ponds, irrigation lines, etc. In addition, it is common for water to seep into fill material, perch on the native or compacted soils, travel along the surface of the native or compacted soils, and daylight where the cut/fill line is exposed. This perched water can daylight in any number of locations such as slope faces, roadway subgrade, and crawl spaces.

Foundation and stem wall backfill should be densified to at least 90 percent relative compaction in accordance with the requirements given under **Grading and Filling**. Compacting the backfill material decreases permeability and reduces the amount of irrigation and storm water available to enter under floor areas.

One proactive alternative is to collect moisture via drainage swales excavated along the interior of the perimeter footing and sloped to the sewer lateral and gravel bed the lateral from the crawl space to the sewer main. The trench should start out a minimum depth of 3 inches below footing grade and slope to the sewer lateral at approximately 1 percent, and should be backfilled with drain rock. Once the swales are constructed, the entire crawl space should be covered with a moisture barrier (visqueen sheeting). Refer to Appendix D for a construction detail of the proposed drainage swale alternative.

Crawl space drainage systems are not a guarantee against sporadic wetting caused by large storms, unusually large and/or rapid snowmelt or plumbing leaks. The purpose of a crawl space drainage system is to reduce the amount of moisture that accumulates in the crawl space under normal conditions and to drain the moisture caused by an unusual condition within a few days or possibly weeks. Positive crawl space drainage does not insure that soils are dry, only that ponding water is not normally present. As with other design features of the residence, maintenance is required.

Moist to wet soils are normal in crawl spaces, particularly in the vicinity of the perimeter footings. Any perceived harmful effects from this moisture are usually alleviated by the proper installation of a visqueen vapor retarder placed over the crawl space surface. Crawl space vents should be open all year to help facilitate the evaporation and reduction of moisture.

Asphaltic Concrete

The minimum structural section for roadways within the City of Reno is 4 inches of asphaltic concrete and 6 inches of base material overlying a subgrade soil with a support strength equivalent to an R-Value of 30 or greater. For subgrade soils with R-Values less than 30, base course thickness can be increased or a subbase layer can be utilized to upgrade the subgrade soil support characteristics to an equivalent R-value of 30. Because final grades are not yet determined, subgrade soils will be evaluated during performance of a design level geotechnical report grading or during construction to determine R-Value strength characteristic. If required, recommendations to upgrade subgrade soils to an equivalent R-Value of 30 will be provided.

If clay soils with a plasticity index between 16 and 20 15 are encountered at subgrade they should be over excavated at least 1½ foot cut below subgrade elevation and replaced with structural fill. This separation layer should be increased to 2 feet within areas where the plasticity index exceeds 20.

All roadway construction shall be in accordance with the approved plans and the Standard Specifications for Public Works Construction. Roadway subgrade shall be prepared in accordance with the requirements of this report. The upper 2-inches of the pavement mat shall use AC-20P oil. The Contractor should submit a pavement mix design to the Owner, for approval, at least 5 working days prior to paving. When pavement is placed directly adjacent to concrete flatwork, the finish compacted grade of the pavement be at least ¼ to ⅜ of an inch higher than the edge of adjacent concrete surface. This is to allow adequate compaction of the pavement without damaging the concrete.

Maintenance is **mandatory** to long-term pavement performance. Maintenance refers to any activity performed on the pavement that is intended to preserve its original service life or load-carrying capacity. Examples of maintenance activities include patching, crack or joint sealing, and seal coats. If these maintenance activities are ignored or deferred, premature failure of the pavement **will occur**.

The cost associated with proper maintenance is generally much less than the cost for reconstruction due to the premature failure of the pavement. Therefore, since pavement quality is an integral consideration in the formulation of our design recommendations, we strongly recommend the owner/project manager implement a pavement management program.

Premature failure of asphaltic concrete frequently occurs adjacent to poorly graded ponding areas and/or landscape areas. Failures may occur due to excessive precipitation, irrigation and landscaping water infiltrating into the subgrade soils causing subgrade failure. As such, in areas where the design team suspects that saturation of the subgrade soils beneath asphaltic pavement may occur, it is strongly recommended the owner/project manager install a subdrain system to eliminate the potential for saturation of subgrade soils. The subdrain system should discharge into a permanent drainage area that will not impede drainage flow to cause the system to back-up and/or clog. Appropriate maintenance procedures should be implemented to ensure the subdrain system does not plug and allow for proper drainage of surface and subsurface water beneath paved areas. Subdrain location and configuration should be evaluated once final grading and landscaping plans have been prepared. The project civil engineer and landscape designer should review all potential areas for subdrain installation.

CONSTRUCTION OBSERVATION AND TESTING SERVICES

The recommendations presented in this report are based on the assumption that the contractor performs his work as required by the project documents and that owner/project manager provides sufficient field-testing and construction review during all phases of construction. Prior to construction, the owner/project manager should schedule a pre-job conference including, but not limited to, the owner, architect, civil engineer, the general contractor, earthwork and materials subcontractors, building official, and geotechnical engineer. It is the owner's/project manager responsibility to set-up this meeting and contact all responsible parties. The conference will allow parties to review the project plans, specifications, and recommendations presented in this report, and discuss applicable material quality and mix design requirements. All quality control reports should be submitted to the owner/project manger for review and distributed to the appropriate parties.

During construction, James Edward Engineering, Inc. should have the opportunity to provide sufficient on-site observation of site preparation and grading, over-excavation, fill placement, foundation installation, and paving. These observations would allow us to document that the geotechnical conditions are as anticipated and that the contractor's work meets with the criteria in the approved plans and specifications.

STANDARD LIMITATION CLAUSE

This report has been prepared in accordance with generally accepted local geotechnical practices. The analyses and recommendations submitted are based upon field exploration performed at the locations shown on Plate A-1 – Site Map and Approximate Exploration Locations of this report. This report does not reflect soils variations that may become evident during the construction period, at which time re-evaluation of the recommendations may be necessary. We recommend our firm be retained to perform construction observation in all phases of the project related to geotechnical factors to document compliance with our

recommendations. The owner/project manger is responsible for distribution of this geotechnical report to all designers and contractors whose work is related to geotechnical factors.

All plans and specifications should be reviewed by the design engineer responsible for this geotechnical report, to determine if they have been completed in accordance with the recommendations contained in this report, prior to submitting to the building department for review. It is the owner's/project manager responsibility to provide the plans and specifications to the engineer.

Water level readings were made on the date shown on Plate A-3 (Logs of Test Borings) and Plate A-4 (Logs of Test Pits) of this report. Fluctuations in the water table may occur due to rainfall, temperature, seasonal runoff or adjacent irrigation practices. Construction planning should be based on assumptions of possible variations.

This report has been prepared to provide information allowing the architect and engineer to design the project. The owner/project manager is responsible for distribution of this report to all designers and contractors whose work is affected by geotechnical aspects. In the event of changes in the design, location, or ownership of the project after presentation of this report, our recommendations should be reviewed and possibly modified by the geotechnical engineer. If the geotechnical engineer is not accorded the privilege of making this recommended review, he can assume no responsibility for misinterpretation or misapplication of his recommendations or their validity in the event changes have been made in the original design concept without his prior review. The engineer makes no other warranties, either expressed or implied, as to the professional advice provided under the terms of this agreement and included in this report.

This report was prepared by James Edward Engineering, Inc. for the account North Valley Investment Group, LLC. The material in it reflects James Edward Engineering Inc.'s best judgment in light of the information available to it at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. James Edward Engineering Inc. accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

REFERENCES

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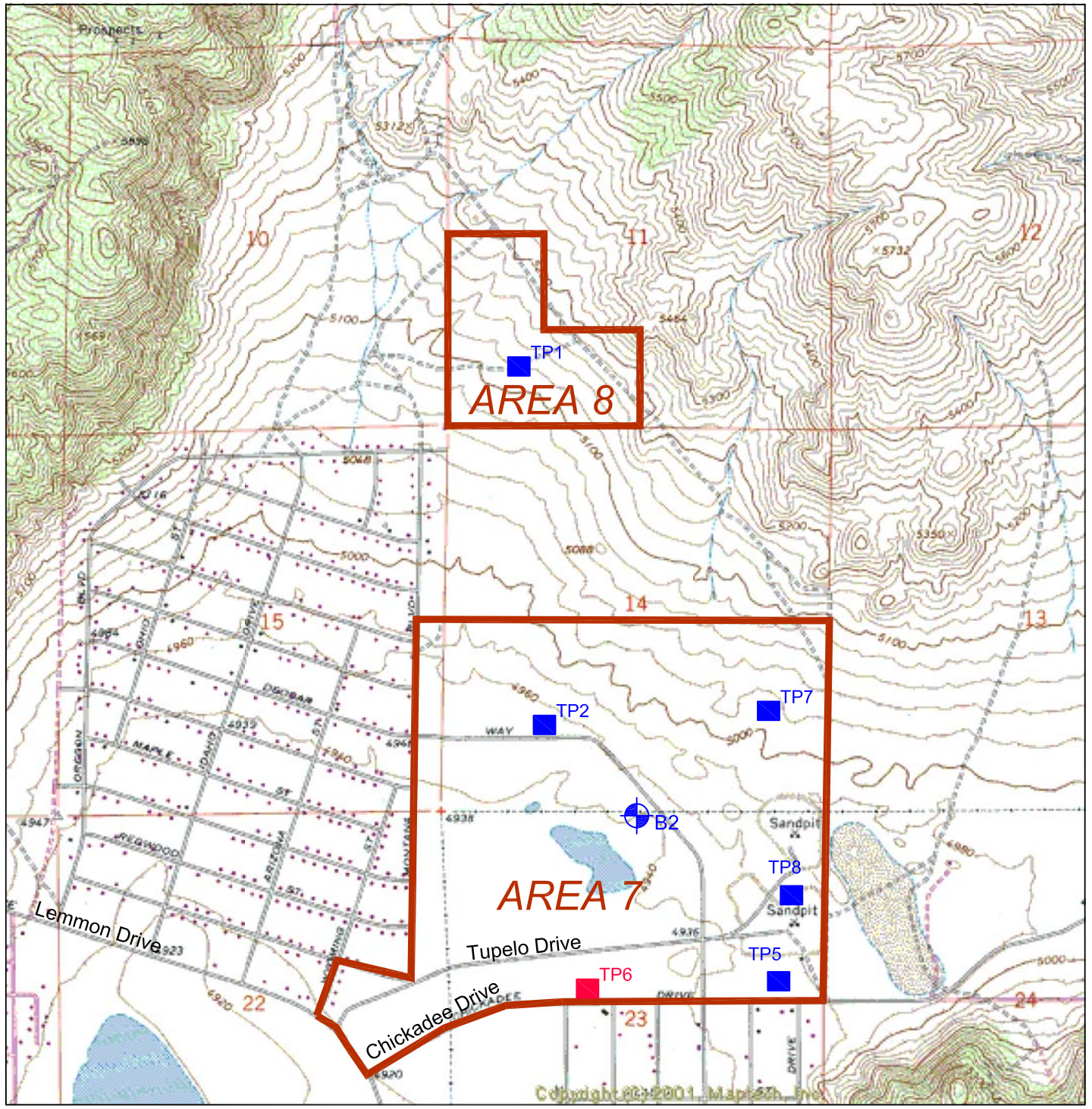
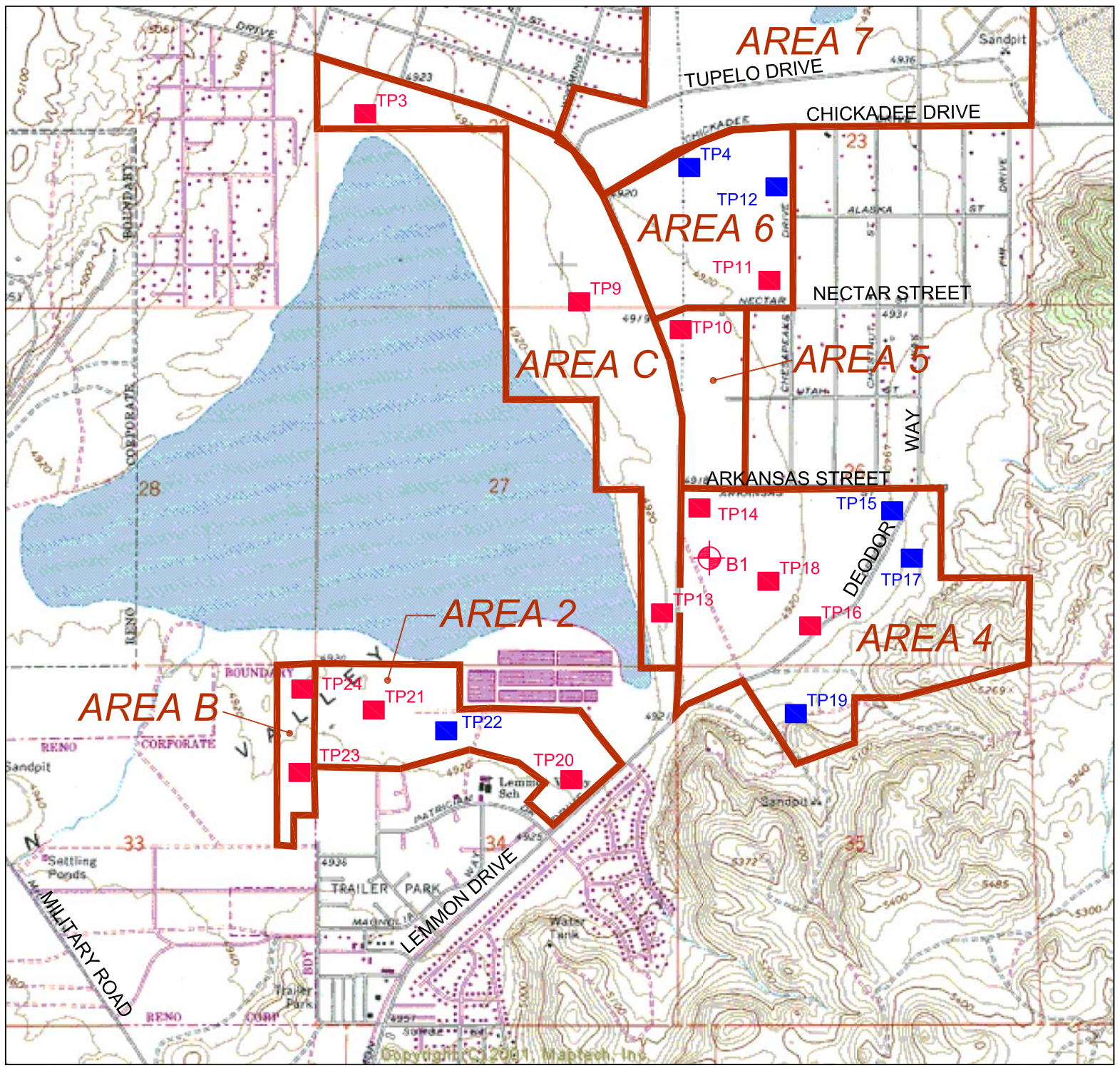
APPENDIX A





LEGEND

TP24 APPROXIMATE TEST PIT LOCATIONS

B2 APPROXIMATE BORING LOCATIONS

LEGEND - COLOR CODING

GRANULAR SOILS ENCOUNTERED WITHIN TEST PIT OR BORING

CLAY SOILS ENCOUNTERED WITHIN UPPER 5 FEET OF TEST PIT OR BORING

APPROX. SCALE
1"=2000'

N

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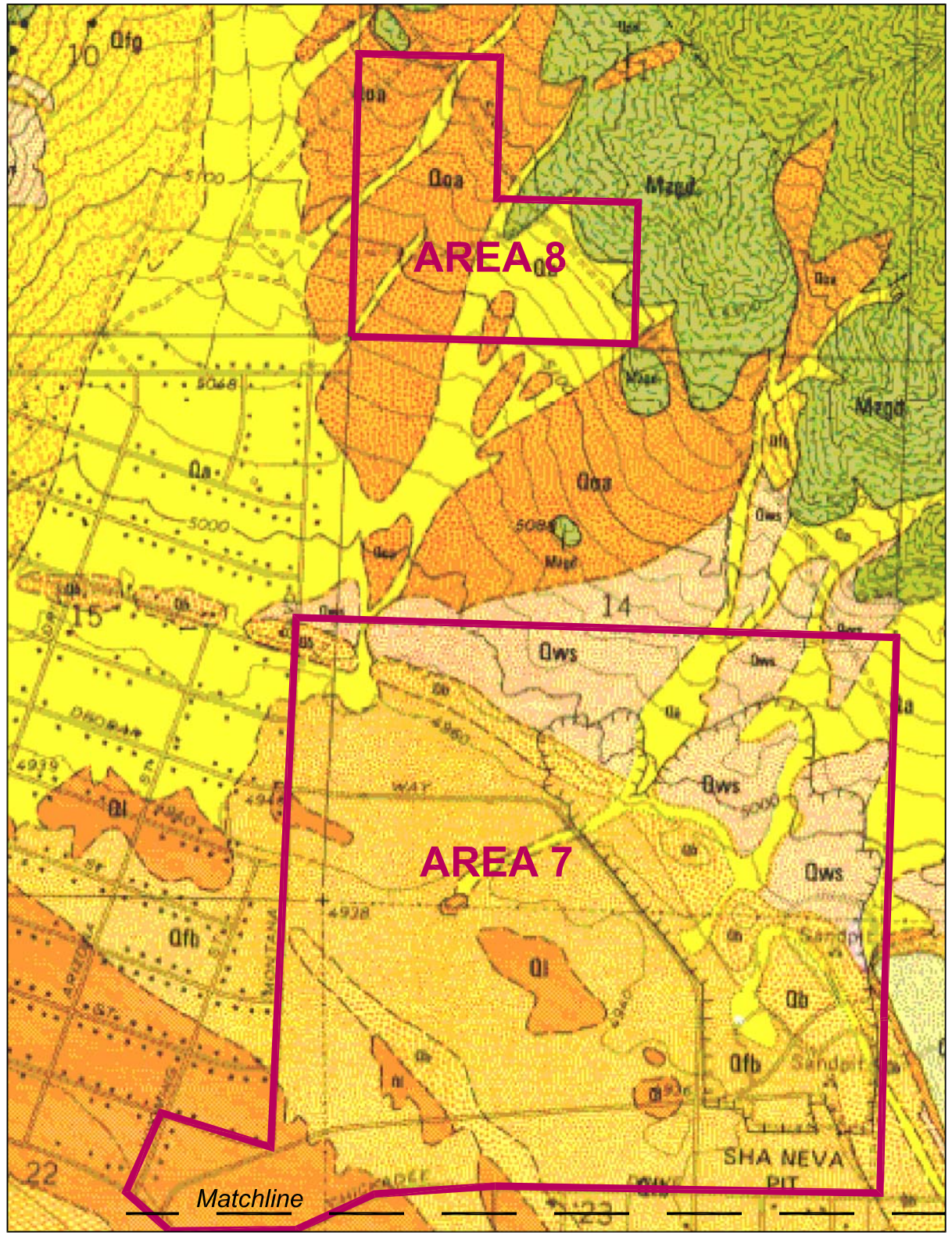
SITE MAP AND APPROXIMATE EXPLORATION LOCATIONS

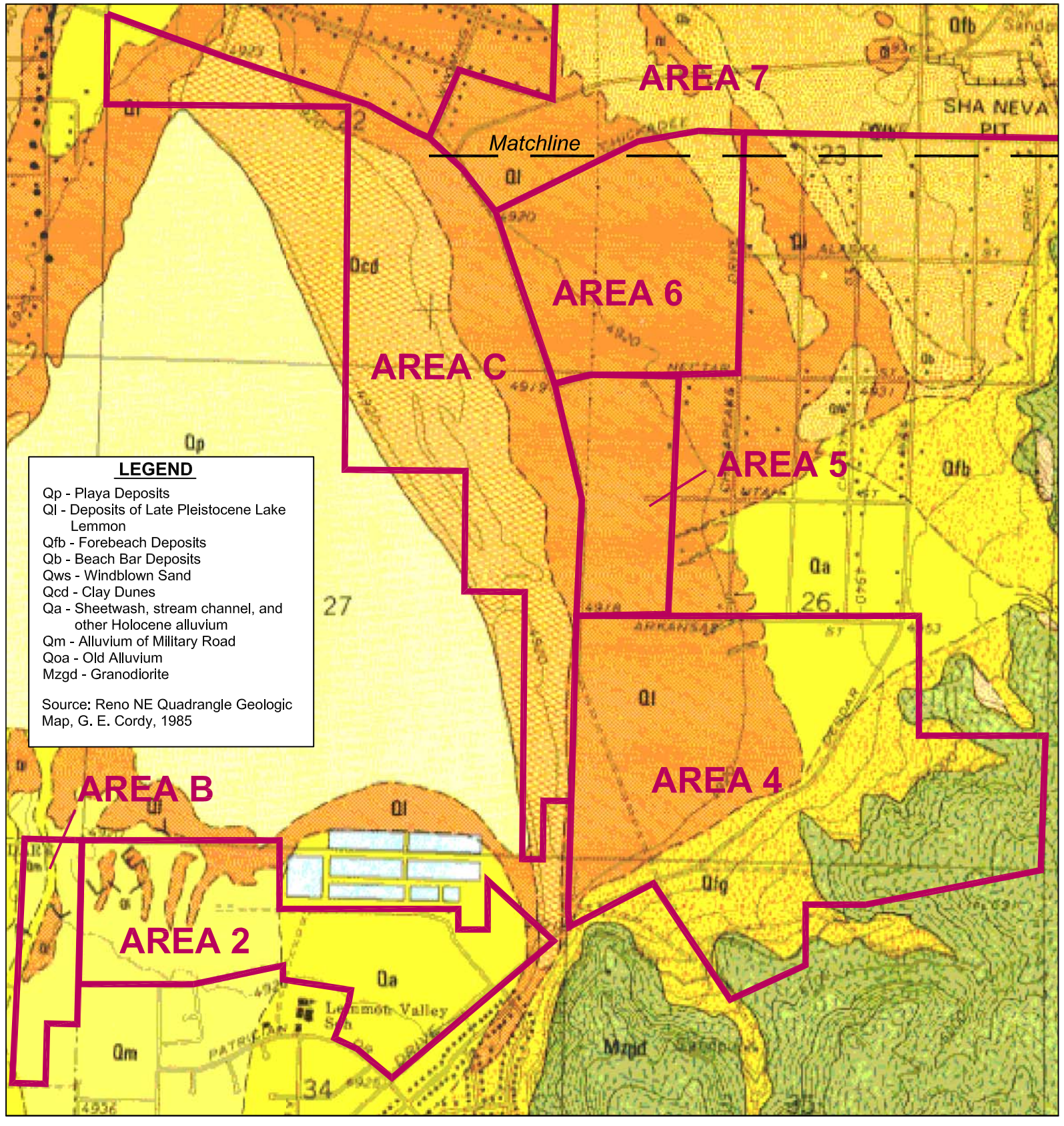
Geotechnical Investigation
LEMMON VALLEY PARCELS

PROJECT NO.: 1181.01
DATE: 05-23-05

Plate A-1



N
NTS



LEGEND

Qp - Playa Deposits
Ql - Deposits of Late Pleistocene Lake Lemmon
Qfb - Forebeach Deposits
Qb - Beach Bar Deposits
Qws - Windblown Sand
Qcd - Clay Dunes
Qa - Sheetwash, stream channel, and other Holocene alluvium
Qm - Alluvium of Military Road
Qoa - Old Alluvium
Mzgd - Granodiorite

Source: Reno NE Quadrangle Geologic Map, G. E. Cordy, 1985

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GEOLOGIC MAP

Geotechnical Investigation
LEMMON VALLEY PARCELS

PROJECT NO.: 1124.01
DATE: 07-14-05

Plate A-2

LOG OF TEST BORING NO. B1
LIQUEFACTION ANALYSIS

PROJECT NAME:	Lemmon Valley Parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	
DATE:	11/22/2004	EXPLORATION EQUIPMENT:	CME-55

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Blows per Foot	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
								0–10': **Sandy Lean Clay (CL)**, stiff, dry to moist, brown, moderate vegetation			
					18	6			300	0.39 1.00	1.15 0.75 1.00
5	CL				16	7	D		500	0.5 1.00	1.15 0.75 1.00
					18	9			700	0.59 1.00	1.15 0.75 1.00
					21	12			900	0.67 1.00	1.15 0.75 1.00
10											
					25	16		10'-17': **Lean Clay with Sand (CL)** – stiff, moist, brown	1100	0.74 1.00	1.15 0.75 1.00
	CL				31	25	M		1300	0.81 1.00	1.15 0.85 1.00
15					32	23			1500	0.75 1.00	1.15 0.85 1.00
	SM				40	36	D/M	17'–19': **Silty Sand (SM)**, dense, dry to moist, brown	1700	0.92 1.00	1.15 0.85 1.00
					36	34	M	19'-20½': **Lean Clay (CL)**, stiff, moist, brown	1900	0.97 1.00	1.15 0.85 1.00
20	CL										
	SM				50	56	D	20½'-24': **Silty Sand (SM)**, dense to very dense, dry, brown	2100	1.02 1.00	1.15 0.95 1.00
					50	58			2300	1.07 1.00	1.15 0.95 1.00
25								24'-32': **Fat Clay with Sand (CH)**, medium stiff, moist, brown			
					17	21			2600	1.14 1.00	1.15 0.95 1.00
	CH						M				
					22	29			2900	1.2 1.00	1.15 0.95 1.00
30											
					18	26			3100	1.24 1.00	1.15 1.00 1.00
								32'-36½': **Clayey Sand (SC)**, medium dense, moist, brown			
	SC				21	31	M		3330	1.29 1.00	1.15 1.00 1.00
35											
					20	31			3675	1.36 1.00	1.15 1.00 1.00
	CH							36½'-41½': **Fat Clay (CH)**, medium stiff, moist, brown to grey			
					10	17	M		3875	1.39 1.00	1.15 1.00 1.00
41					9	15			4175	1.44 1.00	1.15 1.00 1.00

GROUNDWATER & SOIL MOISTURE					SAMPLE TYPE		LABORATORY TESTS
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**- Atterberg Limits
▽				**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**- Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**- Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**- Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** - Direct Shear

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Plate A-3

LOG OF TEST BORING NO. B2
LIQUEFACTION ANALYSIS

PROJECT NAME:	Lemmon Valley Parcels	PROJECT NUMBER:	1106.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	
DATE:	11/22/2004	EXPLORATION EQUIPMENT:	CME-55

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Blows per Foot	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
0	SM						M	0–2': **Siltv Sand (SM)**. medium dense. moist. brown, moderate vegetation growth			
	SC						D	2'–7': **Clayey Sand (SC)**, dense, dry, brown			
				S	51	18			345	0.42 1.00	1.15 0.75 1.00
5				S	29	14.8			690	0.59 1.00	1.15 0.75 1.00
	SC						M	7'-10': **Clayey Sand (SC)**, medium dense to dense, moist, brown	920	0.67 1.00	1.15 0.75 1.00
				S	38	22					
10				S	51	35.2		10'-20': **Silty Sand (SM)**, dense to very dense, moist, brown	1265	0.8 1.00	1.15 0.75 1.00
				S	51	42.9			1495	0.86 1.00	1.15 0.85 1.00
15	SM			S	52	48.8	M		1840	0.96 1.00	1.15 0.85 1.00
				S	50	49.4			2070	1.01 1.00	1.15 0.85 1.00
20				S	40	48.1		20'-35': **Silty Sand (SM)**, dense to very dense, moist, brown, with interbeds of **Poorly Graded Sand**, very difficult to drill.	2415	1.1 1.00	1.15 0.95 1.00
				S	38	47.7			2645	1.15 1.00	1.15 0.95 1.00
25				S	35	46.6			2990	1.22 1.00	1.15 0.95 1.00
	SM						M				
				S	70	97.1			3220	1.27 1.00	1.15 0.95 1.00
30				S	50	77.1			3565	1.34 1.00	1.15 1.00 1.00
35											

GROUNDWATER & SOIL MOISTURE				SAMPLE TYPE		LABORATORY TESTS
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings / **B** - Bulk Sample	**A**- Atterberg Limits
▽				**M** - MOIST	**C** - CME Sample / **R** - Rotary Cuttings	**B**- Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample	**C**- Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample	**MD**- Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube	**DS** - Direct Shear

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Plate A-3

LOG OF TEST PIT NO. 1

PROJECT NAME:	Lemmon Valley Parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	5120' (USGS Topo)
DATE:	2/8/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1	SM			B	1	M	0-3': **Silty Sand (SM)**, moist, loose to medium dense, brown, with lenses of clean sand.			
2										
3										
4	SC			B	2	S	3-10': **Clayey Sand (SC)**, slightly moist, dense, brown			
5										
6										
7							NOTE: Weathered bedrock encountered at 7 feet.			
8				B	3					
9										
10							Bottom of Test Pit @ 10 Feet No Free Water Encountered			

GROUNDWATER & SOIL MOISTURE				SAMPLE TYPE		LABORATORY TESTS
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings / **B** - Bulk Sample	**A**- Atterberg Limits
▽	NE		2/8/2005	**M** - MOIST	**C** - CME Sample / **R** - Rotary Cuttings	**B**- Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample	**C**- Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample	**MD**- Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube	**DS** - Direct Shear

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LOG OF TEST PIT NO. 2

PROJECT NAME:	Lemmon Valley parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4955' (USGS Topo)
DATE:	2/8/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1	SC					M	0-2': **Clayey Sand (SC)**, moist, loose to medium dense, brown.			
2	SC			B	4	S	2'-10½': **Clayey Sand (SC)**, slightly moist, medium dense, with interbeds of poorly graded sand.			
3				B	5					
4										
5										
6										
7				B	6					
8										
9										
10										

Bottom of Test Pit @ 10½ Feet
No Free Water Encountered

GROUNDWATER & SOIL MOISTURE				
	Depth	Hour	Date	**D** - DRY
▽	NE		2/8/2005	**M** - MOIST
▼				**W** - WET
NE- No Free Water Encountered				**V**-VERY MOIST
				S- SLIGHTLY MOIST

SAMPLE TYPE	
A - Drill Cuttings	**B** - Bulk Sample
C - CME Sample	**R** - Rotary Cuttings
S- 2" O.D. 1.38" I.D. Tube Sample	
U- 3" O.D. 2.42 " I.D. Tube Sample	
T- 3" O.D. Thin-Walled Shelby Tube	

LABORATORY TESTS	
A-	Atterberg Limits
B-	Grain Size Distribution
C-	Consolidation
MD-	Moisture/Density
DS -	Direct Shear

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Plate
A-4

LOG OF TEST PIT NO. 3

PROJECT NAME:	Lemmon Valley parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4920' (USGS Topo)
DATE:	2/8/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1							0-4': **Fat Clay (CH)**, slightly moist, stiff, brown, roots to 2'.			
2	CH					S				
3				B	7					
4										
5	CH					M	4-10½': **Fat Clay (CH)**, moist, stiff, brown.			
6				B	8				23.7	A,B
7										
8										
9										
10				B	9					

Bottom of Test Pit @ 10½ Feet
No Free Water Encountered

GROUNDWATER & SOIL MOISTURE				
	Depth	Hour	Date	**D** - DRY
▽	NE		2/8/2005	**M** - MOIST
▼				**W** - WET
NE- No Free Water Encountered				**V**-VERY MOIST
				S- SLIGHTLY MOIST

SAMPLE TYPE	
A - Drill Cuttings	**B** - Bulk Sample
C - CME Sample	**R** - Rotary Cuttings
S- 2" O.D. 1.38" I.D. Tube Sample	
U- 3" O.D. 2.42 " I.D. Tube Sample	
T- 3" O.D. Thin-Walled Shelby Tube	

LABORATORY TESTS	
A-	Atterberg Limits
B-	Grain Size Distribution
C-	Consolidation
MD-	Moisture/Density
DS -	Direct Shear

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Plate
A-4

LOG OF TEST PIT NO. 4

PROJECT NAME:	Lemmon Valley parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4930' (USGS Topo)
DATE:	2/8/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1	SC					M	0-2': **Clayey Sand (SC)**, moist, medium dense to dense, brown.			
2	SP-SM			B	10	S	2'-10 ½': **Poorly Graded Sand with Silt (SP-SM)**, slightly moist, loose to medium dense, light brown.			
3										
4				B	11					
5										
6										
7				B	12					
8										
9										
10										

Bottom of Test Pit @ 10½ Feet
No Free Water Encountered

GROUNDWATER & SOIL MOISTURE				
	Depth	Hour	Date	**D** - DRY
▽	NE		2/8/2005	**M** - MOIST
▼				**W** - WET
NE- No Free Water Encountered				**V**-VERY MOIST
				S- SLIGHTLY MOIST

SAMPLE TYPE	
A - Drill Cuttings	**B** - Bulk Sample
C - CME Sample	**R** - Rotary Cuttings
S- 2" O.D. 1.38" I.D. Tube Sample	
U- 3" O.D. 2.42 " I.D. Tube Sample	
T- 3" O.D. Thin-Walled Shelby Tube	

LABORATORY TESTS	
A-	Atterberg Limits
B-	Grain Size Distribution
C-	Consolidation
MD-	Moisture/Density
DS -	Direct Shear

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Plate
A-4

LOG OF TEST PIT NO. 5

PROJECT NAME:	Lemmon Valley parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4950' (USGS Topo)
DATE:	2/8/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1-8	SP-SM			B	13	M to S	0-8': **Poorly Graded Sand with Silt (SP-SM)**, moist to slightly moist, medium dense, brown, with interbeds of clean sand.			
8-11	SP			B	14	S	8'-11': **Poorly Graded Sand (SP)**, slightly moist, medium dense to dense, brown, with trace to few gravels.			

Bottom of Test Pit @ 11 Feet
No Free Water Encountered

GROUNDWATER & SOIL MOISTURE					SAMPLE TYPE		LABORATORY TESTS
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**- Atterberg Limits
▽	NE		2/8/2005	**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**- Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**- Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**- Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** - Direct Shear

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Plate
A-4

LOG OF TEST PIT NO. 6

PROJECT NAME:	Lemmon Valley parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4930' (USGS Topo)
DATE:	2/8/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1	SC					M	0-1½': **Clayey Sand (SC)**, moist, loose to medium dense, brown.			
2	SP-SM			B	15	S	1½' -3': **Poorly Graded Sand with Silty and Gravel (SP-SM)**, slightly moist, medium dense, brown.			
3										
4	CL					V	3'-10 ½': **Sandy Lean Clay (CL)**, very moist, stiff, brown.			
5				B	16				47.9	A,B
6										
7										
8										
9										
10										

Bottom of Test Pit @ 10½ Feet
No Free Water Encountered

GROUNDWATER & SOIL MOISTURE				
	Depth	Hour	Date	**D** - DRY
▽	NE		2/8/2005	**M** - MOIST
▼				**W** - WET
NE- No Free Water Encountered				**V**-VERY MOIST
				S- SLIGHTLY MOIST

SAMPLE TYPE	
A - Drill Cuttings	**B** - Bulk Sample
C - CME Sample	**R** - Rotary Cuttings
S- 2" O.D. 1.38" I.D. Tube Sample	
U- 3" O.D. 2.42 " I.D. Tube Sample	
T- 3" O.D. Thin-Walled Shelby Tube	

LABORATORY TESTS	
A-	Atterberg Limits
B-	Grain Size Distribution
C-	Consolidation
MD-	Moisture/Density
DS -	Direct Shear

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Plate
A-4

LOG OF TEST PIT NO. 7

PROJECT NAME:	Lemmon Valley parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	5010' (USGS Topo)
DATE:	2/8/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1	SM					M	0-11½': **Silty Sand (SM)**, moist, medium dense to dense, brown, trace gravel.			
2										
3				B	17					
4										
5										
6										
7				B	18					
8							NOTE: Excavation difficult at 8 feet.			
9							NOTE: Occasional gravel and isolated small cobbles below 9 feet.			
10										
11										
							Bottom of Test Pit @ 11½ Feet No Free Water Encountered			

GROUNDWATER & SOIL MOISTURE				
	Depth	Hour	Date	**D** - DRY
▽	NE		2/8/2005	**M** - MOIST
▼				**W** - WET
NE- No Free Water Encountered				**V**-VERY MOIST
				S- SLIGHTLY MOIST

SAMPLE TYPE	
A - Drill Cuttings	**B** - Bulk Sample
C - CME Sample	**R** - Rotary Cuttings
S- 2" O.D. 1.38" I.D. Tube Sample	
U- 3" O.D. 2.42 " I.D. Tube Sample	
T- 3" O.D. Thin-Walled Shelby Tube	

LABORATORY TESTS	
A-	Atterberg Limits
B-	Grain Size Distribution
C-	Consolidation
MD-	Moisture/Density
DS -	Direct Shear

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Plate
A-4

LOG OF TEST PIT NO. 8

PROJECT NAME:	Lemmon Valley parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4960' (USGS Topo)
DATE:	2/8/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1	SM			B	19	M	0-11': **Silty Sand (SM)**, moist, dense to medium dense, brown.			
2										
3										
4										
5										
6										
7										
8										
9										
10										
11	SC					M	11'-12: **Clayey Sand (SC)**, moist, dense to medium dense, brown.			
12							Bottom of Test Pit @ 12 Feet No Free Water Encountered			

GROUNDWATER & SOIL MOISTURE					SAMPLE TYPE		LABORATORY TESTS	
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**-	Atterberg Limits
▽	NE		2/8/2005	**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**-	Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**-	Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**-	Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** -	Direct Shear

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LOG OF TEST PIT NO. 9

PROJECT NAME:	Lemmon Valley parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4920' (USGS Topo)
DATE:	2/8/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1							0-10': **Fat Clay (CH)**, slightly moist to moist, medium stiff to stiff, brown, roots to 2½ feet.			
2										
3				B	20				18.2	A,B
4										
5	CH					S to M				
6										
7										
8										
9										
10							Bottom of Test Pit @ 10 Feet No Free Water Encountered			

GROUNDWATER & SOIL MOISTURE					SAMPLE TYPE		LABORATORY TESTS
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**- Atterberg Limits
▽	NE		2/8/2005	**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**- Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**- Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**- Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** - Direct Shear

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LOG OF TEST PIT NO. 10

PROJECT NAME:	Lemmon Valley parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4920' (USGS Topo)
DATE:	2/8/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1	CL			B	21	S to M	0-10': **Sandy Lean Clay (CL)**, slightly moist to moist, stiff, brown, moderate root growth to 1 foot', occasional roots from 1 to 1½ feet.	0.5	29.3	A,B
2										
3								> 4		
4								> 4		
5										
6										
7										
8										
9										
10							Bottom of Test Pit @ 10 Feet No Free Water Encountered			

GROUNDWATER & SOIL MOISTURE				SAMPLE TYPE		LABORATORY TESTS	
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**- Atterberg Limits
▽	NE		2/8/2005	**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**- Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**- Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**- Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** - Direct Shear

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LOG OF TEST PIT NO. 11

PROJECT NAME:	Lemmon Valley parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4925' (USGS Topo)
DATE:	2/8/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1							0-8': **Sandy Lean Clay (CL)**, moist to slightly moist, stiff, brown, occasional organics in upper 12 inches.			
2										
3										
4	CL			B	22	M to S			14.7	A,B
5										
6										
7				B	23					
8										
9	SM					S	8'-10': **Silty Sand (SM)**, slightly moist, medium dense, brown.			
10										

Bottom of Test Pit @ 10 Feet
No Free Water Encountered

GROUNDWATER & SOIL MOISTURE					SAMPLE TYPE		LABORATORY TESTS	
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**-	Atterberg Limits
▽	NE		2/8/2005	**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**-	Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**-	Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**-	Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** -	Direct Shear

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LOG OF TEST PIT NO. 12

PROJECT NAME:	Lemmon Valley parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4930' (USGS Topo)
DATE:	2/8/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1	SC					M to S	0-8': **Clayey Sand (SC)**, moist to slightly moist, dense to very dense, brown, moisture decreases with depth, roots in top 1 foot.			
2										
3				B	24					
4										
5							NOTE: Slightly cemented with isolated Clay interbeds at 5 feet.			
6										
7				B	25					
8	CL					M	8'-9½': **Sandy Lean Clay (CL)**, moist, stiff, brown, with interbeds of poorly graded sand.			
9							Bottom of Test Pit @ 9½ Feet No Free Water Encountered			

GROUNDWATER & SOIL MOISTURE					SAMPLE TYPE		LABORATORY TESTS
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**- Atterberg Limits
▽	NE		2/8/2005	**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**- Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**- Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**- Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** - Direct Shear

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LOG OF TEST PIT NO. 13

PROJECT NAME:	Lemmon Valley parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4920' (USGS Topo)
DATE:	2/8/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1							0-10': **Fat Clay (CH)**, moist to slightly moist, stiff, brown, minor organics.			
2								~ 1½		
3								~ 2		
4				B	26				25.5	A,B
5	CH					M to S		> 4		
6										
7										
8										
9										
10										

Bottom of Test Pit @ 10 Feet
No Free Water Encountered

GROUNDWATER & SOIL MOISTURE					SAMPLE TYPE		LABORATORY TESTS
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**- Atterberg Limits
▽	NE		2/8/2005	**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**- Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**- Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**- Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** - Direct Shear

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LOG OF TEST PIT NO. 14

PROJECT NAME:	Lemmon Valley parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4925' (USGS Topo)
DATE:	2/8/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1							0-12': **Fat Clay (CH)**, moist, medium stiff to stiff, brown.			
2										
3				B	27				19.1	A,B
4										
5										
6	CH					M/D	NOTE: Moisture decreases with depth.			
7										
8										
9				B	28					
10										
11										
12										
							Bottom of Test Pit @ 10 Feet No Free Water Encountered			

GROUNDWATER & SOIL MOISTURE					SAMPLE TYPE		LABORATORY TESTS	
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**-	Atterberg Limits
▽	NE		2/8/2005	**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**-	Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**-	Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**-	Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** -	Direct Shear

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LOG OF TEST PIT NO. 15

PROJECT NAME:	Lemmon Valley Parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4940' (USGS Topo)
DATE:	2/9/2005	EXPLORATION EQUIPMENT:	Cat 480D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1	SM					S	0-10': **Silty Sand (SM)**, slightly moist, loose near the surface grading to medium dense to dense, brown, roots to 1 foot, moderate vegetation.			
2										
3				B	29					
4										
5										
6										
7										
8										
9										
10							Bottom of Test Pit @ 10 Feet No Free Water Encountered			

GROUNDWATER & SOIL MOISTURE					SAMPLE TYPE		LABORATORY TESTS	
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**-	Atterberg Limits
▽	NE		2/9/2005	**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**-	Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**-	Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**-	Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** -	Direct Shear

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LOG OF TEST PIT NO. 16

PROJECT NAME:	Lemmon Valley Parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4930' (USGS Topo)
DATE:	2/9/2005	EXPLORATION EQUIPMENT:	Cat 480D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1	SM			B	30	M	0-2½': **Silty Sand (SM)**, moist, loose to medium dense, brown.			
2										
3	SM			B	31	M to S	2½-4': **Silty Sand (SM)**, moist to slightly moist, dense, brown, slightly cemented.			
4										
5	CH			B	32	M	4'-9': **Fat Clay (CH)**, moist, stiff, green/gray.		27.5	A,B
6										
7										
8										
9										

Bottom of Test Pit @ 9 Feet
No Free Water Encountered

GROUNDWATER & SOIL MOISTURE					SAMPLE TYPE		LABORATORY TESTS
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**- Atterberg Limits
▽	NE		2/9/2005	**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**- Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**- Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**- Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** - Direct Shear

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LOG OF TEST PIT NO. 17

PROJECT NAME:	Lemmon Valley parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4950' (USGS Topo)
DATE:	2/9/2005	EXPLORATION EQUIPMENT:	Cat 480D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1	SM					M to S	0-8': **Silty Sand (SM)**, moist to slightly moist, loose to dense, brown, organics upper 1 foot.			
2										
3				B	33		NOTE: Test pit near outcrop of granite bedrock, hard, strong, little weathering, excavates to a Sandy Gravel consistency			
4										
5										
6				B	34					
7										
8										

Bottom of Refusal Met @ 8 Feet
No Free Water Encountered

GROUNDWATER & SOIL MOISTURE					SAMPLE TYPE		LABORATORY TESTS	
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**-	Atterberg Limits
▽	NE		2/9/2005	**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**-	Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**-	Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**-	Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** -	Direct Shear

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LOG OF TEST PIT NO. 18

PROJECT NAME:	Lemmon Valley parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4950' (USGS Topo)
DATE:	2/9/2005	EXPLORATION EQUIPMENT:	Cat 480D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1	CH			B	35	M/S	0-11½': **Fat Clay (CH)**, moist to slightly moist, medium stiff, brown, roots to 18 inches.			
2				B	36				25.2	A,B
3				B	37					
4				B	38					
5				B	39					
6				B	40					
7				B	41					
8										
9				B	42					
10				B	43					
11										

Bottom of Test Pit @ 11½ Feet
No Free Water Encountered

GROUNDWATER & SOIL MOISTURE					SAMPLE TYPE		LABORATORY TESTS
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**- Atterberg Limits
▽	NE		2/9/2005	**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**- Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**- Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**- Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** - Direct Shear

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LOG OF TEST PIT NO. 19

PROJECT NAME:	Lemmon Valley Parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	5000' (USGS Topo)
DATE:	2/9/2005	EXPLORATION EQUIPMENT:	Cat 480D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1							0-10': **Silty Sand (SM)**, moist, medium dense to dense, brown, organics in upper 1 foot.			
2										
3										
4				B	44					
5	SM					M/D				
6										
7							Becomes dry			
8										
9										
10							Bottom of Test Pit @ 10 Feet No Free Water Encountered			

GROUNDWATER & SOIL MOISTURE				
	Depth	Hour	Date	**D** - DRY
▽	NE		2/9/2005	**M** - MOIST
▼				**W** - WET
NE- No Free Water Encountered				**V**-VERY MOIST
				S- SLIGHTLY MOIST

SAMPLE TYPE	
A - Drill Cuttings	**B** - Bulk Sample
C - CME Sample	**R** - Rotary Cuttings
S- 2" O.D. 1.38" I.D. Tube Sample	
U- 3" O.D. 2.42 " I.D. Tube Sample	
T- 3" O.D. Thin-Walled Shelby Tube	

LABORATORY TESTS	
A-	Atterberg Limits
B-	Grain Size Distribution
C-	Consolidation
MD-	Moisture/Density
DS -	Direct Shear

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LOG OF TEST PIT NO. 20

PROJECT NAME:	Lemmon Valley Parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4920' (USGS Topo)
DATE:	2/11/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1	SC-SM			B	45	W to M	0-1½': **Silty Clayey Sand (SC-SM)**, wet to moist, loose to medium dense, brown.			
2	CH					M	1½'-10': **Fat Clay with Sand (CH)**, moist, stiff, brown.			
3				B	46				22.4	A,B
4										
5										
6							NOTE: Color change to green at 6 feet.			
7				B	47					
8										
9										
10							Bottom of Test Pit @ 10 Feet. No Free Water Encountered			

GROUNDWATER & SOIL MOISTURE					SAMPLE TYPE		LABORATORY TESTS	
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**-	Atterberg Limits
▽	NE		2/11/2005	**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**-	Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**-	Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**-	Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** -	Direct Shear

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LOG OF TEST PIT NO. 21

PROJECT NAME:	Lemmon Valley Parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4920' (USGS Topo)
DATE:	2/11/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1	SC					W/M	0-2': **Clayey Sand (SC)**, wet to moist, loose to medium dense, brown, isolated roots to 1 foot.			
2	CL					M	2'-10': **Lean Clay with Sand (CL)**, moist, stiff, brown.			
4				B	48				15.9	A,B
6				B	49					
10							Bottom of Test Pit @ 10 Feet No Free Water Encountered			

GROUNDWATER & SOIL MOISTURE					SAMPLE TYPE		LABORATORY TESTS	
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**-	Atterberg Limits
▽	NE		2/11/2005	**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**-	Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**-	Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**-	Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** -	Direct Shear

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LOG OF TEST PIT NO. 22

PROJECT NAME:	Lemmon Valley Parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4920' (USGS Topo)
DATE:	2/11/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1	SC					M to S	0-9': **Clayey Sand (SC)**, moist to slightly moist, medium dense, brown.			
2				B	50				11.4	A,B
3										
4										
5										
6										
7										
8										
9										

Bottom of Test Pit @ 9 Feet
No Free Water Encountered

GROUNDWATER & SOIL MOISTURE					SAMPLE TYPE		LABORATORY TESTS	
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**-	Atterberg Limits
▽	NE		2/11/2005	**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**-	Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**-	Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**-	Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** -	Direct Shear

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Reno, Nevada 89521
Phone 775.828.1866 Fax 775.828.1871

Plate
A-4

LOG OF TEST PIT NO. 23

PROJECT NAME:	Lemmon Valley Parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4920' (USGS Topo)
DATE:	2/11/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1	SM			B	51	W	0-2': **Silty Sand (SM)**, loose, wet, brown, perched water @ contact 2 feet, organics to 1 foot.			
2										
3	CH					M	2'-10½': **Fat Clay with Sand**, moist, stiff, green.			
4				B	52				22.1	A,B
5										
6										
7										
8										
9										
10										

Bottom of Test Pit @ 10½ Feet
No Free Water Encountered

GROUNDWATER & SOIL MOISTURE					SAMPLE TYPE		LABORATORY TESTS	
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**- Atterberg Limits	
▽	NE		2/11/2005	**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**- Grain Size Distribution	
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**- Consolidation	
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**- Moisture/Density	
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** - Direct Shear	

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Plate
A-4

LOG OF TEST PIT NO. 24

PROJECT NAME:	Lemmon Valley Parcels	PROJECT NUMBER:	1124.01
LOCATION:	See Site Plan	SURFACE ELEVATION:	4920' (USGS Topo)
DATE:	2/11/2005	EXPLORATION EQUIPMENT:	Cat 420D

Depth in Feet	Unified Soil Classification	Graphical Log	Sample	Sample Type	Sample No.	Moisture	Visual Description	Pocket Penetrometer (tsf)	Moisture Content (% of Dry Weight)	Laboratory Tests
1	SM					W	0-3': **Silty Sand (SM)**, wet, loose to medium dense, brown, isolated roots at 1 foot.			
3	CH					M	3-10': **Fat Clay with Sand (CH)**, moist, stiff, brown/green.			
5				B	53					
6							NOTE: Color change from brown to gray/green with depth.			
10							Bottom of Test Pit @ 10 Feet No Free Water Encountered			

GROUNDWATER & SOIL MOISTURE					SAMPLE TYPE		LABORATORY TESTS	
	Depth	Hour	Date	**D** - DRY	**A** - Drill Cuttings	**B** - Bulk Sample	**A**-	Atterberg Limits
▽	NE		2/11/2005	**M** - MOIST	**C** - CME Sample	**R** - Rotary Cuttings	**B**-	Grain Size Distribution
▼				**W** - WET	**S**- 2" O.D. 1.38" I.D. Tube Sample		**C**-	Consolidation
NE- No Free Water Encountered				**V**-VERY MOIST	**U**- 3" O.D. 2.42 " I.D. Tube Sample		**MD**-	Moisture/Density
				S- SLIGHTLY MOIST	**T**- 3" O.D. Thin-Walled Shelby Tube		**DS** -	Direct Shear

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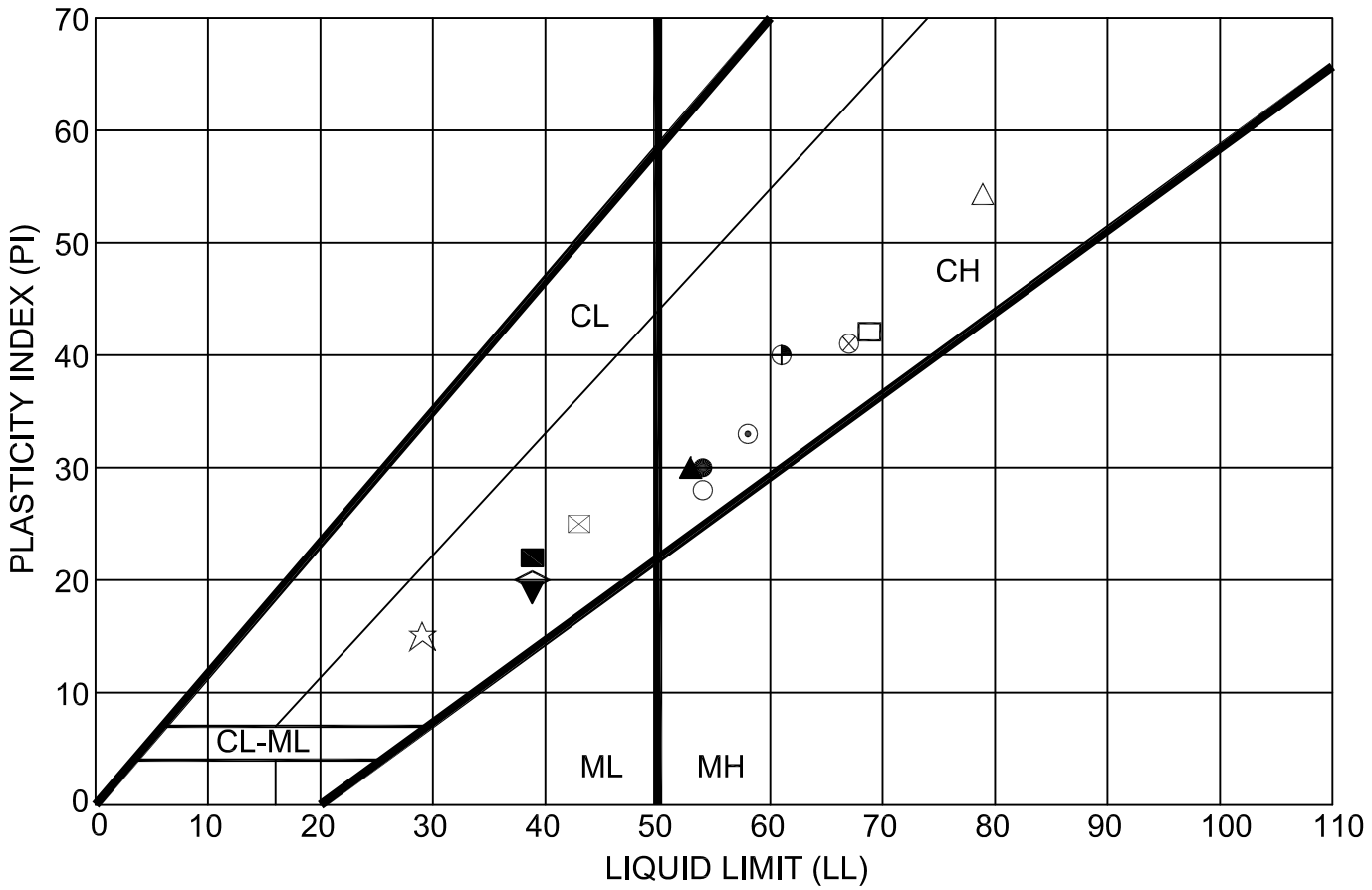
Plate
A-4



SUMMARY OF INDEX TEST DATA

SYMBOL	LOCATION (AREA)	DEPTH (FT)	MOISTURE CONTENT (%)	- #200 (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX	USCS
●	TP3 (C)	5'-6'	23.7	90	54	24	30	CH
■	TP6 (7)	4'-5'	16.7	52	39	17	22	CL
▲	TP9 (C)	2'-3'	18.2	85	53	23	30	CH
◇	TP10 (5)	1'-2'	29.3	65	39	19	20	CL
▼	TP11 (6)	3'-4'	14.7	51	39	20	19	CL
○	TP13 (C)	3'-4'	25.5	18	54	26	28	CH
□	TP14 (4)	2'-3'	19.1	95	69	27	42	CH
⊗	TP16 (4)	5'-6'	27.5	87	67	26	41	CH
△	TP18 (4)	2'-3'	25.2	93	79	25	24	CH
◒	TP20 (2)	3'-4'	22.4	71	61	21	40	CH
⊠	TP21 (2)	4'-5'	15.9	70	43	18	25	CL
☆	TP22 (2)	2'-3'	11.4	44	29	14	15	SC
⊙	TP23 (2)	4'-5'	22.1	78	58	25	33	CH

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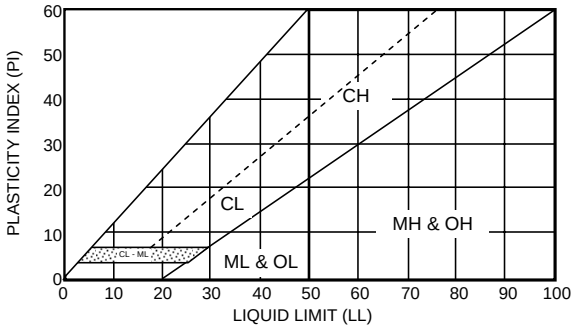
SUMMARY OF INDEX TEST RESULTS

Geotechnical Investigation
LEMMON VALLEY PARCELS

PROJECT NO.: 1124.04
DATE: 07-13-05

Plate A-5

MAJOR DIVISION					TYPICAL NAMES
COARSED-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	**GRAVEL** MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES		GW	WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 12% FINES		GM	SILTY GRAVELS, SILTY GRAVELS WITH SAND
				GC	CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SAND MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES		SW	WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
				SP	POORLY GRADED SAND WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 12% FINES		SM	SILTY SANDS WITH OR WITHOUT GRAVEL
				SC	CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	**SILT AND CLAY** LIQUID LIMIT 50% OR LESS			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
				OL	ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILT AND CLAY LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOLID, ELASTIC SILTS
				CH	INORGANIC CLAYS OR HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC SILTS OR CLAYS MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				Pt	PEAT AND OTHER HIGHLY ORGANIC SOILS



CONSISTENCY		RELATIVE DENSITY	
SILTS & CLAYS	SPT BLOW* COUNTS (N)	SANDS & GRAVELS	SPT BLOW* COUNTS (N)
VERY SOFT	0 - 2	VERY LOOSE	0 - 4
SOFT	3 - 4	LOOSE	5 - 10
MEDIUM STIFF	5 - 8	MEDIUM DENSE	11 - 30
STIFF	9 - 15	DENSE	31 - 50
VERY STIFF	16 - 30	VERY DENSE	50 +
HARD	30 +		

* The Standard Penetration Resistance (N) In blows per foot is obtained by the ASTM D1585 procedure using 2" O.D., 1 3/8" I.D. samplers.

DESCRIPTION OF ESTIMATED PERCENTAGES OF GRAVEL, SAND, AND FINES	
TRACE	Particles are present but est. < 5%
FEW	5% - 10%
LITTLE	15% - 20%
SOME	30% - 45%
MOSTLY	50% - 100%

NOTE: Percentages are presented within soil description for soil horizon with laboratory tested soil samples.

DEFINITIONS OF SOIL FRACTIONS	
SOIL COMPONENT	PARTICLE SIZE RANGE
COBBLES	ABOVE 3 INCHES
GRAVEL	3 IN. TO NO. 4 SIEVE
COARSE GRAVEL	3 IN. TO 3/4 IN.
FINE GRAVEL	3/4 IN. TO NO. 4 SIEVE
SAND	NO. 4 TO NO. 200
COARSE SAND	NO. 4 TO NO. 10
MEDIUM SAND	NO. 10 TO NO. 40
FINE SAND	NO. 40 TO NO. 200
FINES (SILT OR CLAY)	MINUS NO. 200 SIEVE

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UNIFIED SOIL CLASSIFICATION AND KEY TO SOIL DESCRIPTION

Geotechnical Investigation
LEMMON VALLEY PARCELS

Project No.: 1124.01
Date: 7/25/2005

Plate A-6

PRELIMINARY DRAINAGE REPORT

FOR

PRADO RANCH AREA 4

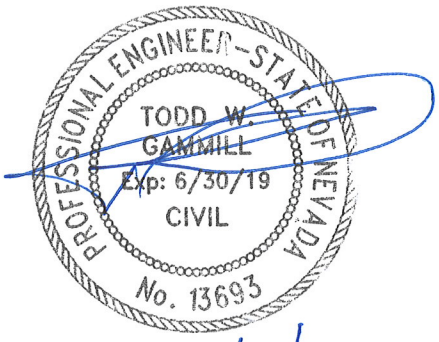
Prepared for:

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

January 15, 2018

Prepared by:

Wood Rodgers, Inc.
1361 Corporate Boulevard
Reno, Nevada 89502
(775) 823-4068
Todd Gammill, P.E. - Associate



11/15/18

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VICINITY MAP
FEMA FIRM Panel 3230G
PRELIMINARY STORM DRAIN SYSTEM LAYOUT
NORTH LEMMON VALLEY PRADO RANCH DEVELOPMENT – CONCEPTUAL DRAINAGE REPORT PREPARED BY CARDO

1 INTRODUCTION

This report shall serve as the preliminary drainage report for the Prado Ranch Area 4 subdivision, which will consist of 538 single family lots. The proposed project site (a portion of APN's 080-723-01, 02, 03 and 04) is approximately 146.3± acres in size and is located within portions of Sections 22 and 23 of T21N, R19E, MDM, City of Reno, Washoe County, Nevada. The project site is bounded by Lemmon Drive to the west, existing single family housing to the north, undeveloped land to the east and Nectar Street to the south. A Vicinity Map is included in the **Appendix** of this report for reference. As this report is preliminary in nature, a more detailed study will need to be conducted and a final technical drainage report will need to be submitted with the final improvement plans for the project.

1.1 HISTORIC DRAINAGE

The parcel is currently open rangeland with storm drainage originating from the north and east and flows via overland flow and sheet flow to the west eventually to Swan/Lemmon Lake. In addition to local storm flow north and east, the site is impacted by a regulated FEMA flood plain Swan/Lemmon Lake.

The FEMA FIRM panel 32031C2850G, revised March 16, 2009, indicates that the southwest portion of the site lies within flood zone AE, areas of 100-year flooding with an established elevation. In this case, during the 100-year, 10-day storm, Lemmon Lake fills to an elevation of 4924 (NAVD 88 datum), which impacts about a third of the lots in the lower, western portion of the project area. A copy of the map is included in the **Appendix**.

1.2 ADDITIONAL STUDIES

Cardno, Inc. of Reno was commissioned by Lansing Companies to analyze the storm flows within the overall Prado Ranch and Prado Ranch Area 4 area in a report entitled *North Lemmon Valley Prado Ranch Development – Conceptual Drainage Report* dated July 7, 2016 (Cardno Report). This study is included in the **Appendix** of this report and contains analysis of offsite flows generated from the north and east, in addition to onsite flows generated by development.

1.3 DEVELOPMENT CONSTRAINTS DUE TO 100-YEAR STORM FLOWS

The previously described FEMA flood zone constrains development of the site, and will be described below:

a) Due to the flooding of Swan Lake in the 100-year, 10-day storm to an elevation of 4924 (Zone AE), per Washoe County development code and the TMRDM, every proposed home site within the extents of the flood zone is required to have a finish floor of elevation a minimum of two feet above the flood elevation, or at an elevation of 4926. As concrete slab-on-grade construction is anticipated, the required minimum finish grade of a home site is 8" lower than the 4926 finish floor elevation, or 4925.3, or 1.3 feet above the regulated flood elevation. Additionally, this will assure that storm drain catch basins and manholes will not surcharge should the 100-year, 10-day storm occur.

b) Per the Truckee Meadows Regional Drainage Manual (TMRDM), new development within Swan/Lemmon Lake, which is a closed basin, is required to provide storm volume replacement for storm volume increase to the lake due to development, in addition to storm volume replacement due to encroachment within the FEMA regulated 100-year storm lake water surface. As the proposed development encroaches into the regulated water surface, both forms of volume replacement are required. Volume replacement can be obtained in one of two ways: Either by use of retention or infiltration basins, or by increasing volume within the 100-year water surface area of Swan/Lemmon Lake. As the developer has controlling interest in areas within the lake, this development contemplates volume replacement in an area west of the site, across Lemmon Drive. The Cardno Report discusses volume replacement requirements and proposed areas in detail and that detention is not required due to the outfall being Swan/Lemmon Lake. The Cardno report described the required volume replacement for Areas 3-6 (including Area 4) at 153 ac-ft. (~247,000 cubic yards) to offset the increase in volume from development and encroachment into the lake. The Tentative map plans sheet G-6 depicts the area intended to be used as volume replacement. The area can accommodate approximately 217 ac-ft. (350,000 cubic yards) of volume replacement. At final design the final requirement for the Area 4 tentative will be finalized, but the area west of Lemmon Drive will be able to accommodate.

c) Channels are proposed to be constructed to handle 100-year, 24 hour storm flows from the north and east of the site and perpetuate them to Swan/Lemmon Lake as shown on the tentative map grading sheets. Channel and culvert sizes were estimated using the flow rates generated by the Cardno Report.

1.4 REGULATORY PERSPECTIVE

The Project site is located within Unincorporated Washoe County and therefore falls under its jurisdiction. The drainage facilities will be operated and maintained by the Washoe County.

2 PRELIMINARY DESIGN

The proposed drainage system for the project site consists of sheet flow from the lots and streets into gutters with which storm water is conveyed into drop inlets and underground storm drain pipes, and offsite flows from south. Offsite flows will be collected via channels or storm pipes and conveyed west for discharge in historic patterns to Swan/Lemmon Lake. The storm drainage system is shown on the tentative map Grading and Utility sheets.

3 HYDROLOGIC ANALYSIS

As the Cardno Report generates offsite and onsite 100-year storm flows local to the site, no other hydrologic analysis was completed. Preliminary pipe locations are shown on the tentative map Grading and Utility sheets. All pipes slope were assumed to have a minimum of 0.3% in the preliminary grading design. In final design, a StormCAD model will be generated to size finalize pipe sizes. Grading of the site will be adjusted accordingly at that time, but is not anticipated to change dramatically.

4 CONCLUSIONS

The drainage facilities that will be constructed with the Prado Ranch Area 4 subdivision have been preliminarily designed to capture and perpetuate the design storm event flows from the north and east and onsite to the south and west in the natural drainage pattern to Swan/Lemmon Lake. The conveyance of flows is in conformance with the Washoe County code and the TMRDM. There will be no negative impacts to any adjacent or downstream properties as a result of development during the 5-year and 100-year, 24 hour storms due to the implementation of the proposed storm water management system. Additionally, volume replacement within Swan/Lemmon Lake is proposed to offset any encroachment into the lake's 100-year FEMA regulated water surface elevation, as well as to offset volume increase due to development. As previously stated, this report is preliminary in nature and a more detailed study will need to be conducted and a final technical drainage report will need to be submitted with the final improvement plans for the project.

5 REFERENCES

Truckee Meadows Regional Drainage Manual, April 30, 2009

Washoe County Development Code, Latest Edition

North Lemmon Valley Prado Ranch Development – Conceptual Drainage Report, July 7, 2016

APPENDIX

VICINITY MAP

FEMA FIRM Panel 2850G

NORTH LEMMON VALLEY PRADO RANCH DEVELOPMENT – CONCEPTUAL DRAINAGE REPORT

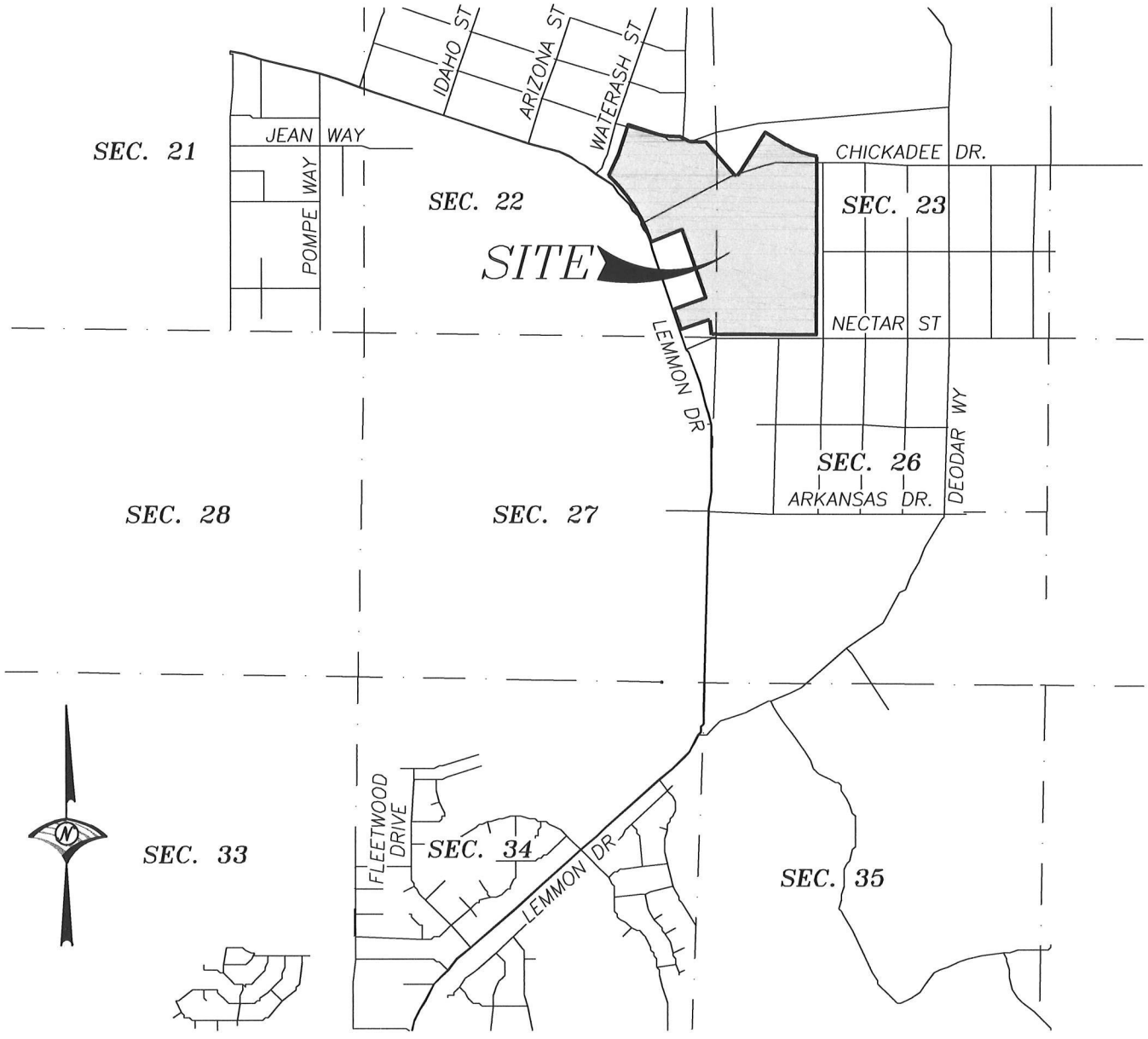
PREPARED BY CARDO

VICINITY MAP

PRADO RANCH AREA 4

LANSING COMPANIES

WASHOE COUNTY **NEVADA**



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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 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 West FIPS Zone 2703. The **horizontal datum** was NAD 83, GRS80. Differences in datum, spheroid, projection or State Plane zones 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, NINGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 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 road centerline 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 1:1,200 in urban areas and 1:2,400 in rural areas.

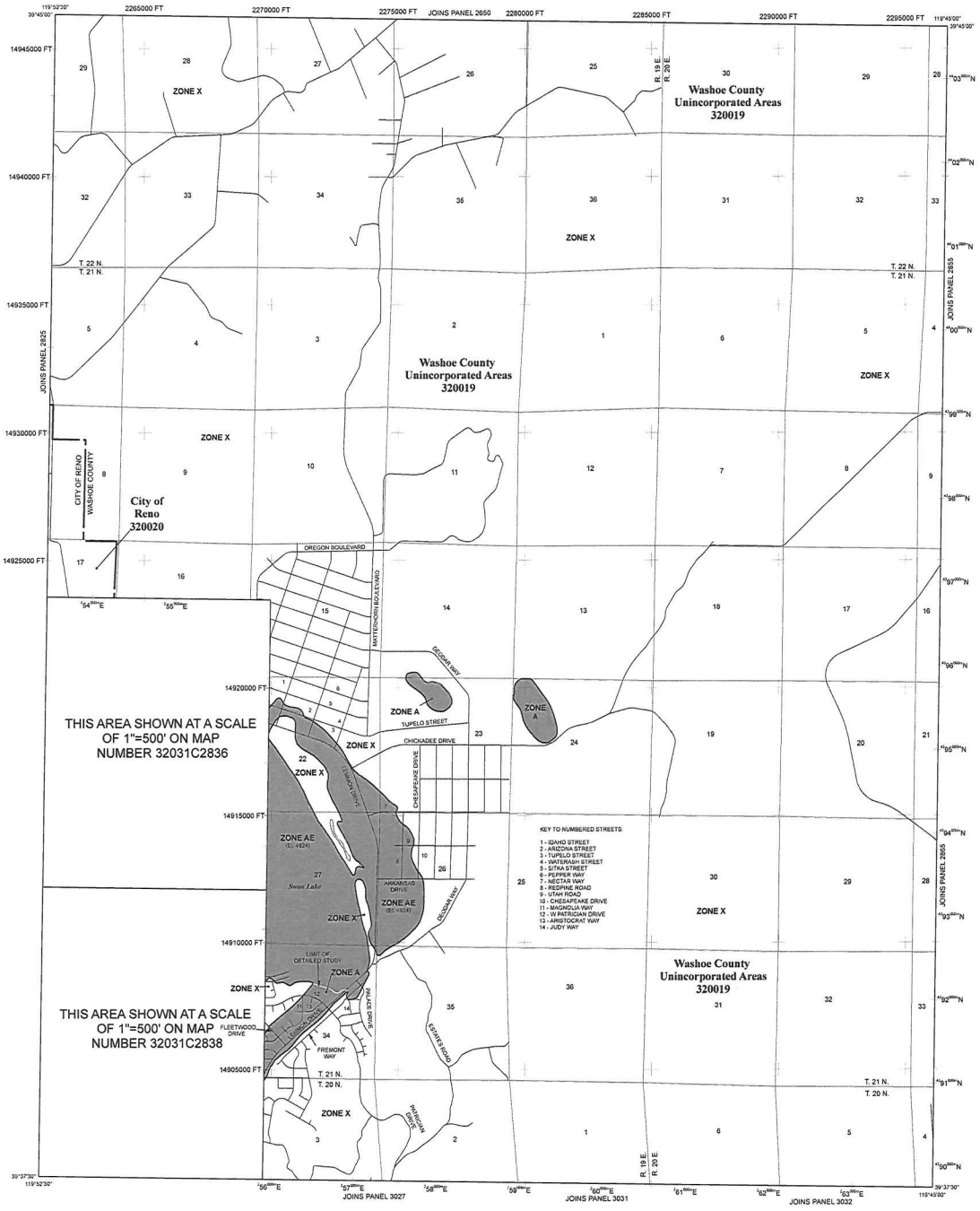
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, 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 table containing National Flood Insurance Program dates for each community as well as a listing of 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://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

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section Line
B — B	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4376000mN	1000-meter Universal Transverse Mercator grid values, zone 11
600000 FT	5000-foot grid ticks: Nevada State Plane coordinate system, West zone (FIPSZONE 2703), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
September 30, 1994

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
March 16, 2009 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 2000'
1000 0 2000 4000 FEET
600 0 600 1200 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 2850G

FIRM

FLOOD INSURANCE RATE MAP

WASHOE COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 2850 OF 3475

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
RENO, CITY OF	320020	2850	G
WASHOE COUNTY	320019	2850	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
32031C2850G

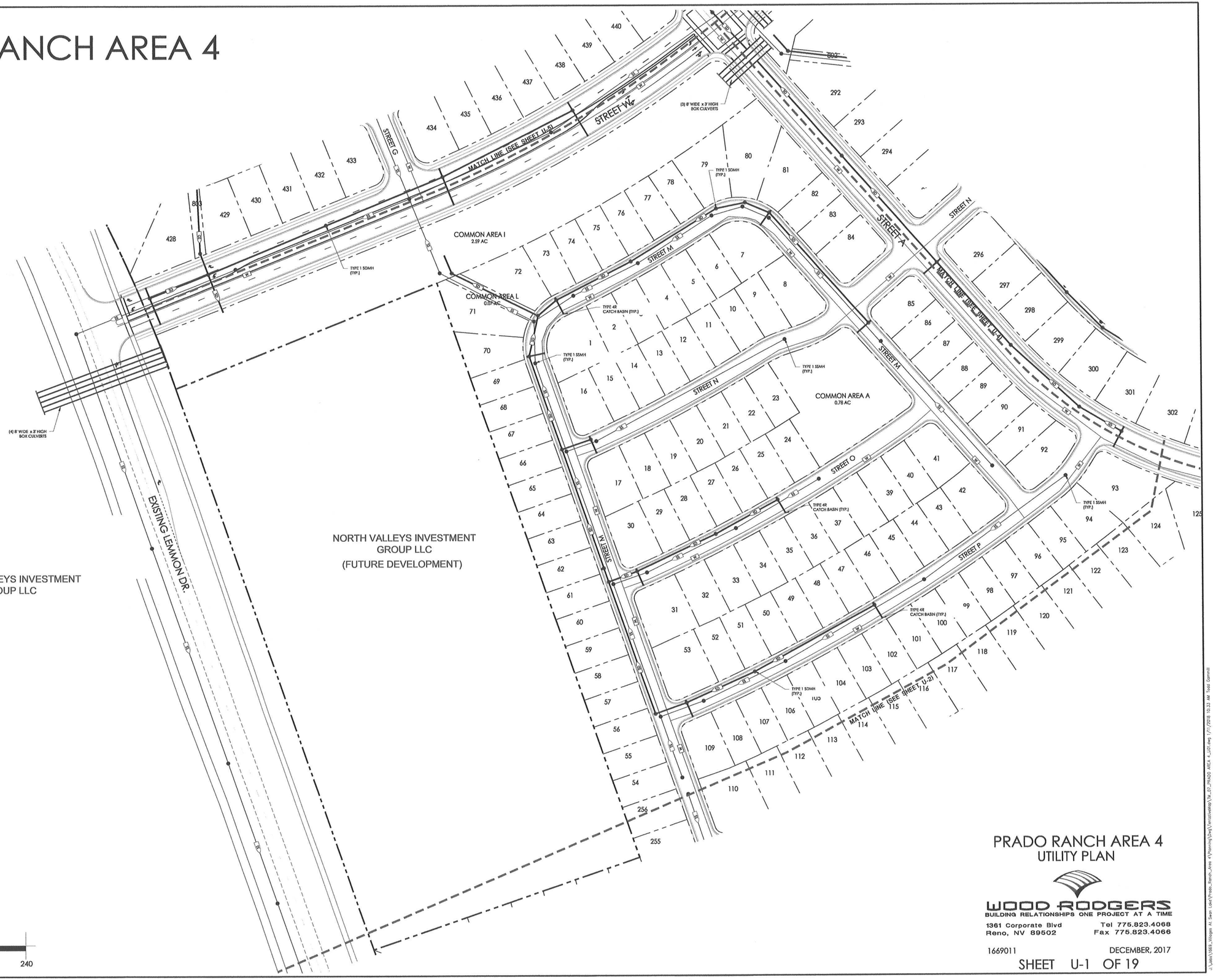
MAP REVISED
MARCH 16, 2009

Federal Emergency Management Agency

PRADO RANCH AREA 4

TENTATIVE MAP

UTILITY PLAN



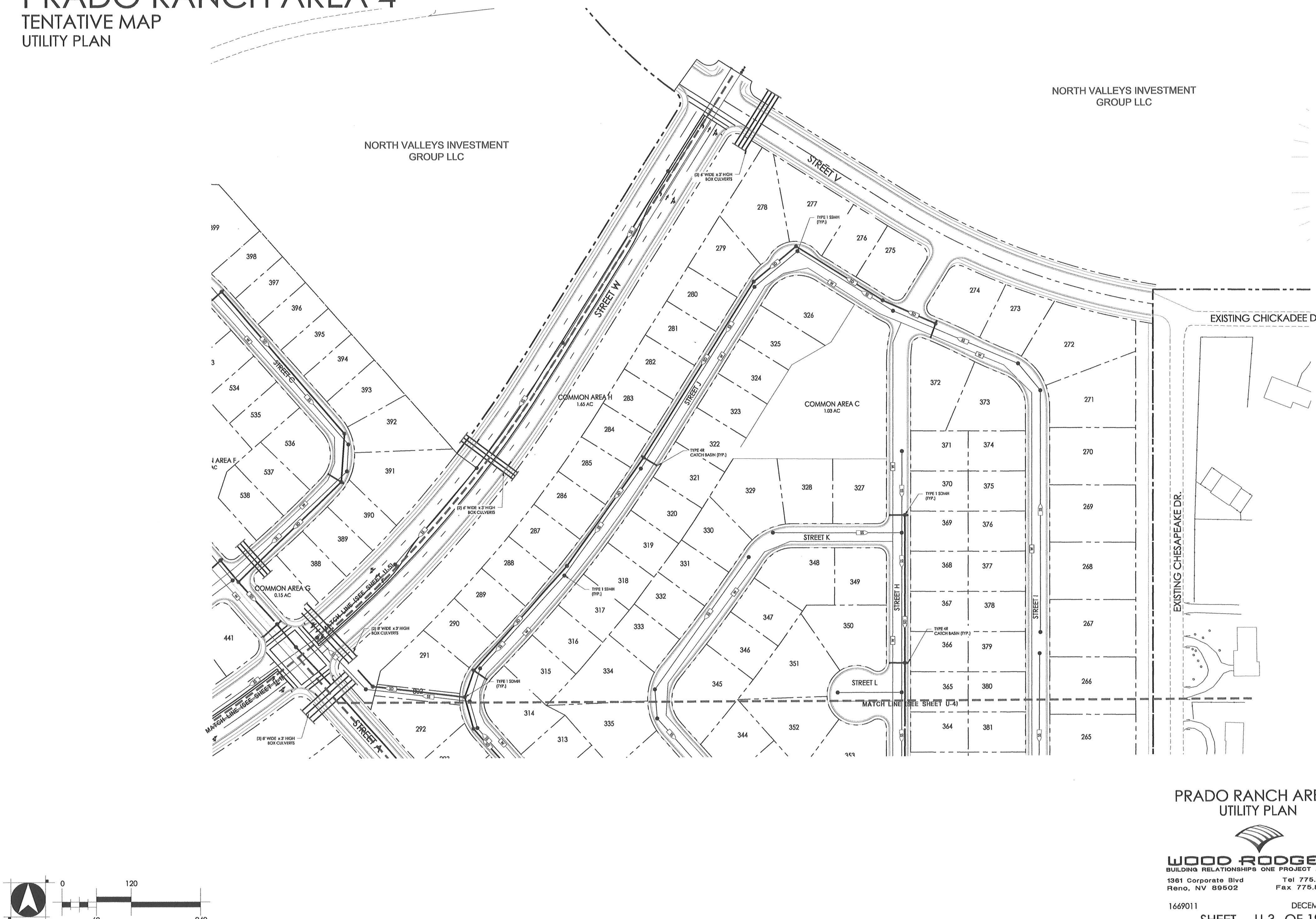
PRADO RANCH AREA 4
UTILITY PLAN

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

1669011

DECEMBER, 2017

PRADO RANCH AREA 4
TENTATIVE MAP
UTILITY PLAN



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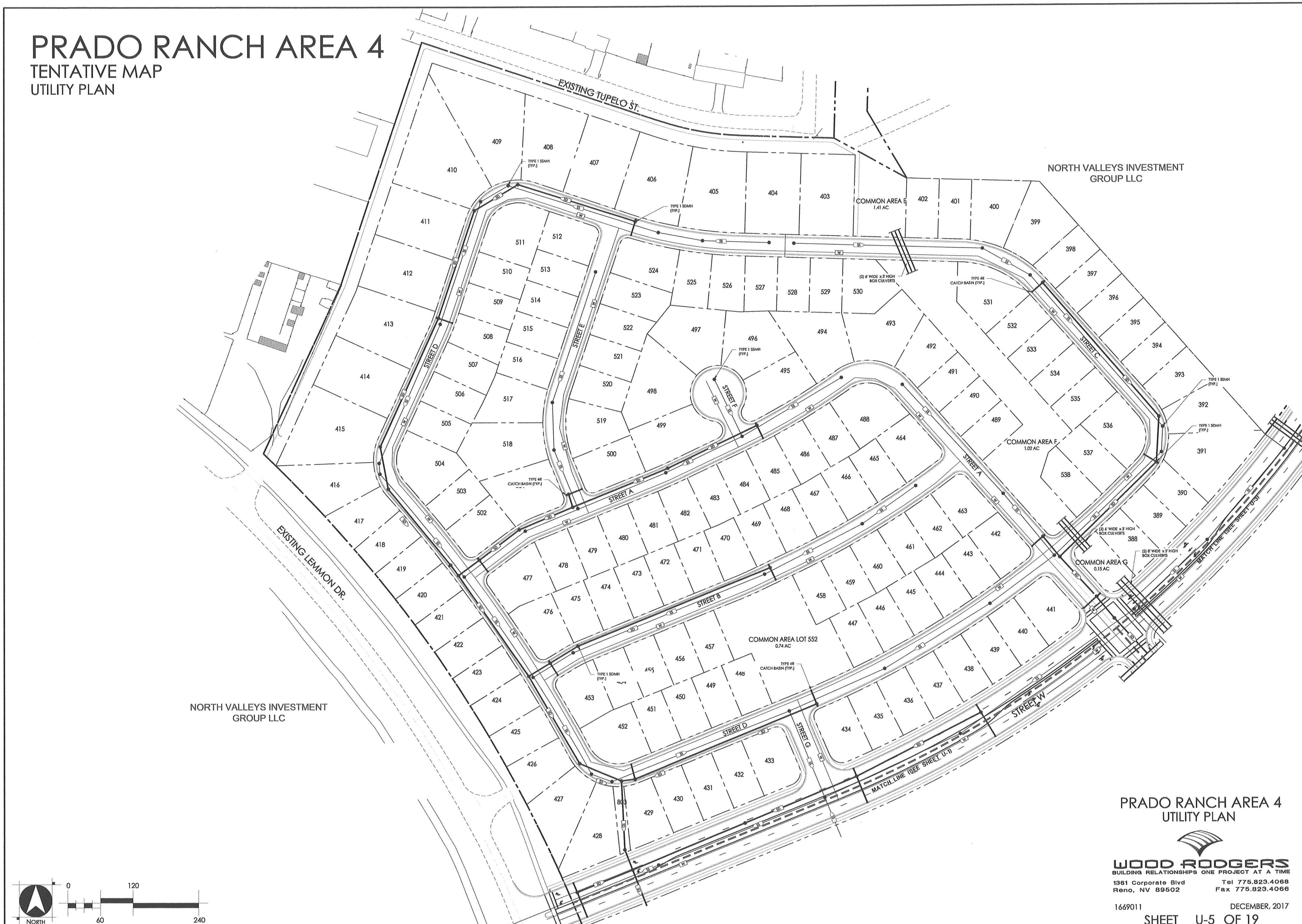
1669011 DECEMBER, 2017

SHEET U-4 OF 19

PRADO RANCH AREA 4
TENTATIVE MAP
UTILITY PLAN



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DECEMBER, 2017

SHEET U-5 OF 19