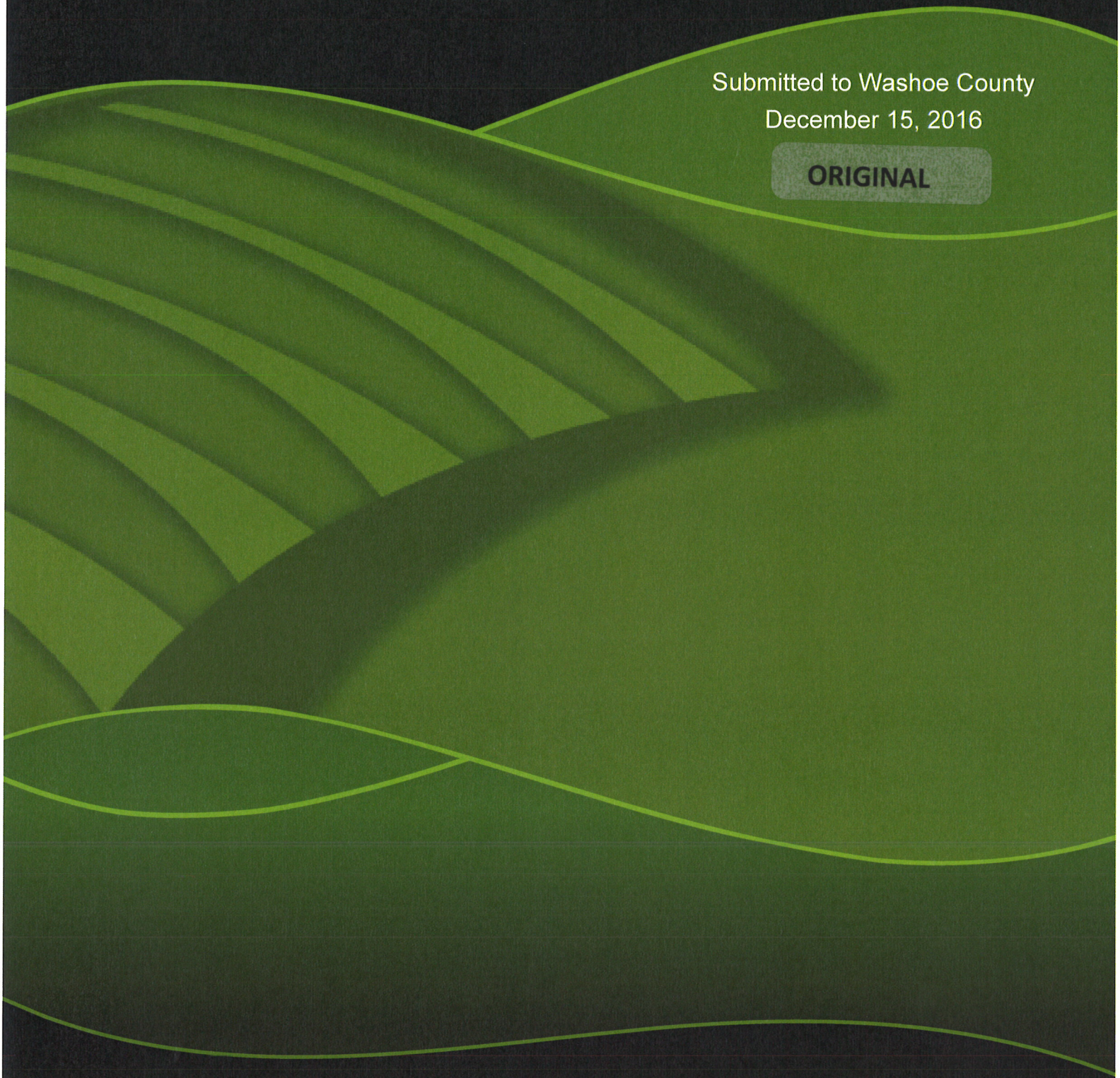
Tentative Map Application
Bailey Creek Estates

Submitted to Washoe County
December 15, 2016

ORIGINAL



Prepared for

Silver Crest Homes
16500 Wedge Parkway, Bldg A, Ste 200
Reno, NV 89511

Prepared by

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Blvd • Reno, NV 89502 • Tel: 775.823.4068 • www.woodrodgers.com

Table of Contents

Submitted Separately

- Reports and Studies
  - Geotechnical Summary
  - Preliminary Drainage Report

Map Pocket

- Tentative Map Set

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: Bailey Creek Estates	
Project Description: A Tentative Map for a 56 lot single family residential subdivision with lots ranging in size from 1/2 acre to 1/3 acre.	
Project Address: Geiger Grade/State Route 431	
Project Area (acres or square feet): 28.76 acres	
Project Location (with point of reference to major cross streets **AND** area locator): The proposed project is located E. of Toll Road; S. of Geiger Grade in the SETM Area Plan/Toll Rd Character Mgmt Area	

Assessor's Parcel No.(s):	Parcel Acreage:	Assessor's Parcel No.(s):	Parcel Acreage:
017-520-03	23.63		
017-480-02	5.125		

Section(s)/Township/Range: Section 27, T18N, R20E

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: Charles B. Maddox	Name: Wood Rodgers, Inc.
Address: P.O. Box 70577, Reno, NV	Address: 1361 Corporate Blvd; Reno, NV
Zip: 89570	Zip: 89502
Phone: 852-4466 Fax:	Phone: 775-823-5258 Fax: 823-4066
Email: danmcgill@prodigy.net	Email: shuggins@woodrodgers.com
Cell: Other:	Cell: 775-250-8213 Other:
Contact Person: Dan McGill	Contact Person: Stacie Huggins
Applicant/Developer:	**Other Persons to be Contacted:**
Name: Silver Crest Homes	Name: Wood Rodgers, Inc.
Address: 16500 Wedge Parkway, Bldg A, Ste 200	Address: 1361 Corporate Blvd; Reno, NV
Zip: 89511	Zip: 89502
Phone: 916-787-3420 Fax:	Phone: 775-823-4050 Fax: 826-4066
Email: rbalestreri@timlewis.com	Email: sstrickland@woodrodgers.com
Cell: 916-425-5657 Other:	Cell: 775-745-4207 Other:
Contact Person: Rich Balestreri	Contact Person: Steve Strickland

For Office Use Only

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

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 project is located on two parcels fronting on Geiger Grade/Highway 341 directly south of Shadow Hills Drive. The subject parcels are approximately 1/4 mile from the intersection of Geiger Grade/Highway 341 and Toll Road in the Toll Road Character Management Area of the Southeast Truckee Meadows Area Plan (SETM).

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

Bailey Creek Estates

3. Density and lot design:

a. Acreage of project site	28.76 acres
b. Total number of lots	56
c. Dwelling units per acre	1.95 du/acre
d. Minimum and maximum area of proposed lots	0.33 min - 0.81 max
e. Minimum width of proposed lots	80 feet
f. Average lot size	0.41 acres (17,869 sqft)

4. Utilities:

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

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

   a. Acreage of common open space:

   0.75+/- acres

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

   Common open space areas are needed to accommodate drainage and on-site detention.

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

   min lot size = 0.33 acre; max lot size = 0.81 acre

   d. Average lot size:

   0.41 ac

   e. Proposed yard setbacks if different from standard:

   Setbacks for Bailey Creek Estates will match the zoning setbacks of MDS.

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

   Not applicable.

   g. Identify all proposed non-residential uses:

   There are no non-residential uses associated with Bailey Creek Estates.

h. Improvements proposed for the common open space:

Common areas are proposed to remain natural. The only anticipated disturbance within these areas is anticipated to be associated with detention and drainage facilities for appropriate, controlled conveyance of stormwater and drainage.

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

There are no public or private trail systems within the Bailey Creek Estates project.

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

Not applicable.

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, fencing will be allowed on side and rear lot lines in accordance with Washoe County standards.

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

The Bailey Creek Estates Homeowners Association will be responsible for maintenance of the common open space areas.

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

The site does not appear to be impacted by "presumed public roads" based on the Presumed Public Roads "Carson" area map.

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

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

The property is within the TMWA Retail Water Service Area. Water rights to serve the project will be dedicated prior to recordation of each final map.

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

The proposed project should be considered as an in-fill project as the site is surrounded by existing development on all sides. To address energy conservation, homes are anticipated to be constructed using energy efficient designs including water conservation considerations.

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:

The site does not appear to be in an area containing rare or endangered plants/animals, critical breeding habitat, migration routes or winter range.

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. The primary access will be Sterling Hills Way, which will be accessed by an extension of Shadow Hills Drive on the south side of Geiger Grade. Gated emergency access will be provided at the intersection of Sterling Hills Way and Moon Lane near the southeast portion of the site.

Pedestrian access will be provided through the project site via streets and sidewalks.

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:

The project site is adjacent to the Bailey Creek drainage, which serves as a natural buffer between the proposed project and the previously approved, and fully built, Cottonwood Creek Subdivision. The existing single family residences to the south and east of the project site have a medium density suburban (MDS) land use designation, consistent with the project site. To comply with lot adjacency standards, in addition to the natural buffer provided by the Bailey Creek drainage, parcels abutting the drainage have been sized in accordance with the SETM requirements with similar sized lots adjacent to the drainage and larger lots along the exterior of the project.

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?

The project site is located in the Southeast Truckee Meadows Area Plan, Toll Road Character Management Area and has a land use designation of Medium Density Suburban. In accordance with SETM Policy 2.13, the proposed project restricts density to 2 dwelling units per acre and includes 1/2 acre lots on the exterior that abuts developed MDS and 1/3 acre lots where abutting higher intensity land uses. This proposed project meets SETM Policy 2.13 (a) and (b) as well as all Washoe County Development Code requirements.

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?

The project site is located in the Southeast Truckee Meadows Area Plan and has a land use designation of Medium Density Suburban. In accordance with Section 110.212.05 Medium Density Suburban Area Modifier, the maximum number of dwelling units that may located in the MDS zone in the Southeast Truckee Meadows planning area is two units per acre. Additionally, the modifier limits minimum lot area to 1/2 acre lots on an exterior that abuts developed MDS and 1/3 acre lots where abutting higher intensity land uses.

This proposed project meets WC Development Code and SETM Policy 2.13 (a) and (b) requirements.

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

The subdivision is anticipated to be developed in one phase.

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?

50,000 +/- cubic yards

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?

It is not anticipated that any import or export of soil (to or from the site) will be necessary. Site grading will result in balance of cut/fill materials.

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 sides. Landscaping and trees are proposed along Geiger Grade to mitigate views from the north. Fencing will be provided along side and rear yards in accordance with County code to help mitigate visibility of the proposed project.

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?

Grading is proposed to not exceed 3:1. However, if grading exceeds 3:1, it may be armored per code. Where necessary, erosion control matting, or equivalent, may be provided 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?

Berms, no greater than 3:1, may be associated with fencing along Geiger Grade. Berms will be revegetated with native vegetation where appropriate.

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?

No. Walls are not proposed as part of this project.

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?

No areas are proposed to need 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.

Property Owner Affidavit

Applicant Name: Silver Crest Homes

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, C.B. Maddox
(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): 017-520-03 and 017-480-02

Printed Name C.B. Maddox

Signed

Address P.O. Box 70577

Reno, NV 89570

Subscribed and sworn to before me this 6th day of December, 2016.

Notary Public in and for said county and state

My commission expires: 10/25/19

(Notary Stamp)

DANIEL McGILL
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 95-0612-2 - Expires October 25, 2019

*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

LEGAL DESCRIPTION

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

PARCEL 1:
Parcel 3B-1 of Reversion to Acreage Tract Map of COTTONWOOD ESTATES UNITS 7 & 8, according to the map thereof, filed in the office of the County Recorder of Washoe County, State of Nevada, on June 24, 2014, as Document No. 4366040, Official Records, Tract Map No. 5083.

PARCEL 2:
Parcels A and C as shown on that certain Second Parcel Map for JANE P. PRECISSI, Parcel Map No. 1948, according to the map thereof, filed in the office of the County Recorder of Washoe County, State of Nevada, on February 13, 1986, as File No. 1052547, Official Records.

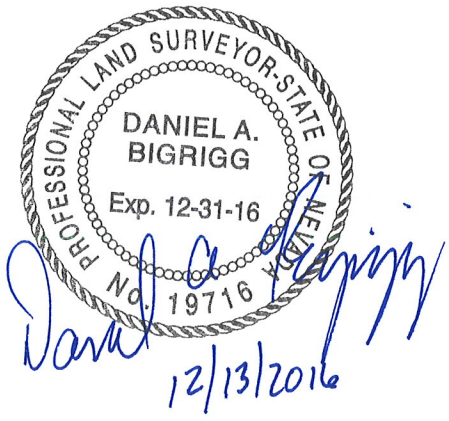
EXCEPTING THEREFROM that portion within the boundaries of COMSTOCK ESTATES UNIT 1, filed in the office of the County Recorder of Washoe County, Nevada, on August 26, 1992, as File No. 1600029, Map No. 2875 and amended by document recorded October 26, 1992, as Document No. 1616563, Official Records.

ALSO EXCEPTING THEREFROM that portion lying within the boundaries of COMSTOCK ESTATES UNIT NO. 2, according to the map thereof, filed in the office of the County Recorder of Washoe County, State of Nevada, on March 18, 1994, as File No. 1776765, Official Records.

FURTHER EXCEPTING THEREFROM that portion lying within the boundaries of COMSTOCK ESTATES UNIT NO. 3, according to the map thereof, filed in the office of the County Recorder of Washoe County, State of Nevada, on September 8, 1994, as File No. 1831350, Official Records

Assessor's Parcel Number(s): 017-480-02 & 017-520-03

Prepared by:
Wood Rodgers, Inc.
1361 Corporate Boulevard
Reno, Nevada 89502



Daniel A. Bigrigg, PLS
Nevada Certification 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

Account Detail

Back to Search Results | Change of Address | Print this Page

Washoe County Parcel Information

Parcel ID	Status	Last Update
01752003	Active	12/13/2016 2:09:51 AM

Current Owner:
MADDOX, CHARLES B

PO BOX 70577
RENO, NV 89570

SITUS:
0 GEIGER GRADE RD
RENO NV

Taxing District
4000

Geo CD:

Legal Description

Township 18 Section 27 Lot 3B-1 Block Range 20 SubdivisionName _REVERSION

Tax Bill (Click on desired tax year for due dates and further details)

Tax Year	Net Tax	Total Paid	Penalty/Fees	Interest	Balance Due
2016	$3,873.67	$1,936.84	$0.00	$0.00	$1,936.83
2015	$3,866.39	$3,866.39	$0.00	$0.00	$0.00
2014	$3,746.48	$3,746.48	$0.00	$0.00	$0.00
				Total	$1,936.83

Important Payment Information

- ALERTS: If your real property taxes are delinquent, the search results displayed may not reflect the correct amount owing. Please contact our office for the current amount due.
- For your convenience, online payment is available on this site. E-check payments are accepted without a fee. However, a service fee does apply for online credit card payments. See Payment Information for details.

Pay Online

Payments will be applied to the oldest charge first.

Select a payment option:

- (•) Total Due $1,936.83
- ( ) Oldest Due $968.42
- ( ) Partial

ADD TO CART

$0.00

Pay By Check

Please make checks payable to:
WASHOE COUNTY TREASURER

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

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

Payment Information

Special Assessment District

Installment Date Information

Assessment Information

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

Account Detail

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Washoe County Parcel Information

Parcel ID	Status	Last Update
01748002	Active	12/13/2016 2:09:51 AM

Current Owner:
MADDOX, CHARLES B

PO BOX 70577
RENO, NV 89570

SITUS:
0 MOON LN
WASHOE COUNTY NV

Taxing District
4000

Geo CD:

Legal Description

Township 18 Range 20 SubdivisionName _UNSPECIFIED Section 34 Lot FR PAR C & FR PAR A Block

Tax Bill (Click on desired tax year for due dates and further details)

Tax Year	Net Tax	Total Paid	Penalty/Fees	Interest	Balance Due
2016	$428.02	$214.02	$0.00	$0.00	$214.00
2015	$426.92	$426.92	$0.00	$0.00	$0.00
2014	$413.60	$413.60	$0.00	$0.00	$0.00
				Total	$214.00

Important Payment Information

- ALERTS: If your real property taxes are delinquent, the search results displayed may not reflect the correct amount owing. Please contact our office for the current amount due.
- For your convenience, online payment is available on this site. E-check payments are accepted without a fee. However, a service fee does apply for online credit card payments. See Payment Information for details.

Pay Online

Payments will be applied to the oldest charge first.

Select a payment option:

- (•) Total Due $214.00
- ( ) Oldest Due $107.00
- ( ) Partial

ADD TO CART

$0.00

Pay By Check

Please make checks payable to:
WASHOE COUNTY TREASURER

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

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

Payment Information

Special Assessment District

Installment Date Information

Assessment Information

Request to Reserve New Street Name(s)

The Applicant is responsible for all sign costs.

Applicant Information

Name: Silver Crest Homes

Address: 16500 Wedge Parkway, Building A, Suite 200

Reno, Nevada 89511

Phone : (916) 425-5657 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.)

Sterling Hills Way	
Sterling Hills Court	
Granite Mine Court	

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

Location

Project Name: Bailey Creek Estates

☐ Reno ☐ Sparks ☑ Washoe County

Parcel Numbers: 017-520-03 and 017-480-02

☑ Subdivision ☐ Parcelization ☐ Private Street

Please attach maps, petitions and supplementary information.

Approved: _____ Date: _____

Regional Street Naming Coordinator

☐ Except where noted

Denied: _____ Date: _____

Regional Street Naming Coordinator

Washoe County Department of Public Works

Post Office Box 11130 - 1001 E. Ninth Street

Reno, NV 89520-0027

Phone: (775) 328-3667 - Fax: (775) 328-6133 Email: streetnames@washoecounty.us

Section 2

Project Description

Location

The Bailey Creek Estates project is in south Washoe County near the intersection of Toll Road and Geiger Grade/Highway 341. The site consists of 28.76± acres and includes Washoe County Assessor Parcel Numbers: 017-520-03 and 017-480-02. The property is bordered by Geiger Grade/Highway 341 and existing residential to the north, a mix of undeveloped land and scattered single family residences to the east, and the Bailey Creek drainage and single family homes in the Cottonwood Creek subdivision to the south and west. *Refer to Vicinity Map, Assessor's Parcel Map and Site Aerial in Section 3 of this submittal packet.*

Site Characteristics

The project site is relatively flat with approximately 97.3 percent of the site with slopes less than 15%. *(Refer to Slope Map in Section 3 of this submittal packet).* The Bailey Creek drainage runs between Toll Road and Geiger Grade in an open space corridor located south of the site. The site is characterized by native vegetation (primarily native shrubs, sagebrush, grasses, and pinion pines).

A drainageway extends along the southern edge of the site in a south/north direction. The drainageway generally follows the FEMA flood zone AE alignment.

Zoning and Master Plan Designations

The project site is within the Toll Road Character Management Area of the Southeast Truckee Meadows Area Plan (SETM). Master Plan designations are as follows: Rural (0.90± acres) and Suburban Residential (27.815± acres). Zoning designations include: General Rural (0.90± acres) and Medium Density Suburban (27.815± acres) *(Refer to Existing Zoning Map, Existing Master Plan Map Exhibits in Section 3 of this submittal packet).*

Density calculations for the total number of lots permitted (excluding any allotment for the General Rural designated acreage) are as follows:

- Medium Density Suburban -2.0 acre minimum (27.815± acres/2.0 = 55.63 lots)
- General Rural – 40 acre minimum (0.90± acres/40 = 0.023 lots)

Total Lots Permitted = 55.63 (rounded to 56)

Cooperative Planning Area

The project site is in a Cooperative Planning Area and is subject to standards outlined in Washoe County Development Code Article 434. There are existing single family residences to the south and east of the project site that have a medium density suburban (MDS) land use designation. To comply with lot adjacency standards, in addition to the natural buffer provided by the Bailey Creek drainage, parcels abutting the drainage have been sized consistent with adjacent parcel sizes.

Current Request

The current project is a 56-lot single family residential development. Lots range in size from about 1/3 acre (14,520 sqft) to 1/2 acre (21,780 sqft) with an average lot size of 0.41± acres (17,869± sqft). The overall density is 1.95 units per acre and is in accordance with the allowed maximum density of 2.0 units per acre as outlined in the SETM. The project includes approximately 0.75± acres of common area.

The request is summarized as follows:

- A **Tentative Subdivision Map** to permit development of a 56-lot single-family subdivision on 28.76± acres.

Tentative Map Design

The Bailey Creek Estates project is an appropriate use for the project site and should be considered as an infill project. The proposed project is surrounded by existing residential development. Furthermore, the project has been designed in accordance with the policies outlined in the SETM Toll Road Character Management Area Plan and other pertinent Washoe County Development Code regulations.

Density calculations for the total number of lots permitted (excluding any allotment for the General Rural designated acreage) are as follows:

- Medium Density Suburban -2.0 acre minimum (27.815± acres/2.0 = 55.63 lots)
- General Rural – 40 acre minimum (0.90± acres/40 = 0.023 lots)

Total Lots Permitted = 55.63 (rounded to 56)

While the majority of the site will be developed with single family lots, the project will include approximately 0.75± acres of common area or 2.6% of the site. The overall density is 1.95 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 final map are proposed as follows:

Minimum Lot Size: 14,520± square feet
Minimum Lot Width: 80 feet
Minimum Building Envelope: 3,600 square feet

Minimum Setbacks:
Front Yard Setback = 20 feet
Side Yard Setback = 8 feet
Rear Yard Setback = 20 feet

House Design

Homes are proposed to be one and two story designs with minimum two car garages. House models are not available at this time.

Grading

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).*

Drainage

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. Onsite flows will be directed to detention basins or directly to Bailey Creek. Offsite flows from the MDS parcels to the east will be picked up in v-ditches located on the project's east boundary. The ditches will pick up the sheet flow from the east and convey it to the underground storm drain system. Ultimately, all of the runoff collected from the offsite areas and developed portions of the project site will be directed into

proposed detention basins. 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 storm water management system. *(Refer to Tentative Map Plan Set and Preliminary Drainage Report in Section 3 and Map Pocket of this submittal packet).*

Traffic and Circulation

Access to the subdivision will be from an extension of Shadow Hills Drive with gated emergency access at the intersection of Sterling Hills Way and Moon Lane. The portion of Moon Lane that is located on the project site will be improved with a 50-foot right-of-way section in accordance with Washoe County design requirements for rural areas. At the project boundary, Moon Lane has an access easement that will allow connectivity with Kivett Lane. In addition to roadway improvements, the proposed subdivision includes sidewalk located on the south side of the main street through the project. *(Refer to Tentative Map Plan Set in Section 3 and Map Pocket of this submittal packet).*

Common Areas

Common areas are strategically located within the subdivision to accommodate detention and/or drainage improvements. *(Refer to Tentative Map Plan Set in Section 3 and Map Pocket of this submittal packet).* Common areas total 0.75± acres and will be landscaped and/or re-vegetated with native vegetation. *(Refer to Preliminary Landscaping Plan in Section 3 and the Map Pocket of this submittal packet).* Maintenance of common areas associated with the project will be maintained by the Bailey Creek Estates Home Owners Association (HOA).

Landscaping

In accordance with Section 110.412.35 all front, rear or side yards that adjoin a public street include at least one tree for every fifty linear feet of street frontage. Where lots abut Geiger Grade, the project includes a 5-foot wide buffer strip with four trees per lot. As depicted on the Preliminary Landscape Plan, the project includes 52 trees along Geiger Grade plus 1 additional tree for each lot that abuts public streets the roadways.

Front yard landscaping will also be provided for each lot. *(Refer to Preliminary Landscaping Plan in Section 3 and the Map Pocket of this submittal packet).*

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

Project signage will consist of monument style entry sign(s) located near the main project entry point along Geiger Grade. 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 Geiger Grade, Shadow Hills Drive and Kivett Lane.

The site is located with the TMWA Retail Water Service Area. Water rights sufficient to serve the proposed subdivision will be dedicated at the time of the final map as required *(Refer to Estimation of Water Demand for Land Development Projects in Section 4 of this submittal packet).*

Sewer service will be provided by Washoe County with treatment at the South Truckee Meadows Wastewater Treatment Facility (STMWRF).

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 subdivision will attend Brown Elementary School; Depoali Middle School and Damonte Ranch High School.

Police and Fire Service

Police and fire service will be provided by Truckee Meadows Fire Department. The closest Truckee Meadows Fire Station is Station 14 located at 12300 Old Virginia Road, approximately 3 miles from the intersection of Shadow Hills Drive and Geiger Grade.

Parks

The proposed project is less than 1 mile from Virginia Foothills Park, which is maintained by Washoe County. The park offers 15 acres of recreational opportunities including tennis courts, covered group picnic areas, children's playground areas, exercise cluster, a fitness trail, and a baseball/soccer field.

Phasing

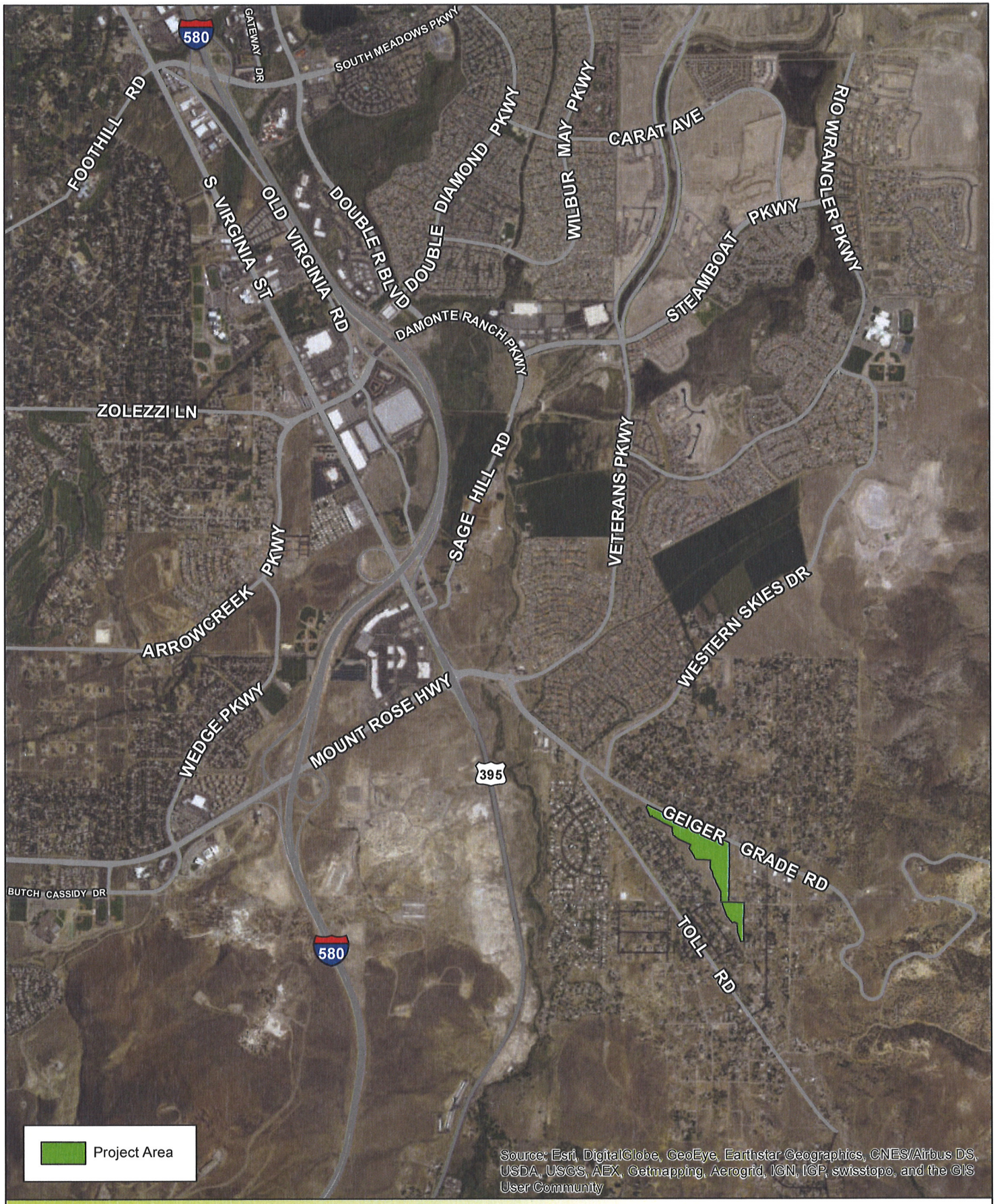
The subdivision is anticipated to be developed in one phase.

Development Statistics Summary

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

Total Site Area:	28.76± acres
Total Dwelling Units:	56 single family residences
Gross Density:	1.95± d.u./acre
Total Lot Area:	23.17± acres
Total Right of Way Area:	4.84± acres
Total Common Area/Open Space	0.75± acres (2.6%±)

Section 3



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MILES

Vicinity Map

Bailey Creek Estates
Washoe County
December, 2016

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

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FEET

Site Aerial

Bailey Creek Estates
Washoe County
December, 2016

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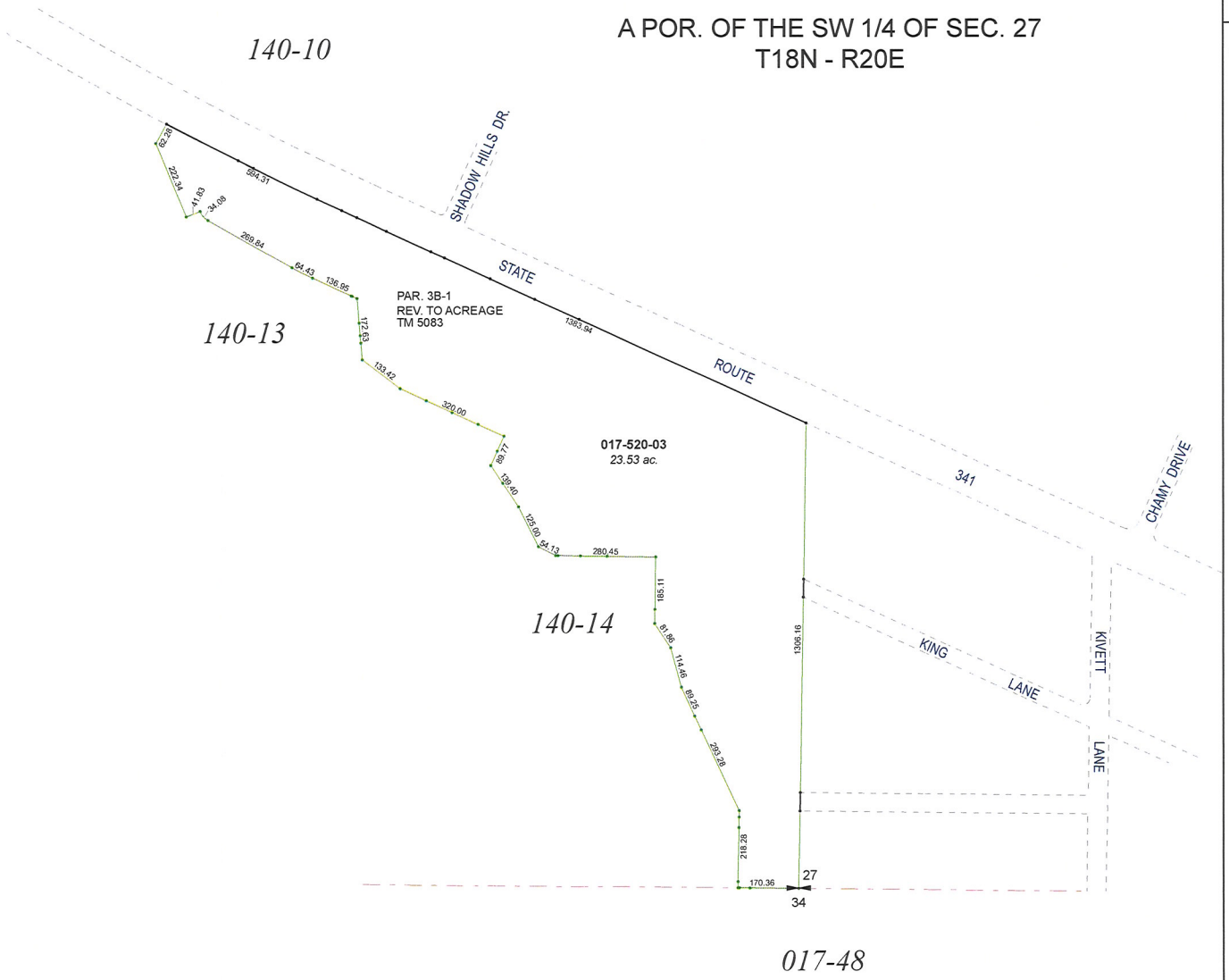
T18N - R20E



Assessor's Map Number

017-52

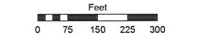
STATE OF NEVADA

WASHOE COUNTY

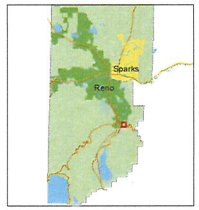
ASSESSOR'S OFFICE

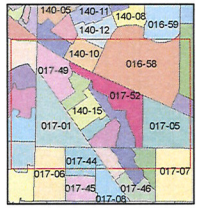
Joshua G. Wilson, Assessor

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



1 inch = 300 feet



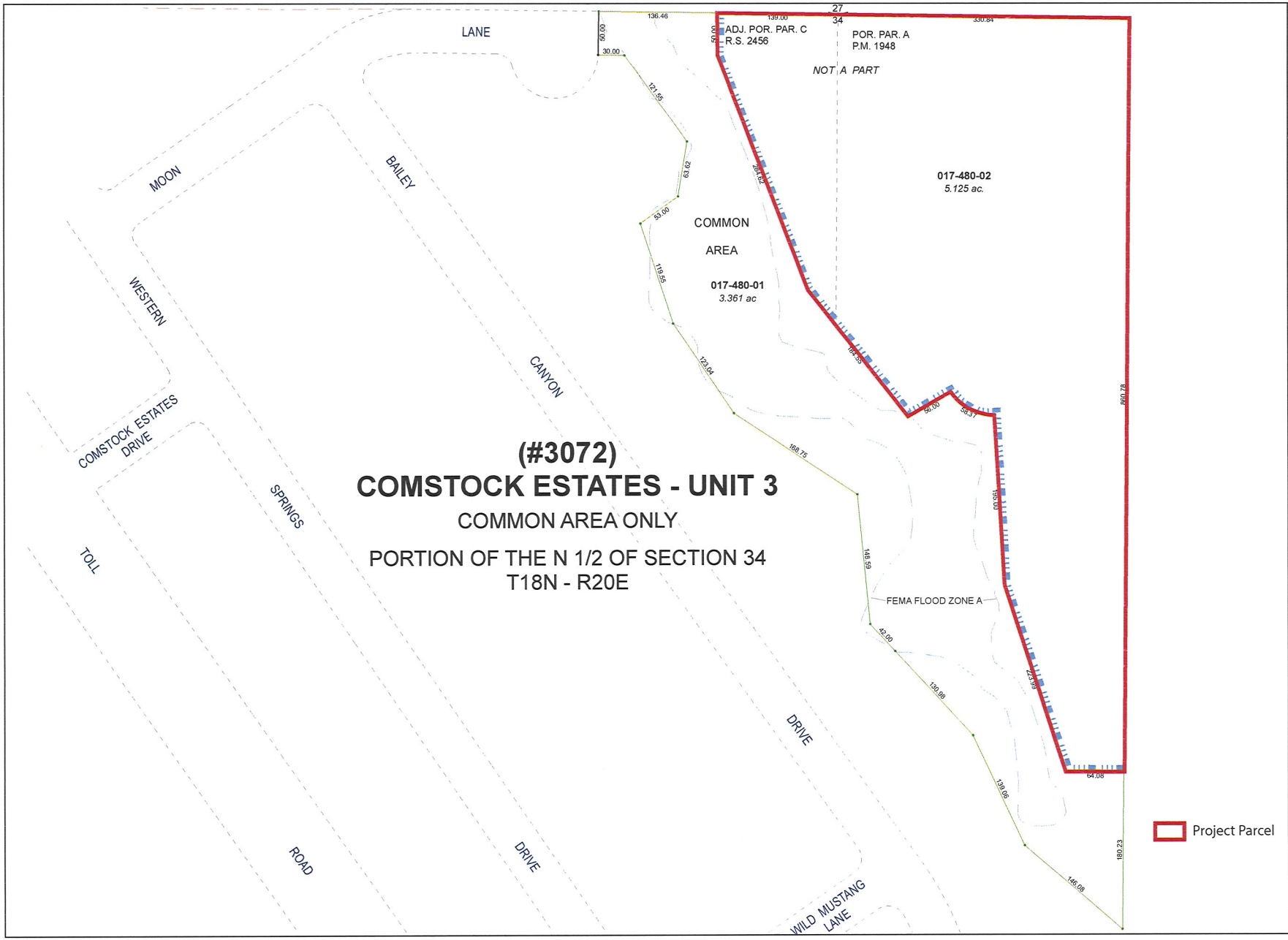


created by: CFB 10/24/2012

last updated: KSB 7/01/14

area previously shown on map(s)

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.



Assessor's Map Number

017-48

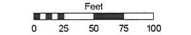
STATE OF NEVADA

WASHOE COUNTY

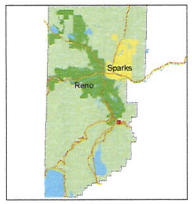
ASSESSOR'S OFFICE

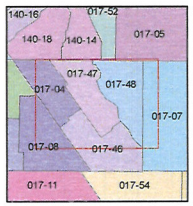
Joshua G. Wilson, Assessor

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



1 inch = 100 feet





created by: TWT 5/14/2014

last updated: _____

area previously shown on map(s)

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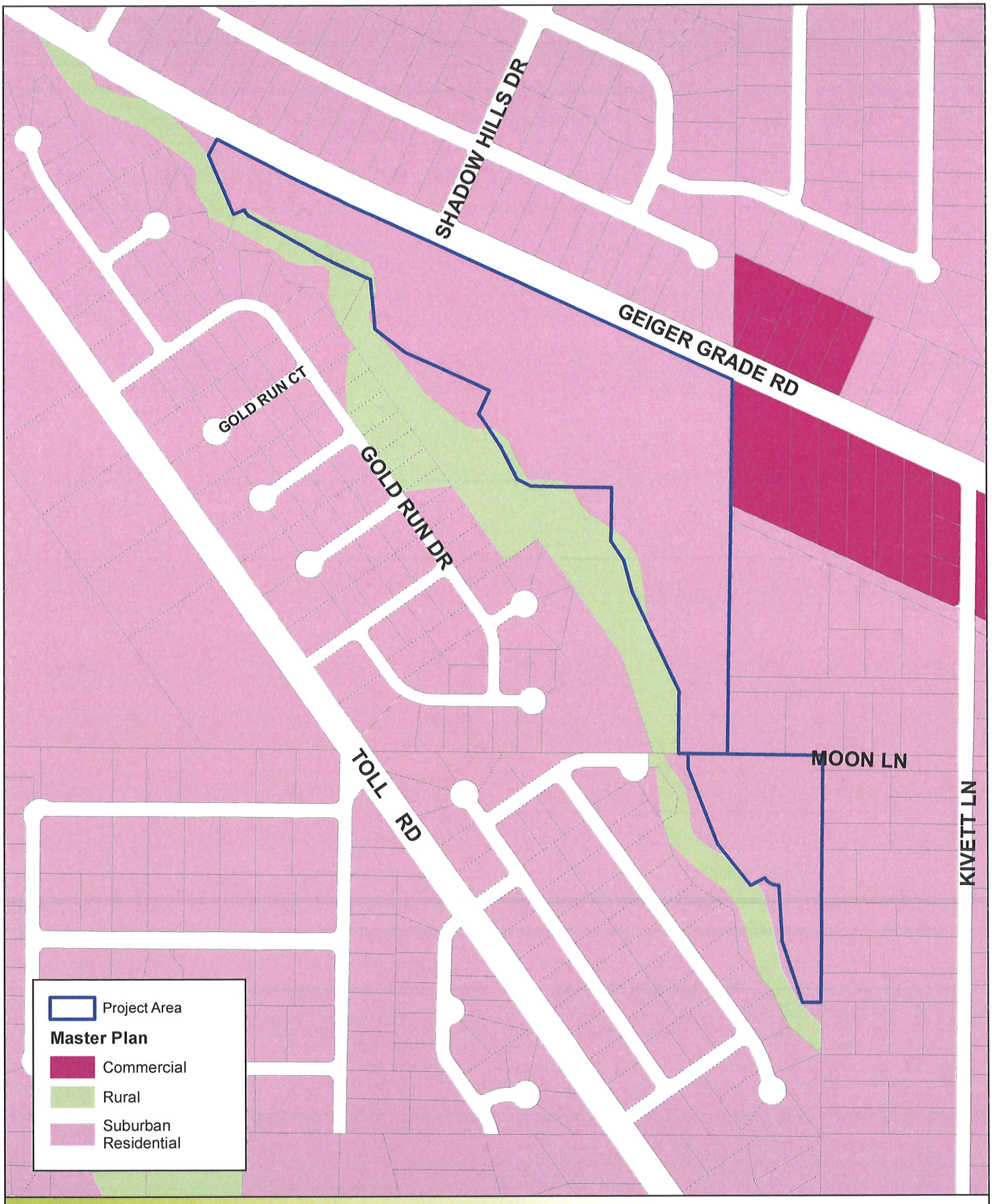
NOTE: This map was prepared for the use of the Washoe County Assessor for assessment and illustrative purposes only. It does not represent a survey of the premises. No liability is assumed as to the sufficiency or accuracy of the data delineated hereon.



Existing Master Plan

Bailey Creek Estates
Washoe County
December, 2016

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

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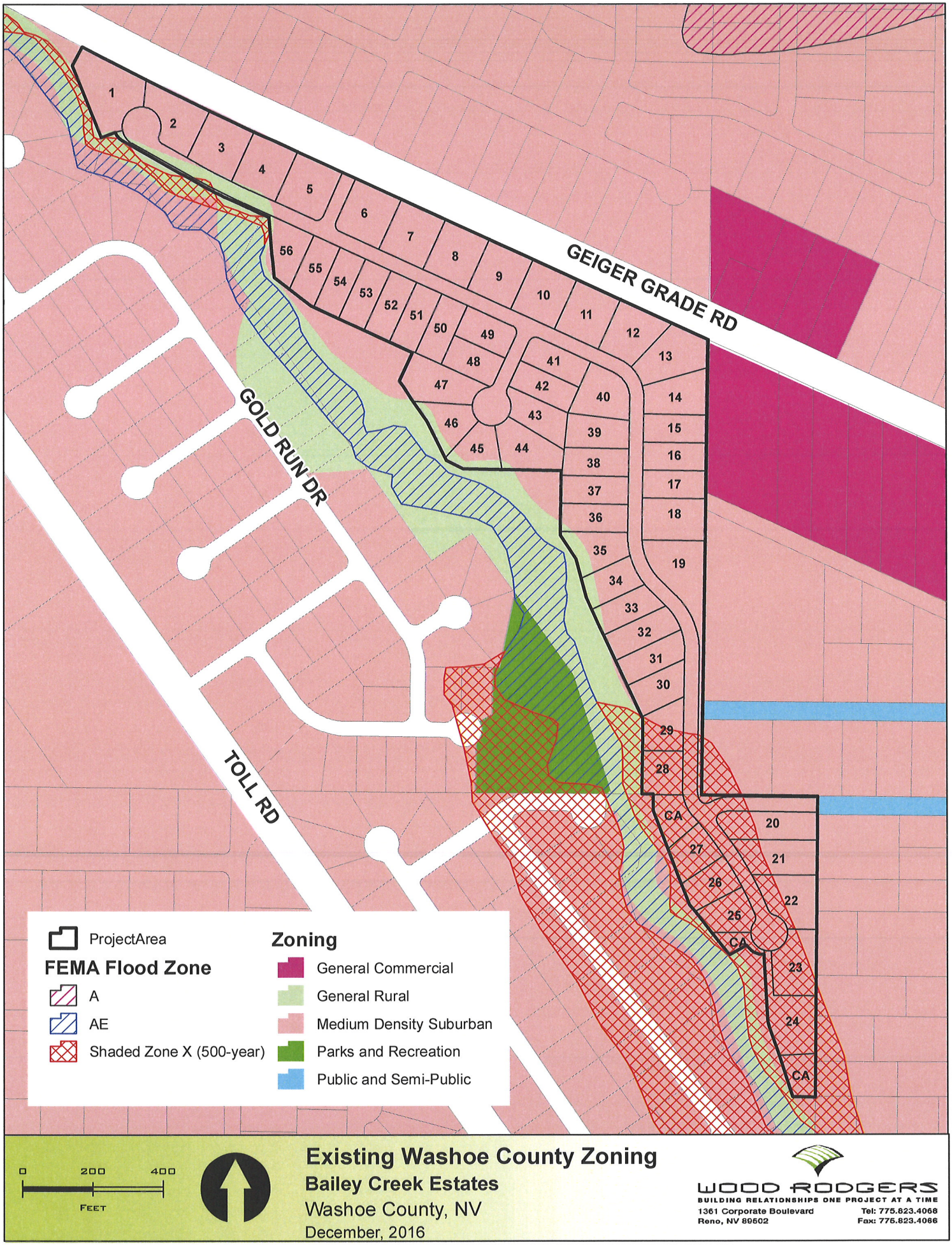

Existing Washoe County Zoning

Bailey Creek Estates

Washoe County, NV

December, 2016

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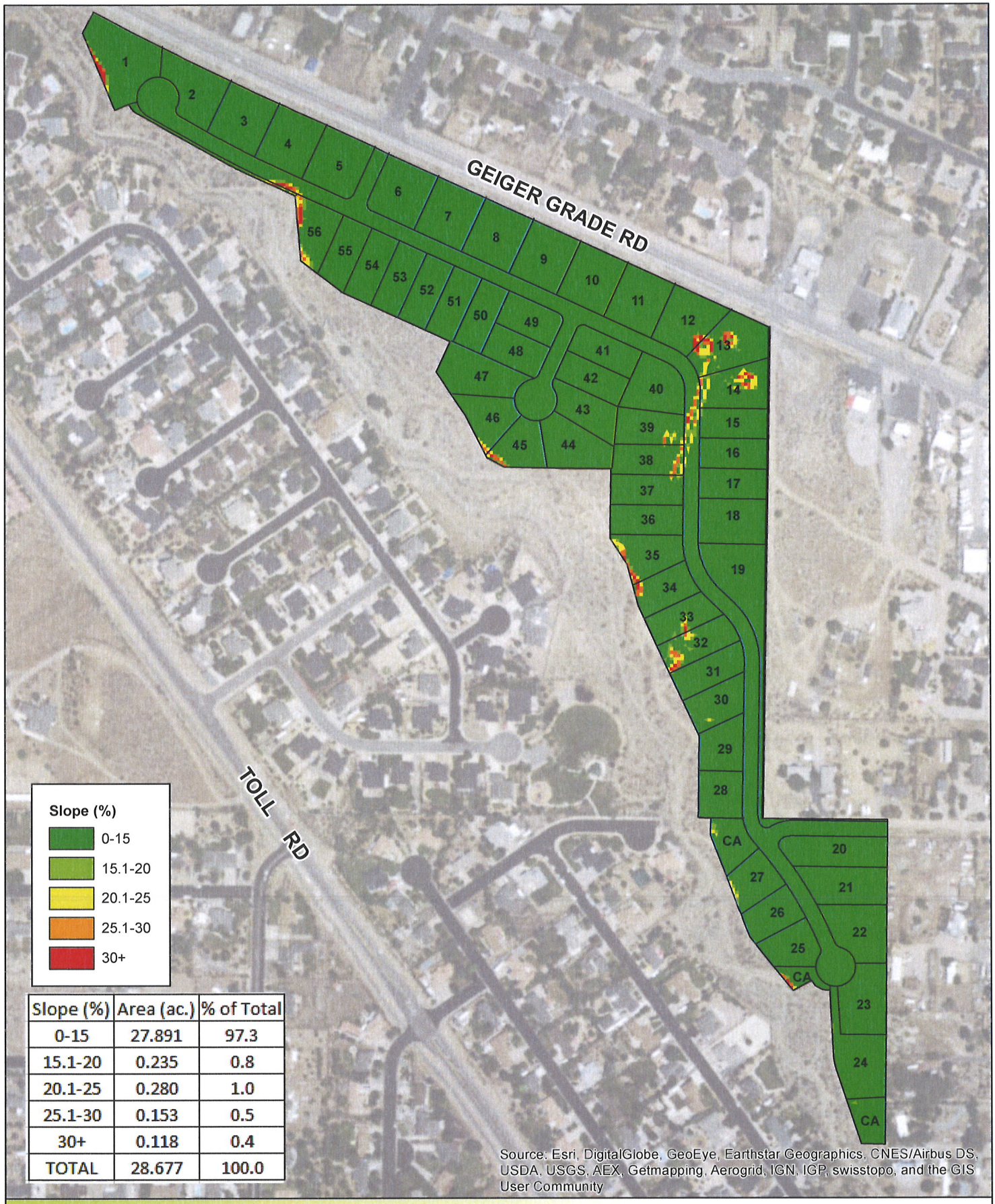

Slope (%)	Area (ac.)	% of Total
0-15	27.891	97.3
15.1-20	0.235	0.8
20.1-25	0.280	1.0
25.1-30	0.153	0.5
30+	0.118	0.4
TOTAL	28.677	100.0

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

0 150 300
FEET

Slope Map

Bailey Creek Estates
Washoe County, NV
December, 2016

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

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SOLAEGUI
ENGINEERS

December 22, 2016

Ms. Kelly Mullin
Washoe County Community Services Department
1001 East Ninth Street
Reno, Nevada 89512

Re: Cottonwood Creek Estates, Trip Generation Letter

Dear Kelly:

This letter contains the findings of our trip generation review of the proposed single family subdivision located on Gieger Grade Road in the Virginia City Foothills region of unincorporated Washoe County, Nevada. The project site plan is attached. Fifty six lots are proposed in the subdivision.

Trip generation calculations for the proposed use are based on the Ninth Edition of *ITE Trip Generation* (2012). The calculation sheet is attached for ITE land use #210: Single Family Detached Housing. Table 1 shows the trip generation summary for the proposed future use.

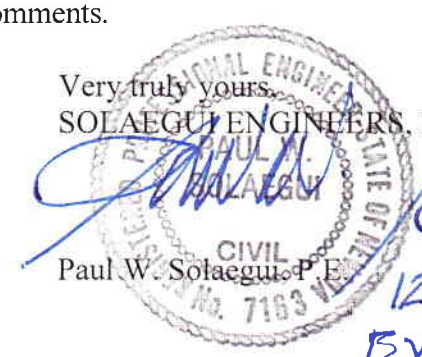
TABLE 1
TRIP GENERATION

LAND USE	ADT	AM PEAK HOUR TOTAL	PM PEAK HOUR TOTAL
Single Family Housing 56 Dwelling Units	533	42	56

As indicated in Table 1, the average daily trip total for the fifty six lots is 533 trips with 42 AM peak hour trips and 56 PM peak hour trips. These totals are be low the 80 peak hour trip threshold that triggers the need for a full traffic study. Consequently a traffic study is not required. However, the project developer has offered to prepare a traffic study as a courtesy to the county.

We trust that this information will be adequate for your immediate project review. Please contact us if you have any questions or comments.

Very truly yours,
SOLAEGUI ENGINEERS, LTD



Paul W. Solaegui, P.E.

12-22-16
EXP 6-30-18

Enclosures
Letters/Cottonwood Creek Estates Trip Letter

Solaegui Engineers Ltd. • 715 H Street • Sparks, Nevada 89431 • 775/358-1004 • FAX 775/358-1098
Civil & Traffic Engineers
e-mail: psolaegui@aol.com

BAILEY CREEK ESTATES

TENTATIVE MAP

PRELIMINARY LOT AND BLOCK PLAN

BAILEY CREEK ESTATES
PRELIMINARY LOT AND BLOCK PLAN

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

1324006

DECEMBER, 2016

SHEET LB-1 OF 5

Average Rate Trip Calculations
For 56 Dwelling Units of Single Family Detached Housing(210) - [R]

Project: Open Date:
Phase: Analysis Date:

Description:

	Average Rate	Standard Deviation	Adjustment Factor	Driveway Volume
Avg. Weekday 2-Way Volume	9.52	3.70	1.00	533
7-9 AM Peak Hour Enter	0.19	0.00	1.00	11
7-9 AM Peak Hour Exit	0.56	0.00	1.00	31
7-9 AM Peak Hour Total	0.75	0.90	1.00	42
4-6 PM Peak Hour Enter	0.63	0.00	1.00	35
4-6 PM Peak Hour Exit	0.37	0.00	1.00	21
4-6 PM Peak Hour Total	1.00	1.05	1.00	56
Saturday 2-Way Volume	9.91	3.72	1.00	555
Saturday Peak Hour Enter	0.50	0.00	1.00	28
Saturday Peak Hour Exit	0.43	0.00	1.00	24
Saturday Peak Hour Total	0.93	0.99	1.00	52

Note: A zero indicates no data available.
Source: Institute of Transportation Engineers
Trip Generation Manual, 9th Edition, 2012

TRUCKEE MEADOWS WATER AUTHORITY

Quality. Delivered.

December 20, 2016

Mr. Charles Maddox
P.O. Box 70577
Reno, NV 89570

RE: Bailey Creek Estates
Acknowledgement of Water Service
TMWA Work Order 16-5301

Dear Mr. Maddox:

I have reviewed the plans for the above referenced development ("Project") as submitted to the Truckee Meadows Water Authority and have determined the Project is within the Truckee Meadows Water Authority's retail water service area. This letter constitutes an Acknowledgment of Water Service pursuant to NAC 445A.6666, and the Truckee Meadows Water Authority hereby acknowledges that Truckee Meadows Water Authority is agreeable to supplying water service to the Project, subject to applicant satisfying certain conditions precedent, including, without limitation, the dedication of water resources, approval of the water supply plan by the local health authority, the execution of a Water Service Agreement, payment of fees, and the construction and dedication of infrastructure in accordance with our rules and tariffs. This Acknowledgement does not constitute a legal obligation by Truckee Meadows Water Authority to supply water service to the Project, and is made subject to all applicable Truckee Meadows Water Authority Rules.

Review of conceptual site plans or tentative maps by Truckee Meadows Water Authority does not constitute an application for service, nor implies a commitment by Truckee Meadows Water Authority for planning, design or construction of the water facilities necessary for service. The extent of required off-site and on-site water infrastructure improvements will be determined by Truckee Meadows Water Authority upon receiving a specific development proposal or complete application for service and upon review and approval of a water facilities plan by the local health authority. Because the NAC 445A Water System regulations are subject to interpretation, Truckee Meadows Water Authority cannot guarantee that a subsequent water facility plan will be approved by the health authority or that a timely review and approval of the Project will be made. The Applicant should carefully consider the financial risk associated with committing resources to their project prior to receiving all required approvals. After submittal of a complete Application for Service, the required facilities, the cost of these facilities, which could be significant, and associated fees will be estimated and will be included as part of the Water Service Agreement necessary for the Project. All fees must be paid to Truckee Meadows Water Authority prior to water being delivered to the Project.

Please call me at 834-8292 at your convenience if you have any questions.

Sincerely,
Truckee Meadows Water Authority

Keith Ristinen, P.E.
Principal Engineer

BAILEY CREEK ESTATES
TENTATIVE MAP
TITLE SHEET

OWNER:

CHARLES B. MADDOX PO
BOX 70577 RENO, NV 89570

APPLICANT:

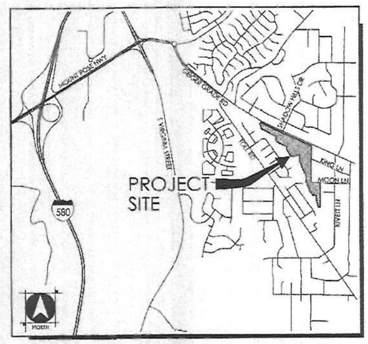
STL COMPANY, LLC.
16500 WEDGE PARKWAY,
BLDG A, STE 200 RENO, NV

BASIS OF BEARINGS

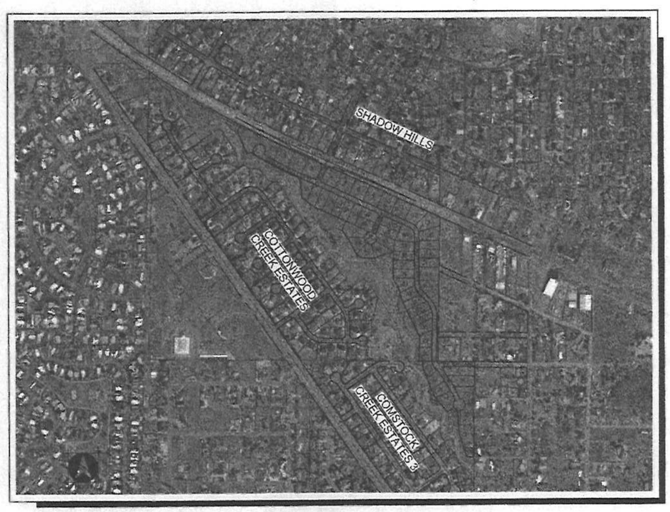
NEVADA STATE PLANE COORDINATE SYSTEM, WEST ZONE, NORTH AMERICAN DATUM OF 1983/1994, HIGH ACCURACY REFERENCE NETWORK (NAD 83/94 - HARN), AS DETERMINED USING REAL TIME KINEMATIC (RTK) GPS OBSERVATIONS WITH CORRECTIONS TRANSMITTED BY THE NORTHERN NEVADA COOPERATIVE REAL TIME NETWORK GPS (NNCRN GPS). THE BEARING BETWEEN GPS REFERENCE STATION "WSZOLEZZI" - 562SM01279 AND "RNW RENO" - N745M01028 IS TAKEN AS NORTH 40°39'41" WEST. 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 1988 (NAVD 88) AS TAKEN FROM CITY OF RENO BENCHMARK 3091, WITH A PUBLISHED ELEVATION OF 4555.77 FT. BENCHMARK 3091 IS DESCRIBED AS BEING 1 ½" DIA STEEL CAP - AT SW'LY TRAFFIC ISLAND OF VETERANS PKWY AND CURTI RANCH RD - 7' NW'LY OF S'LY APEX OF THE ISLAND.



VICINITY MAP
NOT TO SCALE



SITE PLAN
NOT TO SCALE

SITE INFORMATION:

LOT SUMMARY
- SITE AREA: 28.76 AC
- LARGEST LOT AREA: 0.81 AC
- SMALLEST LOT AREA: 0.33 AC
- AVERAGE LOT AREA: 0.41 AC

COMMON AREA
- COMMON AREA 1: 0.05 AC
- COMMON AREA 2: 0.28 AC
- COMMON AREA 3: 0.05 AC
- COMMON AREA 4: 0.24 AC
- COMMON AREA 5: 0.13 AC
- TOTAL COMMON AREA: 0.75 AC

ASSESSOR PARCEL NUMBER
- 017-520-03, 017-480-02

ENGINEERS STATEMENT:

I, STEVEN P. STRICKLAND, DO HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED BY ME OR UNDER MY SUPERVISION AND WAS COMPLETED ON THE 15th DAY OF DECEMBER, 2016.

12/15/16

STEVEN P. STRICKLAND, P.E. #51192

PROFESSIONAL ENGINEER - STATE OF NEVADA
STEVEN P. STRICKLAND
Exp: 6-30-18
CIVIL
No. 15972

SHEET INDEX

SHT No.	DWG ID	DRAWING DESCRIPTION
1	T-1	TITLE SHEET
2	LB-1	PRELIMINARY LOT AND BLOCK PLAN
3	G-1	PRELIMINARY GRADING PLAN
4	U-1	PRELIMINARY UTILITY PLAN
5	L-1	PRELIMINARY LANDSCAPE PLAN

BAILEY CREEK ESTATES
TITLE SHEET

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

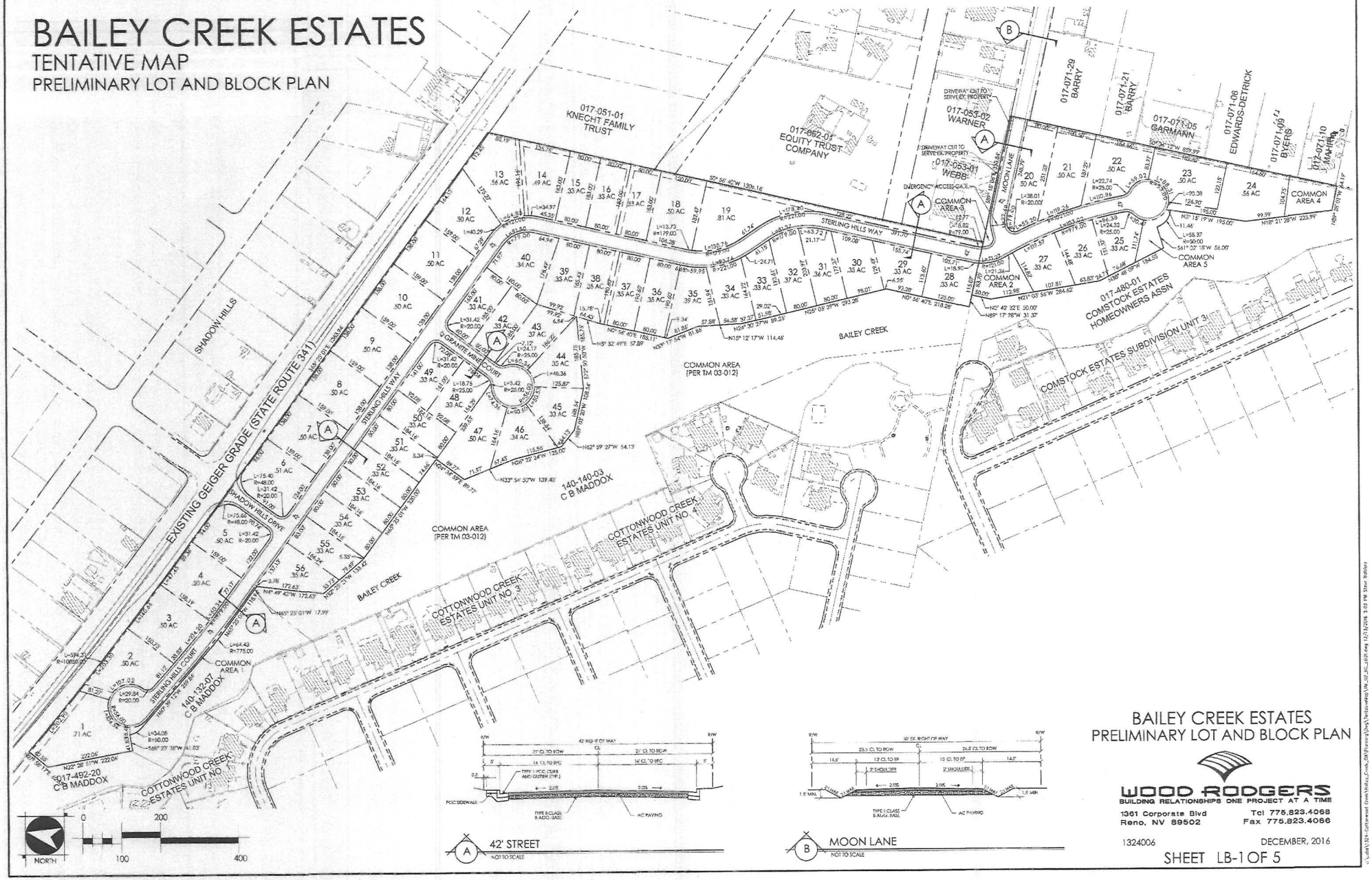
1324006 DECEMBER, 2016

SHEET T-1 OF 5

BAILEY CREEK ESTATES

TENTATIVE MAP

PRELIMINARY LOT AND BLOCK PLAN



BAILEY CREEK ESTATES
PRELIMINARY LOT AND BLOCK PLAN

WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME
1361 Corporate Blvd
Reno, NV 89502
Tel 775.823.4068
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1324006 DECEMBER, 2016

SHEET LB-1 OF 5

BAILEY CREEK ESTATES

TENTATIVE MAP

PRELIMINARY GRADING PLAN

GRADING STATISTICS

ESTIMATED CUT	50,000 cu.yd.
ESTIMATED FILL	50,000 cu.yd.
AREA OF DISTURBANCE	2.3 Ac

BAILEY CREEK ESTATES
PRELIMINARY GRADING PLAN

WOOD RODGERS
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1324006

DECEMBER, 2016

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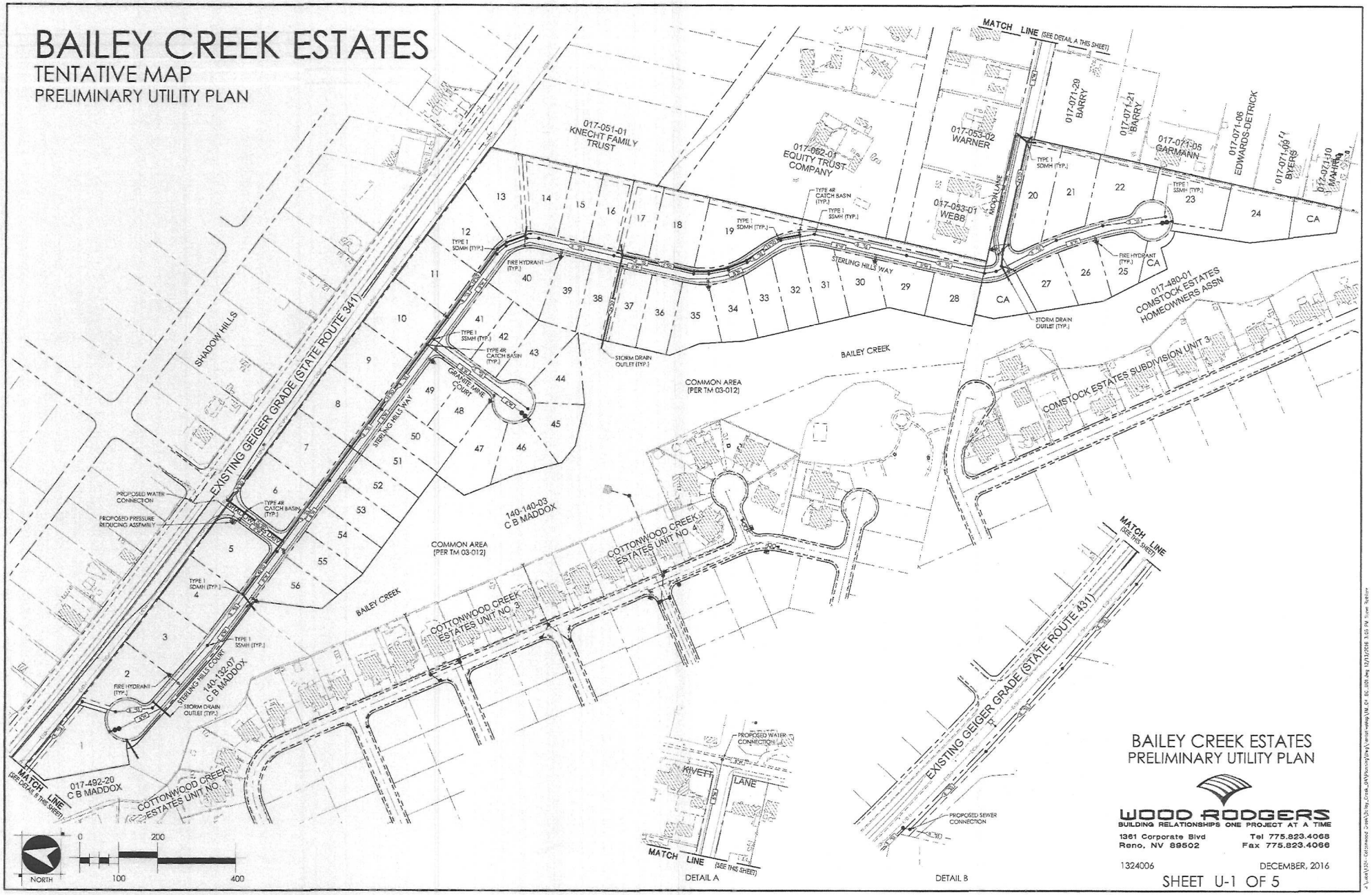
BAILEY CREEK ESTATES

TENTATIVE MAP

PRELIMINARY UTILITY PLAN



BAILEY CREEK ESTATES
PRELIMINARY UTILITY PLAN

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1361 Corporate Blvd
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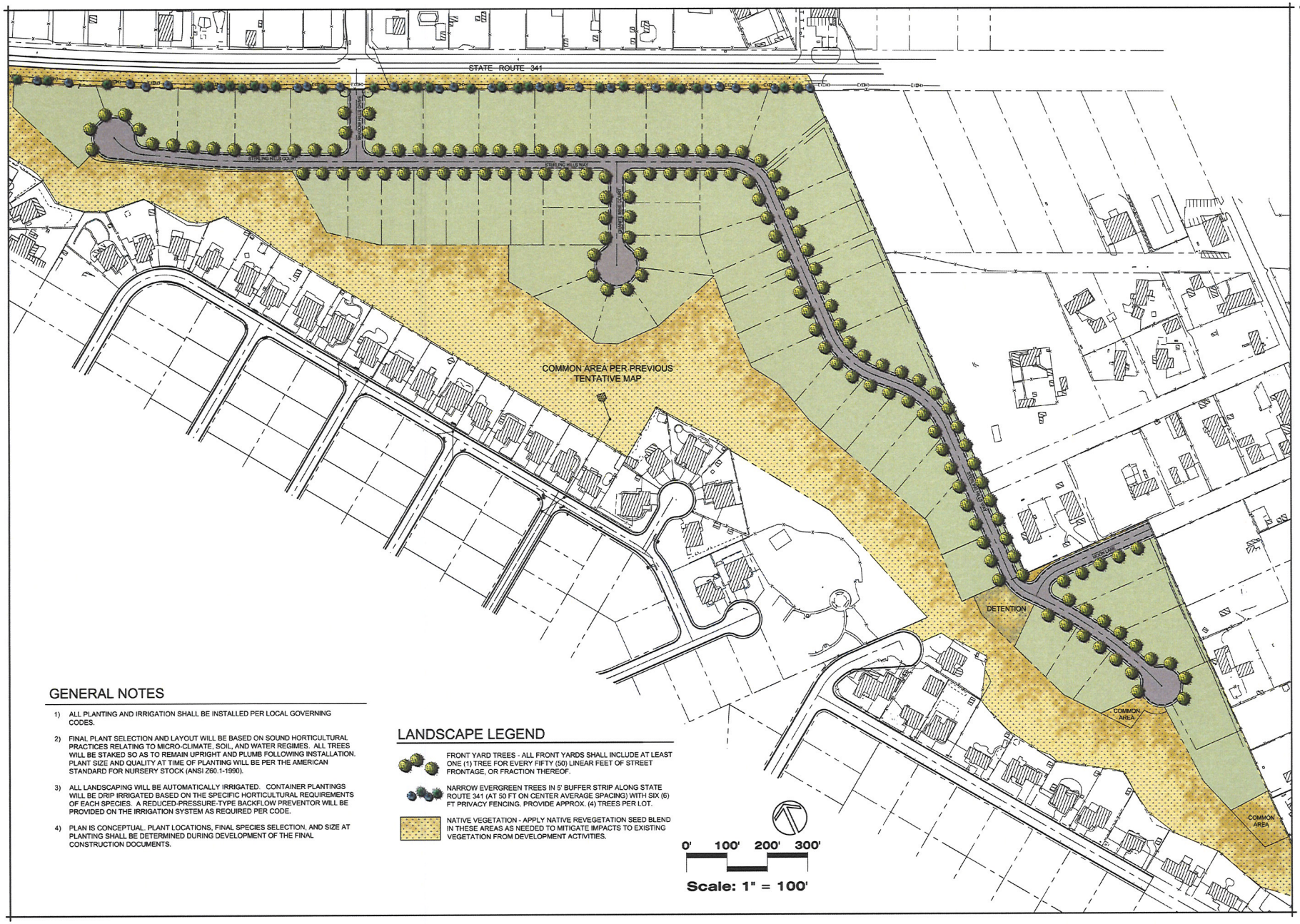
1324006

DECEMBER, 2016

SHEET U-1 OF 5



GENERAL NOTES

1) ALL PLANTING AND IRRIGATION SHALL BE INSTALLED PER LOCAL GOVERNING CODES.

2) 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 THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-1990).

3) ALL LANDSCAPING WILL BE AUTOMATICALLY IRRIGATED. CONTAINER PLANTINGS WILL BE DRIP IRRIGATED BASED ON THE SPECIFIC HORTICULTURAL REQUIREMENTS OF EACH SPECIES. A REDUCED-PRESSURE-TYPE BACKFLOW PREVENTOR WILL BE PROVIDED ON THE IRRIGATION SYSTEM AS REQUIRED PER CODE.

4) PLAN IS CONCEPTUAL. PLANT LOCATIONS, FINAL SPECIES SELECTION, AND SIZE AT PLANTING SHALL BE DETERMINED DURING DEVELOPMENT OF THE FINAL CONSTRUCTION DOCUMENTS.

LANDSCAPE LEGEND

FRONT YARD TREES - ALL FRONT YARDS SHALL INCLUDE AT LEAST ONE (1) TREE FOR EVERY FIFTY (50) LINEAR FEET OF STREET FRONTAGE, OR FRACTION THEREOF.

NARROW EVERGREEN TREES IN 5' BUFFER STRIP ALONG STATE ROUTE 341 (AT 50 FT ON CENTER AVERAGE SPACING) WITH SIX (6) FT PRIVACY FENCING. PROVIDE APPROX. (4) TREES PER LOT.

NATIVE VEGETATION - APPLY NATIVE REVEGETATION SEED BLEND IN THESE AREAS AS NEEDED TO MITIGATE IMPACTS TO EXISTING VEGETATION FROM DEVELOPMENT ACTIVITIES.

L.A. Studio Nevada
the landscape architecture studio
1523 C Street
Sparks, NV 89431
(775) 333-2223
NV RLA #440
www.lastudionevada.com

Preliminary Landscape Plan
BAILEY CREEK
Silver Crest Homes
Washoe County, Nevada

No.	Revision Date

LA No: 586-503-I-16
Designed: LA
Drawn: LA
Checked: RPH
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Map Pocket

WOOD RODGERS

December 14, 2016
Project No. 1324006

Silver Crest Homes
Mr. Rich Balestreri
3500 Douglas Blvd, Suite 270
Roseville, CA 95661

RE: Bailey Creek Subdivision
Geotechnical Review

REF: Updated Geotechnical Investigation – Cottonwood Creek; (Comstock Estates, Units 4-11, dated January 30, 1995); Reno, Nevada; Summit Engineering Corp.; September 6, 2005; Job No. 21545.

Geotechnical Investigation; Comstock Estates, Units 4-11, Washoe County, Nevada; Summit Engineering Corp.; January 30, 1995; File No. 21545.

2012 International Residential Code & Northern Nevada Amendments (IRC)
2012 International Building Code & Northern Nevada Amendments (IBC)

Dear Mr. Balestreri;
Wood Rodgers is pleased to present this review of prior geotechnical work performed for the referenced development and develop preliminary assessments for the development of the project. The purposes of this review are to:

1. Review prior geotechnical design conditions in consideration of contemporary building code requirements and design standards.
2. As appropriate, present recommendations for additional services or refinement of available data.

Our assessments will initially be based upon the opinions and recommendations presented in the referenced geotechnical reports. Additional assessment will then be provided based on readily available geologic and soil maps.

Prior Work
Four test pits have been excavated on the undeveloped portion of the site as part of the original investigation circa 1995. The predominant soil type shown on the logs indicated a dense layer of well-graded gravel with some cobbles and small boulders up to 12 to 18 inches to the maximum depth explored (10 feet). Early geologic mapping shows the majority of the site as a gravel pit. Laboratory testing was performed on the same classification of soils sampled from the currently developed area and indicates a coarse gravel material with a very low fines content. However, within test pit TP-13, to the far east of the

site, a 2 foot cap of clayey sand was indicated that meets the IBC's requisite definition of potentially expansive soils. Groundwater was not encountered during the field exploration.

Three short, inactive quaternary faults were mapped as trending through the southern half of the current development. The subject portion of the site is not crossed by any mapped faults. Although prior reports did not recommend siting occupied structures across any faults, the update report includes an explanation for occupied structures being built over and adjacent to inactive faults in the greater Reno area for decades without significant harm to residents. Seismic design considerations presented are framed around the now obsolete 2003 IBC maps. Liquefaction potential is described as very minimal.

No soluble sulfate data was available from the prior work. Supplemental sampling and testing of soils was required during mass grading to minimize adverse impacts to concrete improvements.

Contemporary Maps and Codes

USGS Quaternary Fault Structures

The United States' Geological Survey interactive fault hazard program indicates three faults trending toward the subject property from across the southern perimeter. These fault structures have been dated as Quaternary (i.e. < 1.6 million years) and have been assigned to the Unnamed Fault Zone East of Reno; however, no associated Holocene aged structures have been mapped or identified. These faults are indicated in Figure 1; mapping also indicates the structures are concealed or inferred through Quaternary deposits.

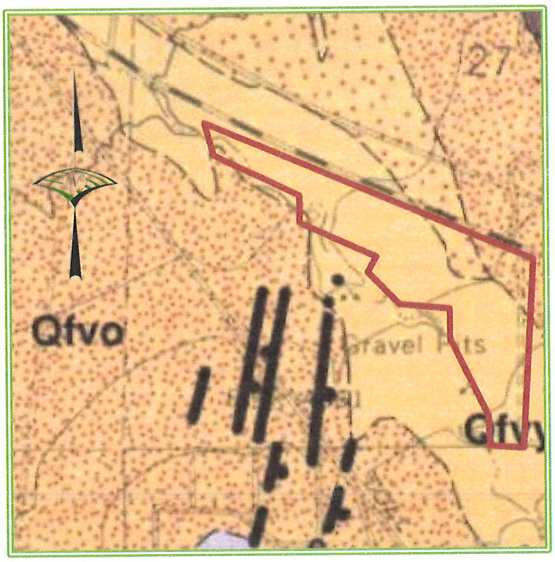


FIGURE 1 – Geologic Map of Project Area
(Nevada Bureau of Mines and Geology, Mt. Rose – NE Bonham & Rogers, 1993)

Natural Resource Conservation Services (NRCS) – Soil Survey Maps

The bulk of the soil profile has been mapped as silty sand with gravel and silty gravel. However, surface soils within the northeast quadrant of the site are indicated to present a sandy clay layer up to 3 feet thick of moderate plasticity which would be characterized as potentially expansive soils.

Grading

The surface clay rich soils should be removed from the building pad areas where present within two feet of footing grade established for the pad. This will assure that at least two feet of structural fill is present between the bottom of footing any remaining clay zone. These surface clay soils may be placed in deep fills or in non-structural areas. Structural areas are defined as those areas that support structures or

planned improvements, including surcharge and active zones associated with retaining structures. Additional grading recommendations would be developed during performance of a design level geotechnical report.

Public Improvements

Most public improvements will be founded in soils presenting an R-Value greatly exceeding 30; we therefore anticipate that Washoe County's minimum structural pavement sections will be satisfactory. If lower R-Values are determined during performance of a design level geotechnical report, the base course thickness should be modified as required by the Public Works Design Manual.

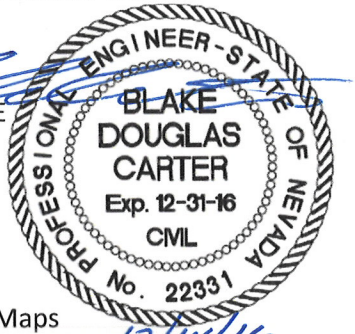
Summary

Overall our preliminary studies indicate the site is well suited for the proposed development. A design level geotechnical report should be prepared for the project that can address specific design and construction considerations based on the current development plan and in consideration of contemporary codes and design standards.

Sincerely,

WOOD RODGERS, INCORPORATED

Blake D. Carter, PE
Associate
RE No. 22331
Expires 12/31/16

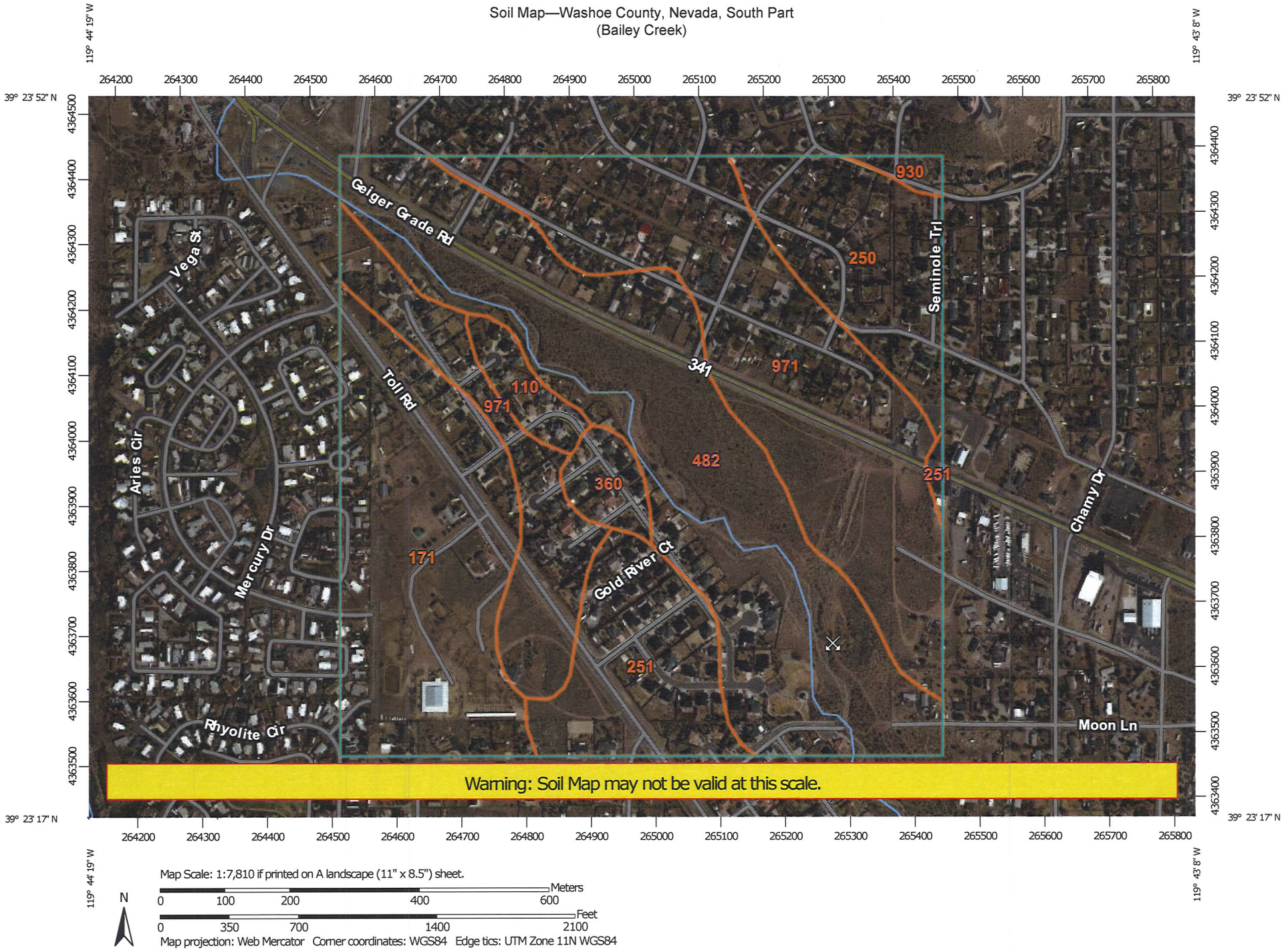


12/14/16

James G. Smith, PE
Principal

NRCS Soil Survey Maps
NRCS Engineering Properties

Soil Map—Washoe County, Nevada, South Part
(Bailey Creek)



Map Scale: 1:7,810 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 100 200 400 600

Feet
0 350 700 1400 2100

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Washoe County, Nevada, South Part
Survey Area Data: Version 12, Sep 12, 2016

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

Date(s) aerial images were photographed: Apr 2, 2012—Apr 29, 2012

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

Map Unit Legend

Washoe County, Nevada, South Part (NV628)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
110	Jowec variant sandy loam, 4 to 8 percent slopes	4.1	1.9%
171	Indian Creek gravelly sandy loam, 0 to 4 percent slopes	40.2	18.9%
250	Cassiro gravelly sandy loam, 2 to 4 percent slopes	18.5	8.7%
251	Cassiro gravelly sandy loam, 4 to 8 percent slopes	19.2	9.0%
360	Pits	4.1	1.9%
482	Holbrook cobbly loamy sand, 2 to 8 percent slopes	60.5	28.5%
930	Old Camp stony sandy loam, 15 to 30 percent slopes	1.3	0.6%
971	Aladshi sandy loam, 2 to 4 percent slopes	64.7	30.5%
Totals for Area of Interest		**212.5**	**100.0%**

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Report—Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Engineering Properties–Washoe County, Nevada, South Part														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
110—Jowec variant sandy loam, 4 to 8 percent slopes														
Jowec variant	85	D	0-10	Sandy loam	SM	A-2	0- 0- 0	0- 3- 5	90-95-100	90-95-100	50-55-60	15-25-35	20-25-31	NP
			10-20	Clay, sandy clay	CH, CL, SC	A-6, A-7	0- 0- 0	0- 0- 0	90-95-100	90-95-100	80-90-100	40-58-75	35-45-55	20-25-30
			20-66	Stratified sandy loam to clay loam	SC	A-2, A-6	0- 0- 0	0- 0- 0	90-95-100	90-95-100	55-68-80	30-40-50	20-28-35	10-15-20
171—Indian Creek gravelly sandy loam, 0 to 4 percent slopes														
Indian creek	85	D	0-3	Gravelly sandy loam	SC-SM, SC	A-1, A-2	0- 0- 0	0- 3- 5	60-70-80	50-60-70	35-45-55	15-25-35	20-23-25	5-8 -10
			3-20	Gravelly clay, clay, sandy clay	CH	A-7	0- 0- 0	0- 3- 5	80-90-100	60-75-90	55-68-80	50-65-80	55-63-70	30-38-45
			20-25	Cemented material	—	—	—	—	—	—	—	—	—	—
			25-60	Stratified extremely gravelly loamy coarse sand to gravelly sandy clay loam	GC-GM, GM, GW-GM, GP-GC	A-1, A-2	0- 0- 0	5-18- 30	35-45-55	30-43-55	15-20-25	5-10- 15	20-25-30	NP-5 -10

Engineering Properties–Washoe County, Nevada, South Part														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
250—Cassiro gravelly sandy loam, 2 to 4 percent slopes														
Cassiro	85	D	0-15	Gravelly sandy loam	SM	A-1, A-2	0- 0- 0	0- 3- 5	65-73-80	55-63-70	30-40-50	15-23-30	21-28-35	NP
			15-45	Very gravelly sandy clay, very gravelly clay	GC, SC	A-2	0- 0- 0	5-10- 15	50-63-75	40-45-50	25-35-45	15-25-35	25-38-50	10-18-25
			45-60	Bedrock	—	—	—	—	—	—	—	—	—	—
251—Cassiro gravelly sandy loam, 4 to 8 percent slopes														
Cassiro	85	D	0-15	Gravelly sandy loam	SM	A-1, A-2	0- 0- 0	0- 3- 5	65-73-80	55-63-70	30-40-50	15-23-30	21-28-35	NP
			15-45	Very gravelly sandy clay, very gravelly clay	GC, SC	A-2	0- 0- 0	5-10- 15	50-63-75	40-45-50	25-35-45	15-25-35	25-38-50	10-18-25
			45-60	Bedrock	—	—	—	—	—	—	—	—	—	—
360—Pits														
Pits	100		0-60	Variable	GP	A-1	—	—	—	—	—	—	0-7 -14	—
482—Holbrook cobbly loamy sand, 2 to 8 percent slopes														
Holbrook	85	A	0-10	Cobbly loamy sand	SM	A-1	0- 0- 0	15-25-30	75-85-90	50-70-70	25-33-40	10-15-20	18-24-30	NP
			10-60	Stratified stony sand to extremely gravelly loam	GM, SM	A-1, A-2	0- 5- 10	10-25-40	45-58-70	40-53-65	30-40-50	15-23-30	17-23-29	NP

Engineering Properties–Washoe County, Nevada, South Part														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
930—Old Camp stony sandy loam, 15 to 30 percent slopes														
Old camp	85	D	0-2	Stony sandy loam	SM	A-1	1- 3- 5	5-10- 15	60-65-70	55-60-65	35-40-45	15-20-25	15-20-25	NP-3 -5
			2-14	Very cobbly clay loam, extremely stony sandy clay loam, very stony clay loam	GC	A-2, A-6	15-15-25	20-25-30	40-48-55	35-43-50	30-38-45	25-33-40	30-35-40	15-20-25
			14-24	Bedrock	—	—	—	—	—	—	—	—	—	—
971—Aladshi sandy loam, 2 to 4 percent slopes														
Aladshi	85	C	0-7	Sandy loam	SM	A-2	0- 0- 0	0- 3- 5	85-93-100	80-88-95	50-58-65	25-30-35	20-23-25	NP-3 -5
			7-34	Gravelly loam, sandy clay loam, sandy loam	CL, SC	A-6	0- 0- 0	0- 3- 5	80-88-95	70-80-90	55-65-75	45-53-60	25-30-35	10-15-20
			34-60	Stratified extremely gravelly loamy sand to very gravelly loam	SM	A-1, A-2	0- 0- 0	5- 8- 10	60-68-75	35-43-50	25-33-40	15-23-30	20-23-25	NP-3 -5

Data Source Information

Soil Survey Area: Washoe County, Nevada, South Part
Survey Area Data: Version 12, Sep 12, 2016

SUMMIT ENGINEERING CORPORATION™

September 6, 2005 Job No. 21545

Mr. C. B. Maddox
5894 Sheep Drive
Carson City, Nevada 89701

RE: Updated Geotechnical Investigation – Cottonwood Creek
(Comstock Estates, Units 4-11, dated January 30, 1995)
Reno, Nevada

Dear Mr. Maddox:

Summit Engineering has completed a supplementary study to augment and to update the information provided in the previous soils report of this project site (Sheets 1 and 2). The supplemental study included review of the current grading plan to assure that depths of original exploration were adequate, updating the specifications to incorporate the *Standard Specifications for Public Works Construction (2004)*, replacing the 1992 date, and assessment of seismic risks using current standards.

The original field exploration test pits were located on and compared with the current grading plan. Depths of those test pits were determined to be adequate for the cuts and fills as planned.

For flexible pavement design, previous traffic information and subgrade resistance data were used to derive a section design (Appendix A). The resultant pavement section consisting of 4 inches asphaltic concrete on 6 inches aggregate base appears to be adequate for the proposed uses. All work shall comply with the *Standard Specifications for Public Works Construction (2004)*.

No soluble sulfate data were available. In order for the soils to be characterized as "negligible" per IBC 2003 standards (IBC 2003, Table 1904.3), the soils must contain less than 0.1% soluble sulfates. Supplemental sampling during grading is required in order to minimize adverse impacts to concrete improvements from soluble sulfate.

Three Quaternary faults have been mapped across the site by prior investigators (Sheet 3). These faults do not cut Holocene sediments, and have been classified previously as "inactive". Additionally, a small, inactive, early Quaternary volcanic cone is situated approximately 0.5 mi north of the site. Literature reviewed included the prior geotechnical investigation by Summit Engineering and studies by the Nevada Bureau of Mines and Geology (Bell, 1984; Bonham and Bell, 1993; dePolo, 1996). The property, according to International Building Code 2003 maps (Sheets 4–6), may be subject to strong seismic acceleration, a minimum 0.65g ground acceleration, and therefore has a high probability for experiencing impact from a major seismic event. The effect of seismic shaking, therefore, is an important consideration.

There are no local codes that provide guidelines for the evaluation of seismic risk or surface rupture hazard associated with Quaternary (Holocene and Pleistocene) faults. The State of Nevada requires the use of seismic provisions set by the IBC, as well as adoptions of appropriate local standards (NRS 278.580.5). For the purposes of assessing seismic hazard and potential fault rupture hazard, standard engineering practice is to pursue the most diligent investigation of those faults deemed to be most likely to be active. Most

geological consultants in Nevada follow the conventions established by the Nevada Earthquake Safety Council, whose guidelines are based on the Alquist-Priolo Act of 1972 in California. Per these guidelines, faults with evidence of movement in Holocene time (past 12,000 years) are considered "active". Those faults with evidence of displacement during Pleistocene time (12,000 to 1,800,000 years ago) would be considered "potentially active". Active faults are afforded a greater degree of study and analysis than those regarded as potentially active. Normally, any fault suspected of being active, as demonstrated by offset of the argillic (topsoil) horizon, poses a greater risk to development and requires a minimum setback of 50 feet for occupied structures. The mapped faults that cross the site have been previously classified as "inactive". The seismic hazard at the Comstock Estates site is probably no greater than other comparable locations in the area that are located at comparable distances to similarly identified faults.

Occupied structures have been built over and adjacent to inactive faults in the greater Reno area for decades, without significant harm to residents from temblors affecting the area. Building codes have evolved in recent years to provide adequate structural protection to residents for the level of tremors experienced to date. Summit Engineering Corporation does not recommend siting occupied structures across any faults, regardless of age.

The site has soil profiles that range from E, soft soil, to D, stiff to dense soil. The following table summarizes seismic design parameters for the 2003 International Building Code criteria for structural design of the project:

IBC SEISMIC DESIGN

Site Class	E	D
Soil Profile Type	Soft Soil	Stiff Soil
Seismic Source Type	B	B
Soil Shear Wave Velocity ($\ddot{v}_s$)	<600 fps	600-1200
Standard penetration resistance (N)	<15 (est.)	15-50
Soil undrained shear strength (s_u)	<1000 psf	1000-2000
Site Coefficient (F_a) w/ short accel. (s_s)	0.9	1.0
Site Coefficient (F_v) w/ 1-sec. accel. (s_1)	2.4	1.5
Max. ground motion, 0.2-sec SA (S_s), %g	159.61	159.61
Max. ground motion, 1.0-sec SA (S_1), %g	64.07	64.07

Please note that the updated reference for all specifications in the initial report now are pursuant to *Standard Specifications for Public Works Construction (2004)*.

If you have any further questions, please contact our office (775)-747-8550.

Sincerely,

SUMMIT ENGINEERING CORPORATION

PROFESSIONAL ENGINEER STATE OF NEVADA
JOHN K. GLYNN III
Exp. 6-30-07
CIVIL
No. 8517

Jack Glynn, III, P.E.
Geotechnical Division Manager

9-7-05

Walter Martin, P. Geo.
Staff Geologist

j:/wpdata/georeports/soils/21545_Supplement.doc

LIMITATIONS

This report is prepared solely for the use of Summit Engineering's client. Any other entity wishing to utilize this report must obtain permission from them prior to doing so. Our services consist of professional opinions and recommendations made in accordance with generally accepted soil and foundation engineering principles and practices. The analyses and recommendations contained in this report are based on our site reconnaissance, the information derived from our field exploration and laboratory testing, our understanding of the proposed development, and the assumption that the soil conditions in the proposed building and grading areas do not deviate from the anticipated conditions.

Unanticipated variations in soil conditions could exist in unexplored areas on the site. If any soil or groundwater conditions are encountered at the site that are different from those discussed in this report, our firm should be immediately notified so that our recommendations can be modified to accommodate the situation. In addition, if the scope of the proposed construction, including proposed loads or structural location, changes from that described in this report, our firm should be notified.

Recommendations made in this report are based on the assumption that an adequate number of tests and inspections will be made during construction to verify compliance with these recommendations. Such tests and inspections should include, but not necessarily be limited to, the following:

- Review of site construction plans for conformance with soils investigation.
- Observation and testing during site preparation, grading, excavation and placement of fill.
- Observation and testing of materials and placement of asphalt concrete and site concrete.
- Foundation observation and review.
- Consultation as may be required during construction.

The findings in this report are valid as of the present date; however, changes in the conditions of the property can occur with the passage of time, whether they are due to natural processes or to the works of man on this or adjacent lands. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or from the broadening of knowledge. Accordingly, the findings in this report might be invalidated, wholly or partially, by changes outside of our control.

REFERENCES

Bell, John W., 1984, Quaternary Fault Map of Nevada, Reno Sheet: Nevada Bureau of Mines and Geology, Reno.

Bonham, Harold F. and Bell, John W., 1993, Steamboat Quadrangle Geologic Map, Urban Area Series Map 4Fg: Nevada Bureau of Mines and Geology, Reno, 1 sheet.

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SUPPLEMENTAL APPENDIX

APPENDIX A

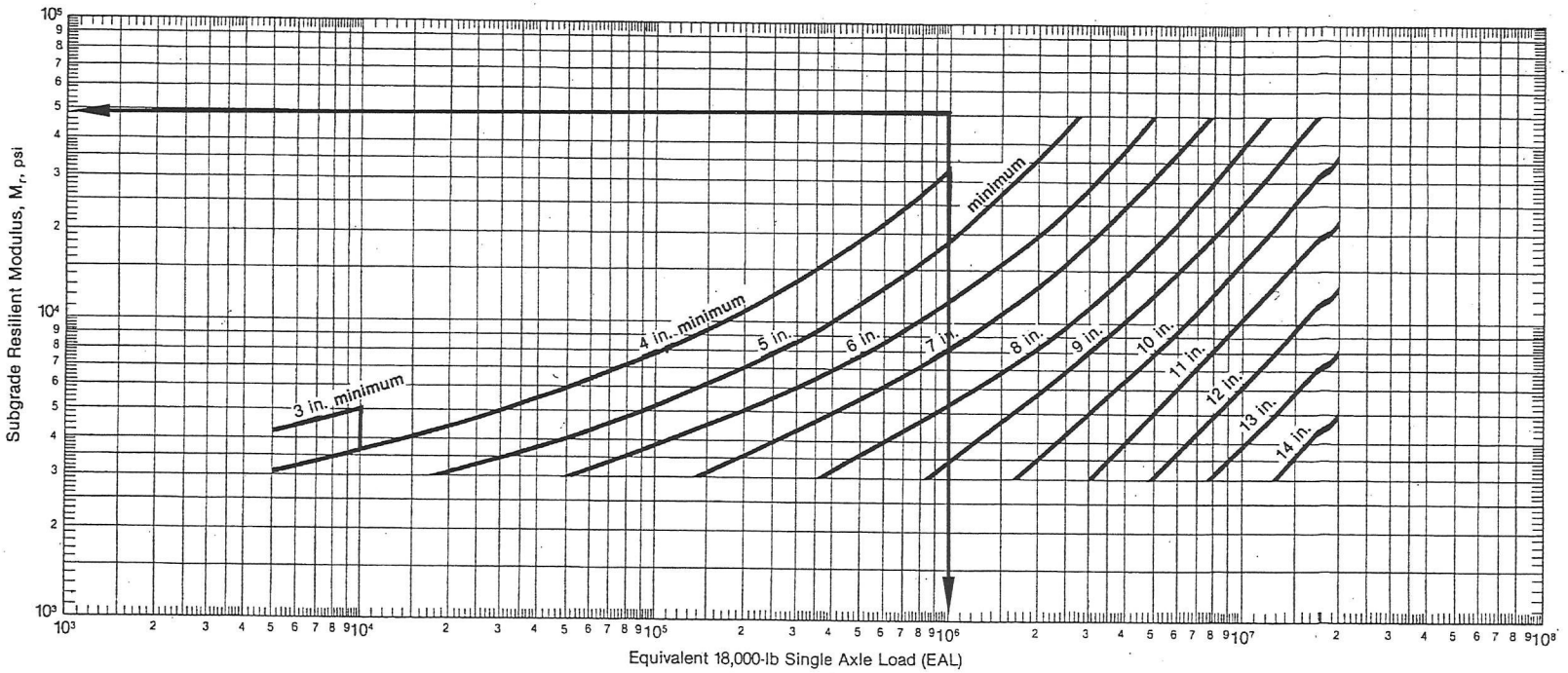
FLEXIBLE PAVEMENT DESIGN

Subgrade "R"-value = 87

$M_R = 4.94 \times 10^4$

Untreated Aggregate Base 6.0 in. Thickness

MAAT 45°F



Design Chart A-23

Allowable ESALs = 10^6 for 4"AC on 6" Base per MS-1

These amounts of ESALs are greater than expected for a local residential street.

SHEET - 1 OF APP.A

SUMMIT ENGINEERING CORPORATION
5405 MAE ANNE AVE. RENO, NV. 89523

JOB NO.: 21545
APPR.: JKG
BY: WMM

FLEXIBLE PAVEMENT
COMSTOCK ESTATES
RENO, NEVADA

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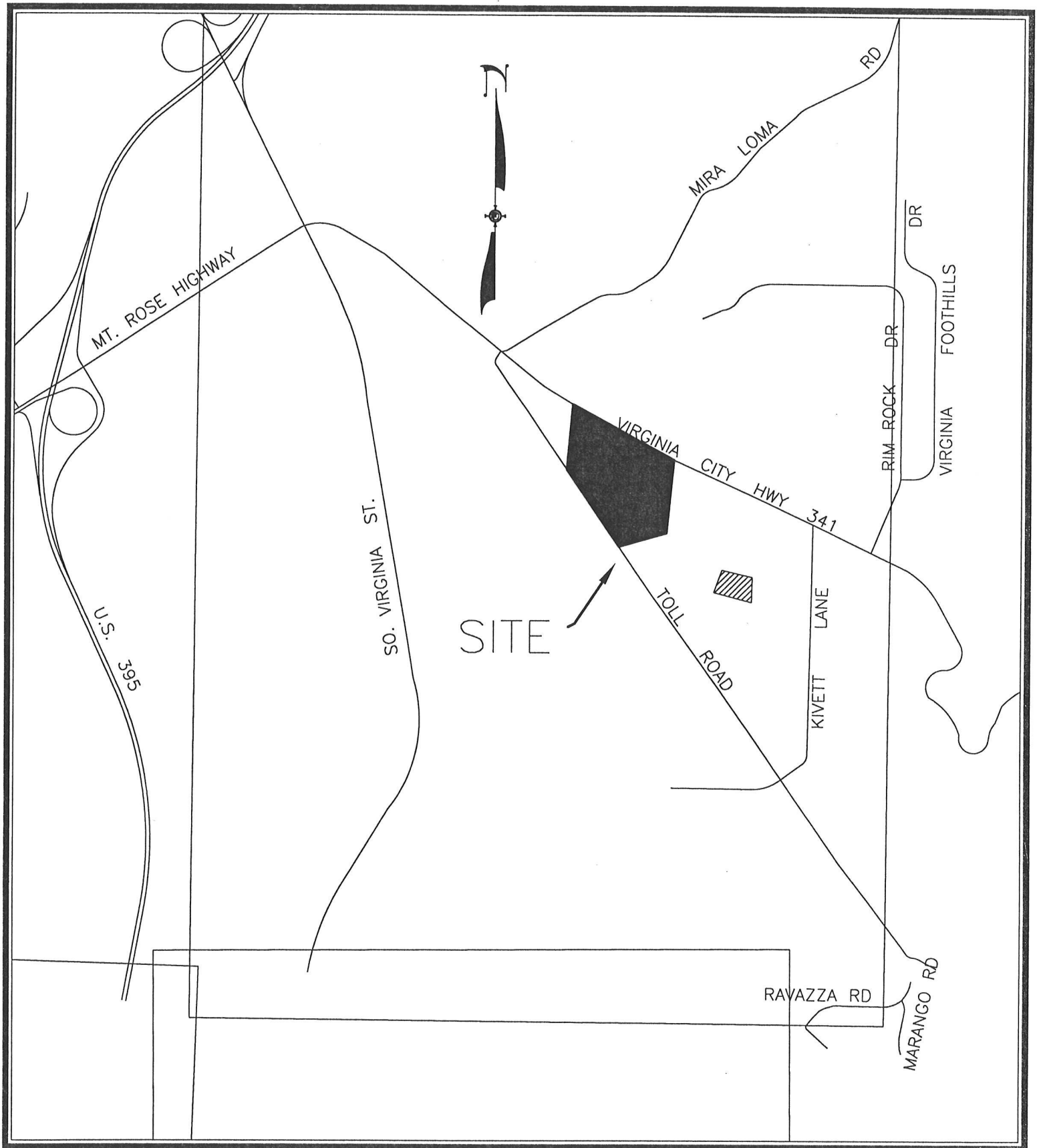
SHEETS



VICINITY MAP
COMSTOCK ESTATES
RENO, NEVADA

JOB NO.: 21545
APPR.: JKG
BY: WMM

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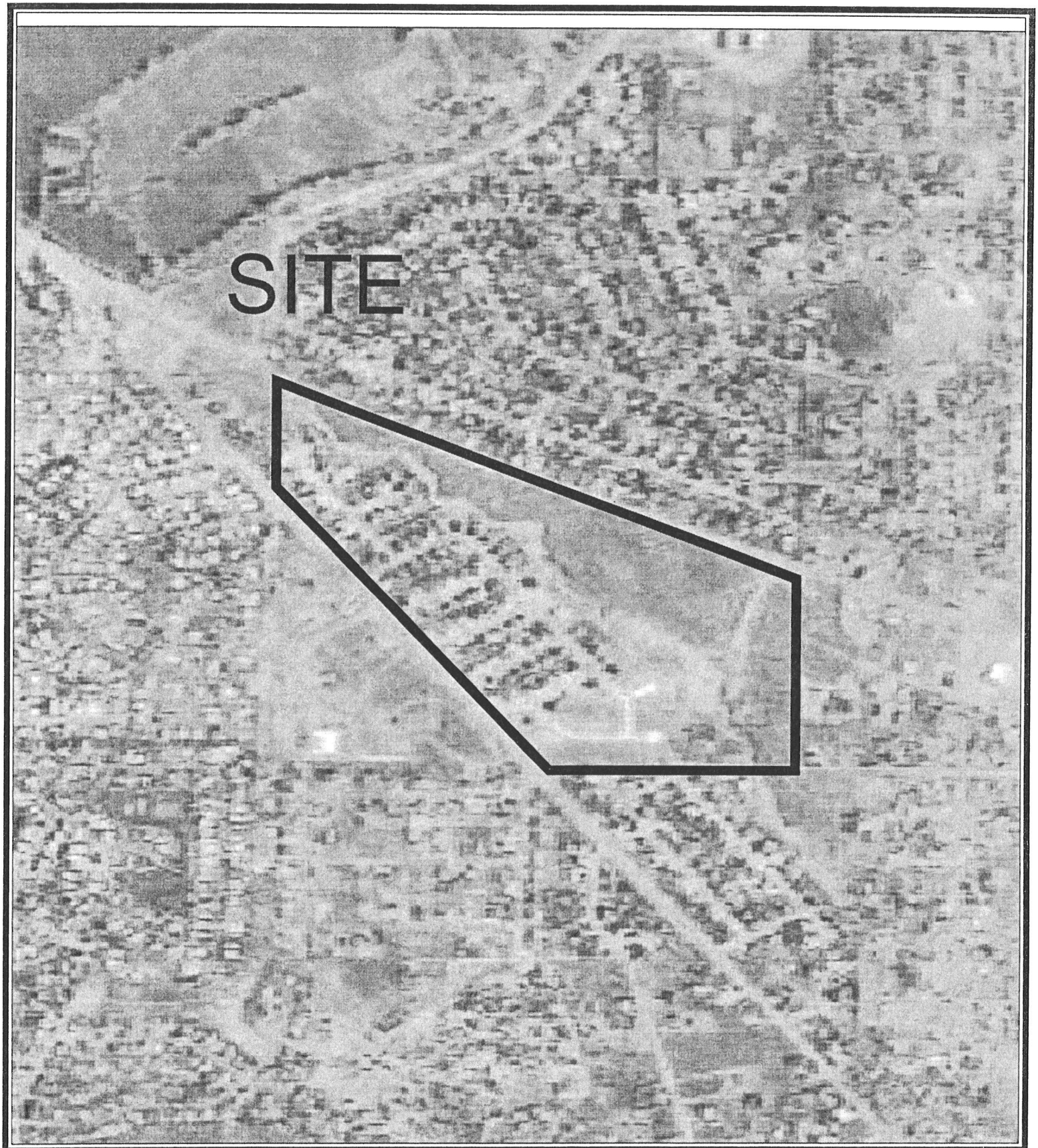
SHEET 1 OF 6



SITE MAP
COMSTOCK ESTATES
RENO, NEVADA

JOB NO.: 21545
APPR.: JKG
BY: WMM

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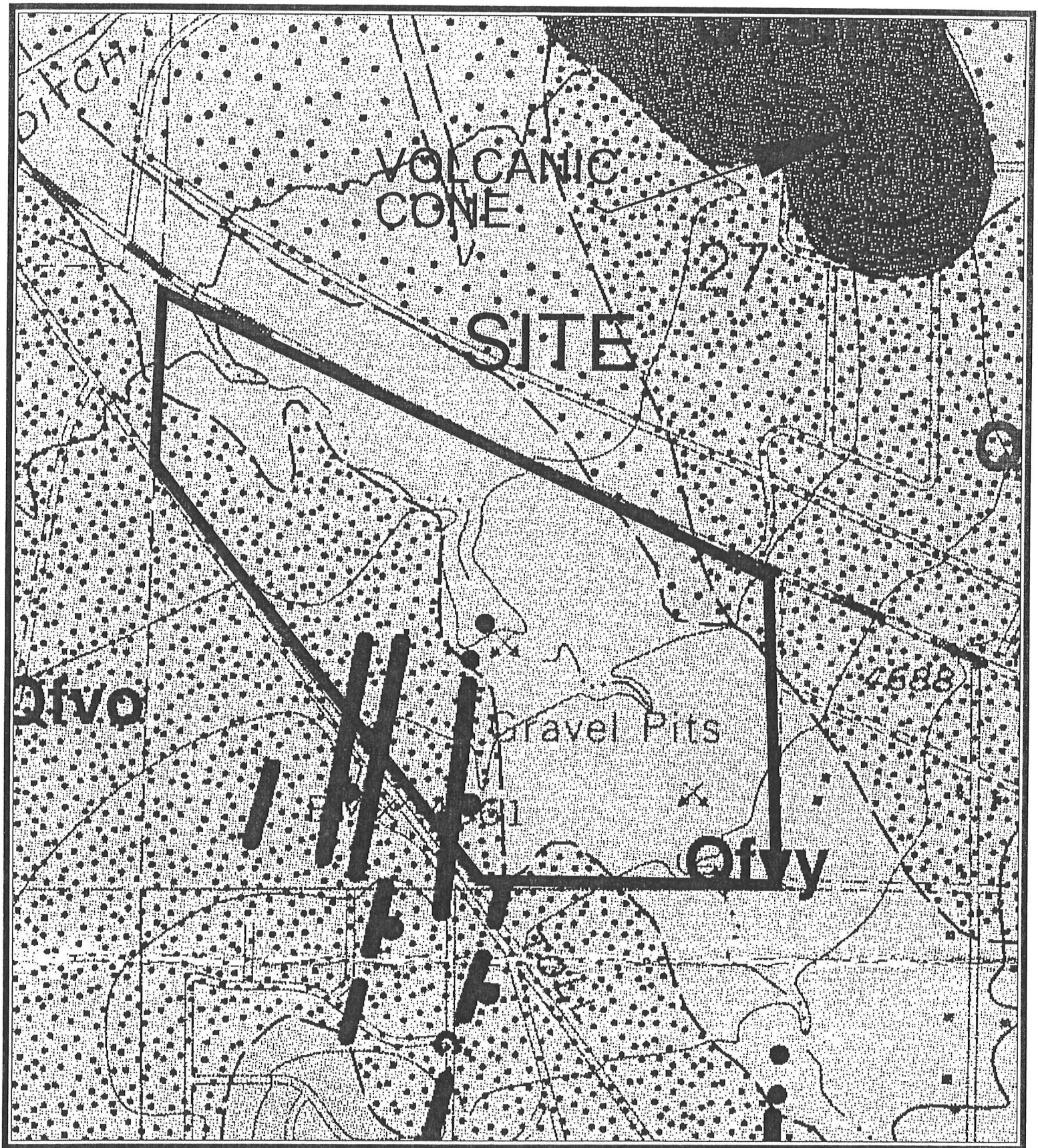

GEOLOGY MAP
COMSTOCK ESTATES
RENO, NEVADA

JOB NO.: 21545
APPR.: JKG
BY: WMM

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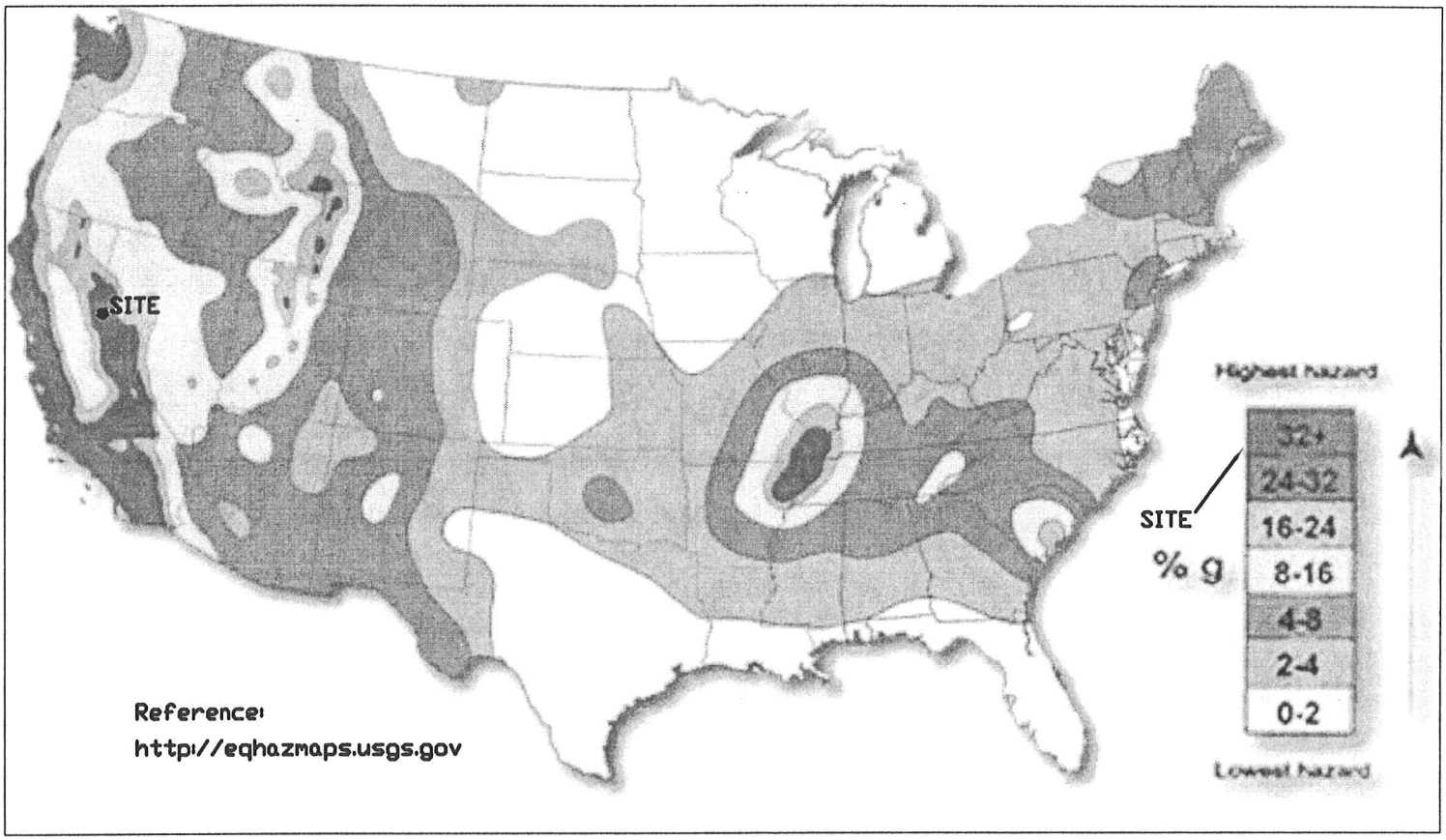

SEISMIC HAZARD MAP
COMSTOCK ESTATES
RENO, NEVADA

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APPR.: JKG
BY: WMM

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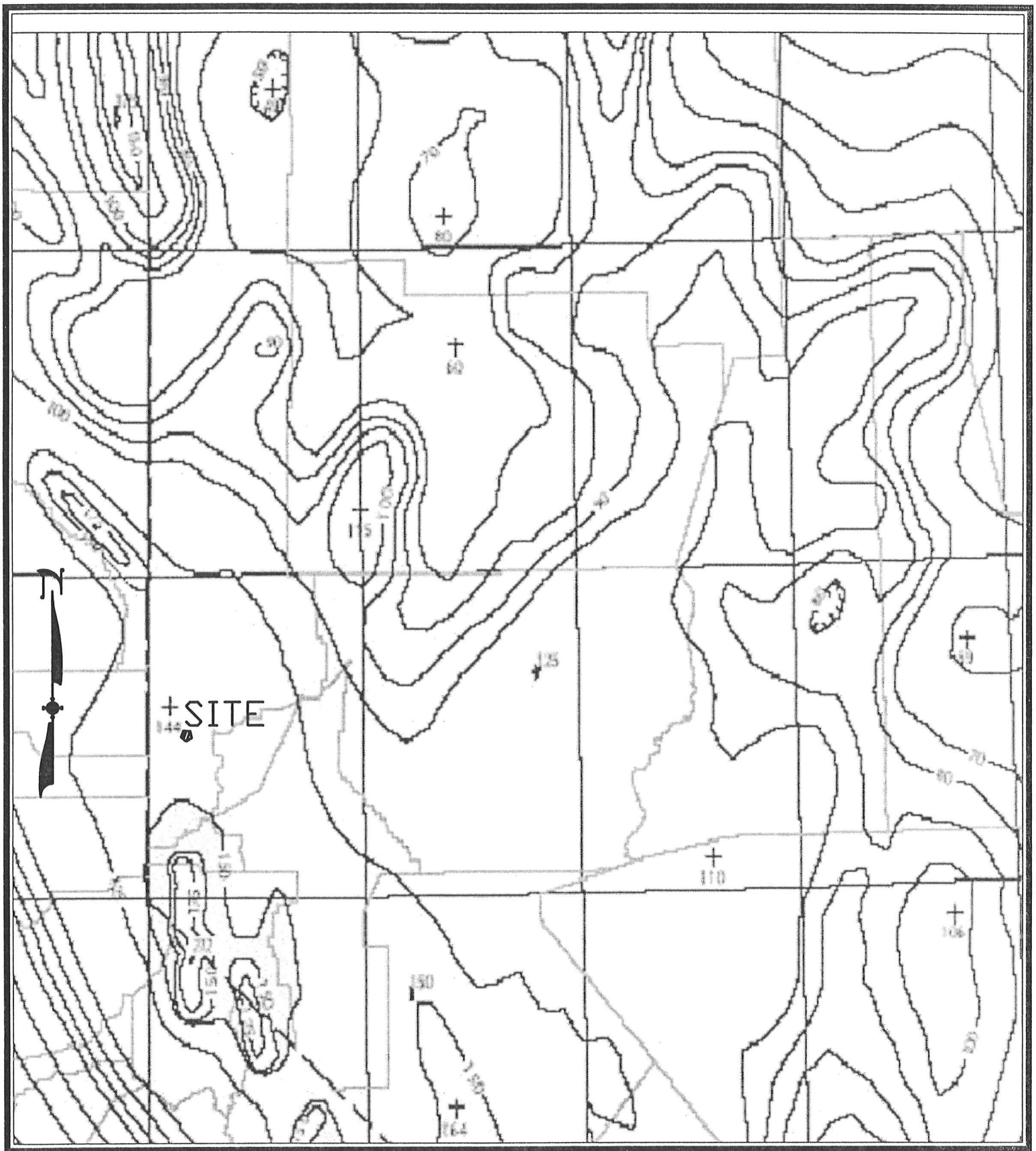

0.2 SEC a SEISMIC MAP
COMSTOCK ESTATES
RENO, NEVADA

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BY: WMM

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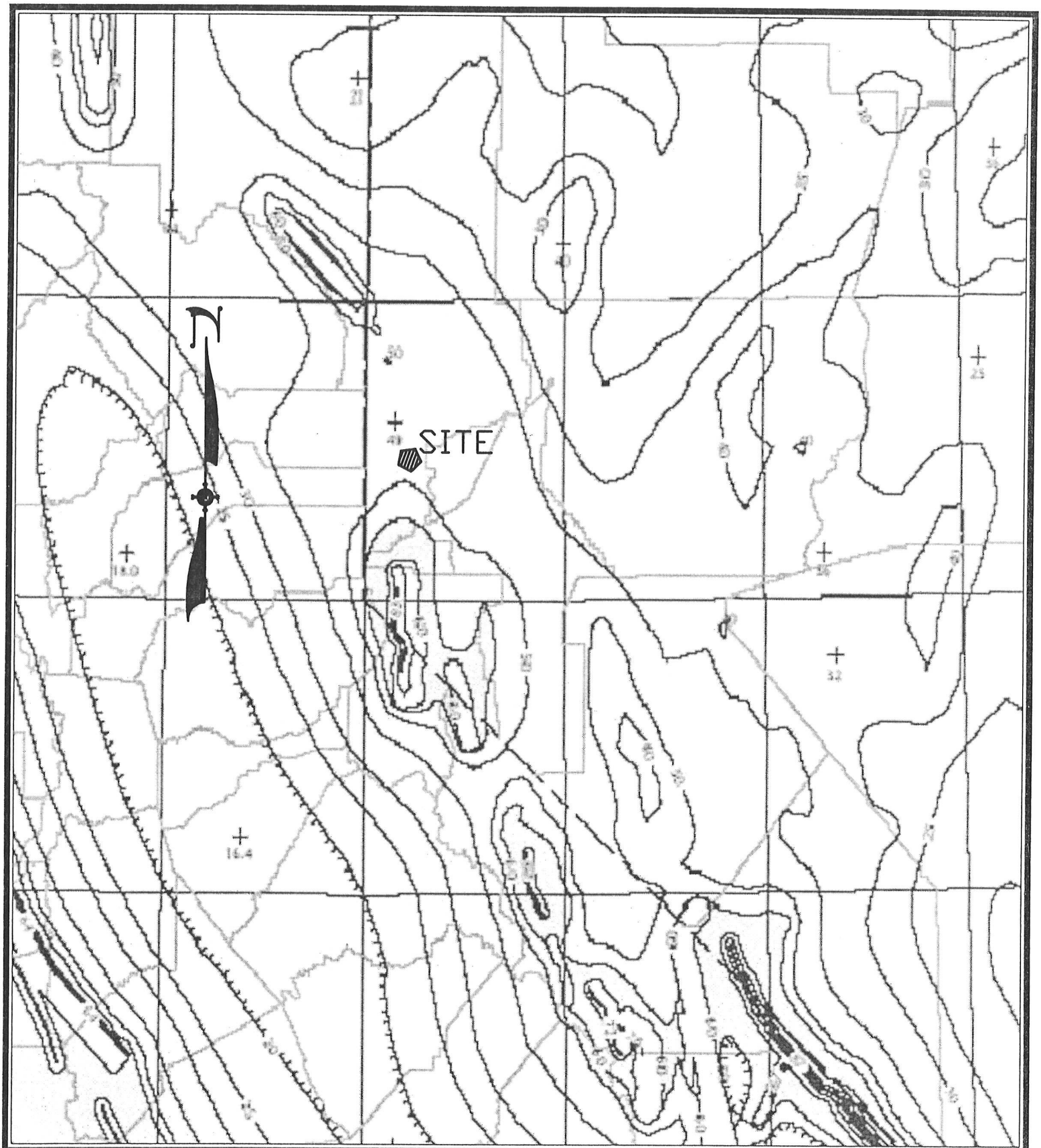

1-SEC a SEISMIC MAP
COMSTOCK ESTATES
RENO, NEVADA

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BY: WMM

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SHEET 6
OF 6

GEOTECHNICAL INVESTIGATION
COMSTOCK ESTATES, UNITS 4 - 11
WASHOE COUNTY, NEVADA

File No. 21545
January 30, 1995

Prepared For:

C. B. Maddox
5894 Sheep Drive
Carson City, Nevada 89701

Prepared By:

Summit Engineering Corporation
5405 Mae Anne Avenue
Reno, Nevada 89523

Linda A. Hansen
Staff Geotechnical Designer
Geotechnical Division

Jack K. Glynn, III, P.E.
Project Manager
Geotechnical Division

SUMMIT ENGINEERING CORPORATION™

October 26, 2003

Job No. 21545

Mr. Ben Maddox
C.B. Maddox
5894 Sheep Drive
Carson City, Nevada 89701

RE: Geotechnical Investigation
Comstock Estates, Units 4-11

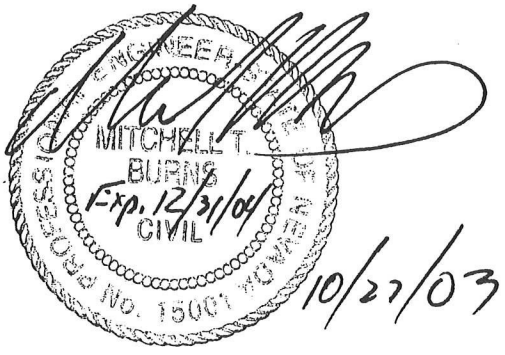
Dear Mr. Maddox:

It is our understanding that the tentative map for the above mentioned project is being submitted to the County for approval. For this purpose, the Geotechnical Investigation Report No. 21545 is applicable. However, once a final grading plan is completed and approved, this will need to be reviewed to insure the test pits were excavated to depths of the "cuts". If it is determined that the "cuts" are deeper than the test pit excavations, additional test pits will be required.

If you have any further questions, or need any additional information, please do not hesitate to contact our office.

Sincerely,

SUMMIT ENGINEERING CORPORATION



Mitch Burns, P.E.
Project Engineer

MB:bjg

j:\wpdata\mitch\21545.doc

5405 Mae Anne Avenue • Reno, Nevada 89523 • (775) 747-8550 FAX (775) 747-8559
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607 South Fifth Street • Elko, Nevada 89801 • (775) 738-8058 FAX (775) 738-8267
824 E. Aultman • Ely, Nevada 89301 • (775) 289-4445 FAX (775) 289-4043

TABLE OF CONTENTS

GEOTECHNICAL INVESTIGATION
COMSTOCK ESTATES, UNITS 4-11
WASHOE COUNTY, NEVADA

I. INTRODUCTION

A. Project Description

This report presents the results of a geotechnical investigation for the proposed Comstock Estates Units 4-11 development in Washoe County, Nevada. This development will include 156 residential homes. The site is located in Washoe County in Section 27 of Township 18 North, Range 20 East. This area lies south of State Route 341, and north and east of Toll Road. The site encompasses a total of approximately 84.6 +/- acres, and contains a proposed 156 units. Plate 1 provides a vicinity map and a Plate 2 provides a site plan.

This investigation provides site specific soil design criteria for the proposed single family residences. The recommendations of this report are made for structures that will have building wall loads of less than 2000 pounds per lineal foot and maximum column loads of 15 Kips. If any structures are to be constructed that will have heavier loads than those described or will have special foundation considerations not addressed in this report, the soil design criteria of this report should be reviewed by a geotechnical engineer.

B. Purpose and Scope

The purpose of this investigation was to determine subsurface soil conditions and to provide geotechnical design criteria based upon our findings for the proposed project. The scope of this

investigation included surface reconnaissance, subsurface exploration, analysis of field and laboratory data, research of pertinent geologic literature, and report preparation. This report provides conclusions and recommendations concerning:

- General subsurface conditions and geology
- Site preparation and earthwork
- Engineering properties of the soils which will influence the design of the future structures, including:
  - Bearing Capacities
  - Settlement potential
  - Lateral earth pressures
- Asphalt concrete and concrete pavement
- Seismic design criteria

C. Field Exploration and Laboratory Testing

Summit Engineering Corporation conducted the subsurface investigation by excavating a total of 16 test pits to a maximum depth of 11 feet. Geotechnical engineers logged the soils and subsurface conditions encountered. Plate 1 shows the vicinity map and Plate 2 presents the site map and the locations of the test pits. Plates 3 through 18 show the vertical profiles of the soils encountered. Plate 19 provides a key to the logs and a copy of the Unified Soil Classification System which was used to identify the site soils.

Representative bulk samples were obtained for laboratory testing. The laboratory testing program consisted of : 1) gradations, 2) moisture contents, and 3) Atterburg limits tests to confirm field soil classifications; and an 4) R-Value to evaluate the subgrade strength for pavement design. Results of the laboratory tests are shown on the test pit logs and are presented graphically on Plates 20 through 22.

II. DISCUSSION

A. Site Description

The subject property is currently undeveloped land covered with grasses and sage brush. The site is found north and east of Toll Road and south of State Route 341 (Geiger Grade). The highest elevations are found in the northeast at approximately 5152 feet above mean sea level. Single family residences are found to the south, west, and east.

B. General Geology

According to the Steamboat Quadrangle Geologic Map by Harold F. Bonham Jr. and John W. Bell (1993), the site is underlain by the alluvial-fan deposits of the Virginia Range, which is divided into Q_{fvy}, Q_{fvi}, and Q_{fvo}. These deposits are described as "Composed dominantly of subangular to subrounded clasts of gray to dark-gray andesite with varying proportions of white to red altered andesite clasts depending upon source areal; poorly to moderately stratified; poorly to very poorly sorted. From oldest to youngest, units comprise a descending set of successively inset and nested fans and stream terraces typically having little vertical separation. Similar geomorphic characteristics make differentiation very difficult without the use of pedologic data. Q_{fvy}: light-brown to brown muddy, sandy, pebble gravel; locally cobble to boulder gravel. Soils have A-C to cambic profiles. Stippled where deposit is dominantly a pebble sand derived from reworking of older Qe deposits. Where bouldery, commonly displays bar-and-channel microtopography. Q_{fvi}: light-brown to brown muddy, sandy, cobble to boulder gravel; maximum boulder diameter of 1 m. Typically contains a well-developed argillic soil about 30 cm thick. Q_{fvo}: light-brown to brown muddy, sandy, cobble to boulder gravel; maximum boulder diameter 1 m. Surface clasts are strongly weathered. Soils contain a well-developed argillic horizon ranging from 0.5 to 1 meter thick, locally underlain by a carbonate- and silica-cemented duripan as much as 1 m thick. East of Steamboat Creek in the Steamboat Springs area, unit forms a predominant terrace which is stratigraphically equivalent to Qdm." From an engineering standpoint, the native site soils should provide adequate bearing support for the proposed structures and site improvements.

C. Regional Seismicity

The subject property, as well as the entirety of the Reno area, lies within the Uniform Building Code Seismic Zone 3. This zone has a high probability for a moderate seismic event. Structures in this area may be subject to damage such as that occurring during an average event equivalent to a Modified Mercalli Intensity of VII. This size event approximately correlates to a Richter Magnitude of 6.0. Plate 23 shows a 1991 UBC Seismic Zone Map for Nevada.

According to the Steamboat Quadrangle Geologic Map by Harold F. Bonham, Jr. and John W. Bell (1993), the three Quaternary faults are found on southern portion of the site, trending from approximately the north to the south. These faults are found in Pleistocene-aged deposits, and do not pass though the Holocene deposits; therefore, the age of these faults can approximated as Pleistocene. According to the Quaternary Fault Map of Nevada - Reno Sheet, by John W. Bell (1984), these faults have been approximately dated as experiencing last movement in the Pleistocene or greater than 100,000 thousand years ago; consequently, it can be considered inactive. An active fault is one that has experienced movement during the Holocene or in the past 12,000 years. The nearest Holocene fault is located approximately 4 miles to the west along the Carson Range front.

D. Subsurface Materials and Conditions

The subsurface investigation encountered the Alluvial-fan deposits of the Virginia Range (Q_{fvy}, Q_{fvi}, and Q_{fvo}) which is consistent with the general geology of the area. Tests pits 3, 4, 5, 6, 7, and 13 encountered a surface layer (up to 2.5 feet below ground surface) of medium to high plasticity sandy clays. Test pits 8, 9, 15, and 16 encountered a surface layer of sands and silty sands. All test pits contained a sandy cobble to boulder gravel, from the surface or below the aforementioned surface layers, to the total depth of the pits. Please refer to Plates 3 through 18 for more details.

E. Ground Water and Surface Hydrology

Groundwater was not encountered in any of the test pits made on the site. The depth of the test pits extended to a maximum depth of 11 feet below ground surface. Groundwater is not expected to be a problem on the site. The portion of the site along Bailey Canyon Creek has been delineated

by the Federal Emergency Management Agency (FEMA) as being located in Flood Hazard Zone A3. This zone is described as "Areas of 100-year flood; base flood elevations and flood hazard factors determined." The portion of the site adjacent to Bailey Canyon Creek has been delineated by the FEMA as being in located in Flood Hazard Zone B. This zone is described as "areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood".

F. Liquefaction Potential

During earthquakes the shaking of the ground may cause a loss of strength or stiffness that results in settlement of buildings, landslides, structural failures, and other hazards. The process leading to such loss of strength or stiffness is called liquefaction. It is a phenomenon associated primarily, but not exclusively, with saturated cohesionless soils.

Liquefaction is brought about by an increase in pore water pressure during dynamic loading of an earthquake. When the increased pore water pressure reaches the value of the overburden stress on the soil, the supporting strength of the soil is reduced to near zero. The liquefied soils have little or no bearing capacity, and can densify causing settlement of foundations or differential settlement of floor slabs.

Loose granular soils without cohesive fines are most susceptible to the rapid buildup of pore pressure. Other factors affecting the degree of pore pressure build up include; the amplitude of the oscillatory straining; the past history of stressing; the size, shape, and gradation of particles; the confining pressure acting on the soil; the age of the deposit; the fabric of the soil; the depth to groundwater; and the shear strength of the soil.

Very limited amounts of potentially liquefiable soils were encountered on site. These soils (clean sands) were mainly located in limited surficial deposits. Due to the medium dense to dense nature of soils, and the depth to groundwater being deep, we believe the potential for damage to any structure due to liquefaction to be very minimal.

III. CONCLUSIONS AND RECOMMENDATIONS

From a geotechnical engineering standpoint, it is our opinion that the subject site is suitable for the construction of future residential development provided that the recommendations contained in this report, and in the attached earthwork specifications, are incorporated into the project design and construction. The following sections present conclusions and recommendations concerning the proposed project.

A. Foundation Considerations

Analysis obtained from field and laboratory testing indicates unsaturated native soils can support up to 3000 pounds per square foot for dead plus long term live loads, on spread type footings with less than 1 inch of total settlement and less than 1/2 inch of differential settlement across the length of the structures. This assumes that all moderately to highly plastic clays, which were found down to 2.5 feet in depth (possibly deeper in unexplored areas), will require complete removal for all footings and flatwork and replaced with structural fill placed in accordance with Appendix A.

B. Asphaltic Concrete Design

The given asphalt pavement section assumes that the sandy clays will be removed and the native sandy gravels will be used beneath roadways and parking lot/entrances areas. It assumes that any existing fill, loose organic topsoil or near surface clayey soils are removed, and that native soil is scarified and recompacted to a depth of six inches. Any fill placed in overexcavated areas should meet the requirements for structural fill. If plastic soil is encountered, overexcavation and replacement of this soil with structural fill is recommended to a depth of 2 feet, compacted in accordance with recommendations in Appendix A of this report. The pavement section provided assumes a 20-year average design period. Subgrade material shall be compacted to 90 percent, and aggregate base material shall be compacted to 95 percent relative compaction (ASTM D-1557).

The pavement section designed was based on an average of 10 trip-ends per unit per day giving a AADT (average daily traffic) of 1560 vehicles per day. The calculated equivalent EAL (equivalent axial load) is 1.43×10^5 for the design life of 20 years. An R-value of 87 was used, which was

obtained from the laboratory analysis presented on Plate 23 . This R-value is equivalent to a resilient modulus (M_r) of 4.94 x 10^4 psi. The following sections are recommended (see Appendix B):

RECOMMENDED PAVEMENT SECTION THICKNESS

LOCATION	ASPHALT	TYPE II BASE
Public Streets	4"	6"

All public streets dedicated to the City of Reno have a required minimum of 4 inches of asphaltic concrete on 6 inches of base material.

* See Appendix B for calculations.

C. Native Soils

The native alluvial soils may be re-used as structural fill, after screening, provided they are tested and meet the requirements stated in Appendix A for structural fill. From a geotechnical engineering standpoint, it is our opinion that the subject site is suitable for the construction of the proposed development provided that the recommendations contained in this report, and in the attached earthwork specifications, are incorporated into the project design and construction.

LIMITATIONS

Our services consist of professional opinions and recommendations made in accordance with generally accepted soil and foundation engineering principles and practices. The analyses and recommendations contained in this report are based on our site reconnaissance, the information derived from our field exploration and laboratory testing, our understanding of the proposed development, and the assumption that the soil conditions in the proposed building and grading areas do not deviate from the anticipated conditions.

Unanticipated variations in soil conditions could exist in unexplored areas on the site. If any soil or groundwater conditions are encountered at the site which are different from those discussed in this report, our firm should be immediately notified so that our recommendations can be modified to accommodate the situation. In addition, if the scope of the proposed construction, including proposed loads or structural location, changes from that described in this report, our firm should be notified.

Recommendations made in this report are based on the assumption that an adequate number of tests and inspections will be made during construction to verify compliance with these recommendations. Such tests and inspections should include, but not necessarily be limited to, the following:

- Review of site construction plans for conformance with soils investigation.
- Observation and testing during site preparation, grading, excavation and placement of fill.
- Observation and testing of materials and placement of asphalt concrete and site concrete.
- Foundation observation and review.
- Consultation as may be required during construction.

The findings in this report are valid as of the present date; however, changes in the conditions of the property can occur with the passage of time, whether they be due to natural processes or to the works of man on this or adjacent lands. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or from the broadening of knowledge. Accordingly, the findings in this report might be invalidated, wholly or partially, by changes outside of our control.

APPENDIX A
SPECIFICATIONS FOR
SITE PREPARATION, EXCAVATION, RECOMPACTION
STRUCTURAL FILL, and SUBGRADE PREPARATION

1.0 GENERAL

1.1 Standard Specifications - Where referred to in these specifications, "Standard Specifications" shall meet the Standard Specifications for Public Works Construction sponsored and distributed by Washoe County, City of Reno, City of Sparks, et. al. (1992).

1.2 Scope - All work shall be done in accordance with the standard Specifications except as may be modified by the specifications outlined below. The work done under these specifications shall include clearing, stripping, removal of unsuitable material, excavation and preparation of natural soil, placement and compaction of on-site and/or imported fill material, or as specifically referred to in the plans or specifications.

1.3 Geotechnical Engineer - When used herein, Geotechnical Engineer shall mean the engineer or a representative under the engineer's supervision. The work covered by these specifications shall be inspected by a Geotechnical Engineer, who shall be retained by the Owner. The Geotechnical Engineer will be present during the site preparation and grading to inspect the work and to perform the tests necessary to evaluate material quality and compaction. The Geotechnical Engineer shall submit a report to the Owner, including a tabulation of all tests performed.

1.4 Soils Report - A "Soil Investigation" report, prepared by Summit Engineering Corporation, is available for review and may be used as a reference to the surface and subsurface soil and groundwater conditions on this project. The Contractor shall make his own interpretation with regards to the methods and equipment necessary to perform the excavations.

1.5 Percent Compaction - Where referred to herein, percent compaction shall mean the in-place dry unit weight of soil expressed as a percentage of the maximum dry unit weight of the same material, as determined by ASTM D-1557, compaction test procedure. Optimum moisture content is the moisture content corresponding to the maximum dry density determined by the ASTM test method D-1557.

2.0 SITE PREPARATION AND EARTHWORK

2.1 All earthwork and site preparation should be performed in accordance with the requirements of this report and attached specifications, and the "Standard Specifications For Public Works Construction" sponsored and distributed by Washoe County, City of Sparks, City of Reno, et.al. (1992).

2.2 Clearing - Areas to be graded shall be cleared of existing brush and debris. These materials shall be removed from the site by the Contractor.

2.3 Stripping - Surface soils containing roots and organic matter shall be stripped from areas to be graded and stockpiled or discarded as specified by the plans or specifications. In general, the depth of stripping of the topsoil will be approximately 6 to 8 inches. Where required, deeper stripping, to remove weak soils or accumulations of organic matter, shall be performed when determined by the Geotechnical Engineer. Strippings shall be removed from the site or stockpiled at a location specified by the plans.

2.4 Dust Control - The contractor shall prevent and maintain control of all dust generated during construction in compliance with all federal, state, county, and city regulations. The project specifications should include an indemnification by the contractor of the engineer and owner for all dust generated during the entire construction period.

2.5 Materials - All material not suitable for use as structural fill, shall be removed from the site by the Contractor, or placed in non-structural fill areas. The Geotechnical Engineer shall determine the suitability of material for reuse as structural fill.

2.6 Ground Surface - The ground surface exposed by stripping and/or excavation shall be scarified to a depth of 6 inches, moisture conditioned by aerating or adding water, and compacted to 90 percent relative compaction (ASTM D 1557), unless otherwise specified. Compaction of the ground surface shall be approved by the Geotechnical Engineer.

2.7 Backfill of test pits - Our exploration pits and previous pits were backfilled without mechanical compaction. In building and flatwork areas, backfill in the pits should be removed and replaced with approved, compacted materials.

3.0 FILL MATERIAL

3.1 Fill material shall be free of perishable, organic material and rocks over six inches in largest diameter. Rock used in the fill shall be placed in such a manner that no voids are present, either between or around the rock, after compacting the layer.

3.2 Structural Fill - Material shall consist of suitable non-expansive soils having a liquid limit less than 40, and a plasticity index less than 12. The gradation requirements shall be as follows:

Sieve Sizes	Percentage Passing (by weight)
4"	100
3/4"	70 - 100
40	15 - 70
#200	5 - 25

Materials not meeting the above requirements may be suitable for use as structural fill at the discretion of the Geotechnical Engineer. Samples of imported fill proposed for use as structural fill shall be submitted to the Geotechnical Engineer and approved before it is delivered to the site.

3.3 Rock Fill - Fill material containing over 25 percent (by volume) of rock larger than 6 inches in greatest dimension is defined as rock fill. Rock fill located three feet or more below finished grade may be constructed in loose lifts up to the maximum size of rock in the material but not exceeding two feet in thickness. The interstices around the rock in each rock fill lift shall be filled with granular material and compacted to the satisfaction of the Geotechnical Engineer. Rock larger than 12 inches in greatest dimension shall not be allowed in the rock fill without approval of the Geotechnical Engineer. Rock larger than 6 inches shall not be placed in the upper 1 foot of structural fill.

4.0 EARTHWORK AND FILL PLACEMENT

4.1 Placement - Fill material shall be placed in layers that shall not exceed 8 inches of compacted thickness, unless otherwise approved by the Geotechnical Engineer. Each layer shall be evenly spread and moisture conditioned as necessary. Unless otherwise specified, each layer of earth fill shall be compacted to 90 percent relative compaction. Compaction shall be approved by the Geotechnical Engineer. Rock fill shall be placed in accordance with the appropriate sections of the Standard Specifications. Rock fill placement shall be verified by the Geotechnical Engineer. Full time inspection is required unless otherwise approved.

4.2 Keyways - Where the fill extends onto native slopes with gradients greater than 5:1, the fill shall be keyed into the native soils. The keys will have a minimum width of 8 feet and constructed with a minimum 5% slope into the hillside.

4.3 Compaction Equipment - The Contractor shall provide and use equipment of a type and weight suitable for the conditions encountered in the field. The equipment shall be capable of obtaining the required percent of compaction in all areas including those that are inaccessible to ordinary rolling equipment.

4.4 Reworking - When, in the judgement of the Geotechnical Engineer, sufficient compaction effort has not been used, or where the field density tests indicate that the

required compaction or moisture content has not been obtained, fill materials shall be reworked and compacted as needed to obtain the required density and moisture content. This reworking shall be accomplished prior to the placement of additional fill.

4.5 Unstable Areas - If pumping or other indications of instability are noted, fill materials shall be evaluated by the Geotechnical Engineer and be left to dry; reworked; or removed, replaced, and compacted as needed to obtain the required density and moisture content. This work shall be accomplished prior to the placement of additional fill.

5.0 EXCAVATION AND SLOPE REQUIREMENTS

5.1 Finished cut and fill slopes should not exceed ratios of two horizontal to one vertical. Slopes steeper than three horizontal to one vertical or more than ten feet in height should be protected from erosion using either rip-rap, vegetation, or a similar designated and acceptable means meeting the City of Reno or Washoe County standards.

5.2 Temporary, unsupported construction slopes less than ten feet in height may stand at a slope as steep as 1:1 (H:V) provided that the length of the unsupported slope does not exceed twenty feet. These temporary slopes should not remain unsupported for extended periods of time.

6.0 FOUNDATIONS AND FOOTING DESIGN

6.1 Spread type continuous and column footings should be designed to impose a maximum net dead plus long term live load of 3000 pounds per square foot. Net bearing pressures up to one-third in excess of the given bearing value are permitted for transient live loads from wind and earthquake. Footing widths should be designed based upon these bearing pressures and design loads; however, in no case should they

be less than 1 foot wide for single story structures and 15 inches wide for two story structures. Isolated interior footings should also be a minimum of 15 inches wide.

6.2 Exterior footings should be embedded a minimum of 24 inches below the lowest adjacent final compacted subgrade to provide adequate frost protection and confinement. Isolated interior footings, where subject to any lateral loads, should be founded at least one foot below interior grade.

6.3 Passive soil resistance to lateral footing pressures may be calculated using an equivalent fluid weight of 400 pounds per cubic foot not exceeding 4000 pounds per cubic foot and a base coefficient of friction of 0.35. Active soil pressure may be calculated by using an equivalent fluid weight of 35 pounds per cubic foot.

6.4 Backfill placed around the footing excavations or formed footings should be compacted to at least 90 percent relative compaction.

6.5 All footing excavations should be clear of loose material prior to placement of concrete. All soil or fill material in the bottom of the footing excavation should be recompacted to at least 90 percent compaction.

7.0 UTILITY TRENCH BACKFILL

7.1 Material - Bedding material shall consist of clean, granular material having a sand equivalent of not less than 30, and 100 percent passing the 3/8 inch sieve. Backfill in the remainder of the trench shall consist of material meeting the requirements of structural fill.

7.2 Placement and Compaction - Bedding material shall first be placed so that the pipe is supported for the full length of the barrel with full bearing on the bottom segment of the pipe equal to a minimum of 0.4 times the outside diameter of the barrel. Bedding shall also extend to one foot above the top of the pipe. Pipe bedding within 6 inches of the pipe shall be placed in thin layers not exceeding 8 inches in loose

thickness, conditioned to the proper moisture content for compaction, and compacted to at least 90 percent compaction. All other trench backfill shall be placed in thin layers not exceeding 8 inches in loose thickness, conditioned to the proper moisture content, and compacted as required for adjacent fill, or if not specified, to at least 90 percent compaction in areas under structures, utilities, roadways, parking areas, and concrete flatwork. The top 6" under roadways and parking shall be compacted to 95%. In undeveloped areas trench backfill may be compacted to 85 percent relative compaction.

7.3 Drain Rock - Any necessary subsurface drainage systems shall use drain rock conforming to the following Type 2 gradation:

Sieve Sizes	Percentage Passing (by weight)
1"	100
3/4"	90-100
3/8"	20-55
No. 4	0-10

8.0 CONCRETE SLAB-ON-GRADE AND FLATWORK CONSTRUCTION

8.1 Slab-on-grade - When used in this report, slab-on-grade shall refer to all interior concrete flatwork including floors and garage slabs.

8.2 Concrete flatwork - A general term, flatwork refers to all exterior concrete site work including sidewalks, driveways, and patios.

8.3 Subgrade - Subgrade beneath concrete flatwork and slabs-on-grade shall be compacted to 90 percent compaction. In areas where dynamic loading (vehicular traffic) occurs, the subgrade shall be compacted to 95% relative compaction. Compaction shall be approved by the Geotechnical Engineer.

8.4 Overexcavation - Expansive soils within two feet of flatwork or slab-on-grade shall be overexcavated to a depth of two feet (unless otherwise stated) below the bottom of the base material. Overexcavations should extend at least two feet laterally beyond the edge of the flatwork/slab-on-grade section.

8.5 Base - Base material shall be a minimum of 6 inches thick and be compacted to 95 percent relative compaction. Compaction shall be approved by the Geotechnical Engineer. Type 2 Class B aggregate base or pit run gravel meeting the following requirements shall be used:

Sieve Size	Percentage Passing (by weight)
1"	100
3/4"	90-100
No. 4	35-65
No. 16	15-40
No. 200	2-10

8.6 Concrete slab thickness and compressive strength requirements shall be in accordance with design criteria provided by the Structural Engineer. Minimum slab thickness and compressive strength shall be in accordance with the requirements of the City of Reno.

8.7 Concrete work shall conform to all requirements of ACI 301-84, Specifications for Structural Concrete for Buildings, except as modified by supplemental requirements.

8.8 Type II Portland Cement shall be used for all concrete slabs and flatwork.

8.9 To facilitate curing of the slab, base materials shall be kept moist until placement of the concrete.

8.10 Excessive slump (high water:cement ratio) of the concrete and/or improper curing procedures used during hot or cold weather could lead to excessive shrinkage, cracking or curling of slabs and other flatwork.

8.11 Concrete Specifications - For concrete curbs, gutters, sidewalks, driveways, and alley returns, the following specifications are required:

Minimum 28-day compressive strength	4,000 psi
Sacks cement per cubic yard concrete	6-8
Maximum gallons water per sack cement	5
Percent air entrainment	5%-7%
Slump range, inches	1-4

Admixtures - All admixtures shall be incorporated in the mix design and approved by the Geotechnical Engineer.

Finishing - All finishing shall be done in the absence of bleed water. No water shall be added to placed concrete during finishing.

9.0 RETAINING WALLS

9.1 Footings for continuous strip type retaining walls should be placed at least 24 inches blow the lowest adjacent finished grade to provide for confinement and to minimize settlement. The footings should be designed using an allowable soil bearing pressure of 3000 psf.

9.2 Retaining walls should be designed for an active lateral earth pressure of 35 pounds per cubic foot, a passive lateral earth pressure of 400 pounds per cubic foot, and a base coefficient of 0.35.

9.3 Concrete for the retaining walls should be poured against undisturbed soils, if possible. If forms are used for the footings, they should be backfilled with material

taken from the excavation and recompacted to at least 90 percent compaction based on the ASTM D1557-78 test method.

9.4 In addition to active pressure from the soil, the effects of any surcharge form existing adjacent structures or roadways should be included in calculating lateral pressures on the retaining wall.

9.5 The design pressures given assume that the soils retained are granular and non-expansive and free draining.

9.6 Backfill should be lightly compacted to 85 percent relative density as the use of heavy compaction equipment could easily cause loads exceeding the designed lateral pressures which may result in wall failure. If moisture is encountered in the excavation, weep holes or a continuous drain along the base of the wall is recommended.

9.7 If moisture is encountered in the excavation or it is anticipated that surface moisture will seep down and be retained behind the wall, weep holes or continuous drain along the base of the wall is recommended.

9.8 City of Reno Standards require a concrete interceptor swale at the top of all retaining walls.

10.0 ASPHALT CONCRETE PAVEMENT

10.1 Material and Procedure - The asphalt-concrete material and placement procedures shall conform to appropriate sections of the "Standard Specifications". Aggregate materials for asphalt concrete shall conform to the requirements listed for Type 2 Plantmix Aggregate in Section 200.02.02 of the "Standard Specifications, 1992". The Contractor shall submit a proposed asphalt-concrete mix design to the Geotechnical Engineer for review and approval prior to paving. The mix design shall be based on

the Rice Method. Asphalt materials should be compacted to a minimum 92 percent of its maximum density per the Rice Method.

10.2 Subgrade Preparation - After completion of the utility trench backfill and prior to the placement of aggregate base the upper 6 inches of finished subgrade soil or sub-base material shall be uniformly compacted to at least 95 percent compaction. This may require scarifying, moisture conditioning and compacting.

10.3 Aggregate Base Rock - After the subgrade is properly prepared, the aggregate base material shall be placed uniformly on the approved subgrade. Aggregate base shall be placed in such a manner as to prevent segregation of the different sizes of material and any such segregation, unless satisfactorily corrected, shall be cause for rejection at the discretion of the Geotechnical Engineer. The aggregate base material shall be spread for compaction in layers not to exceed six inches, moisture conditioned as necessary, and compacted to at least 95 percent compaction. Aggregate base materials shall meet the requirements of Section 200.01.03 of the "Standard Specifications, 1992" for Type I, Class A or Type II, Class B aggregate base. The aggregate base materials shall be approved by the Geotechnical Engineer prior to incorporation into the pavement structure. Native soils and fill in roadway areas should be scarified to a depth of 1 foot and recompacted as subgrade. Subgrade material shall be compacted to at least 90 percent, except the top 6 inches which shall be compacted to 95 percent.

10.4 For all private car parking areas we recommend a pavement section consisting of 3 inches of asphalt underlain by 4 inches of Type 2 aggregate base.

10.5 It is important that parking area grades be set to prevent ponding of water and to provide positive drainage to suitable drainage structures. A desirable slope for drainage in paved areas is two percent; however, a minimum of one percent is allowable.

11.0 SEISMIC DESIGN

11.1 Design of structures should include an allowance for earthquake loading. Structures should be designed in conjunction with UBC Zone III seismic design criteria.

APPENDIX B
ASPHALTIC CONCRETE DESIGN

ASPHALT INSTITUTE PROGRAM - HWY 01-30-1995

Printout of MS-1/MS-17 Results

Datafile : COMSTOCK UNITS 4 - 11

****** TRAFFIC INFORMATION ******

ANALYSIS PERIOD (years) = 20
INITIAL DESIGN LIFE (years) = 20
DESIGN LANE FACTOR = 0.50

INITIAL AVERAGE ANNUAL DAILY TRAFFIC (AADT) = 1560
% OF AADT THAT IS TRUCKS = 4
ANNUAL COMPOUND GROWTH RATE (percent) = 4

Type of Usage is RURAL :

TRUCK CLASSIFICATION	Percent of TRUCKS	Truck Factor
TRUCK(2-AXLE,4-TIRE)	47.0	0.03
TRUCK(2-AXLE,6-TIRE)	10.0	0.20
TRUCK(3-AXLE or MORE)	2.0	0.67
MULT.TRUCK(3-AXLE)	1.0	0.48
MULT.TRUCK(4-AXLE)	4.0	0.70
MULT.TRUCK(>=5-AXLE)	36.0	0.95

>>>>>>> CALCULATED EQUIVALENT AXLE LOADS OF TRAFFIC :
****

INITIAL YEAR	(EAL)	=	4,809
DESIGN LIFE	(EAL)	=	143,210
REMAINING 0 years	(EAL)	=	0
TOTAL PERIOD	(EAL)	=	143,210

****** SUBGRADE INFORMATION ******

TYPE OF STRENGTH MEASUREMENT : SOIL RESISTANCE VALUE (R)

INDIVIDUAL VALUES OF SUBGRADE STRENGTH :

NUMBER	R-VALUE
1	87

SOIL RESISTANCE CORRELATION EQUATION USED : Mr(psi) = [1155 +(555 x R)]
Mr(MPa) = [8.0 +(3.8 x R)]

>>>>>>> CALCULATED DESIGN SUBGRADE RESILIENT MODULUS :
****

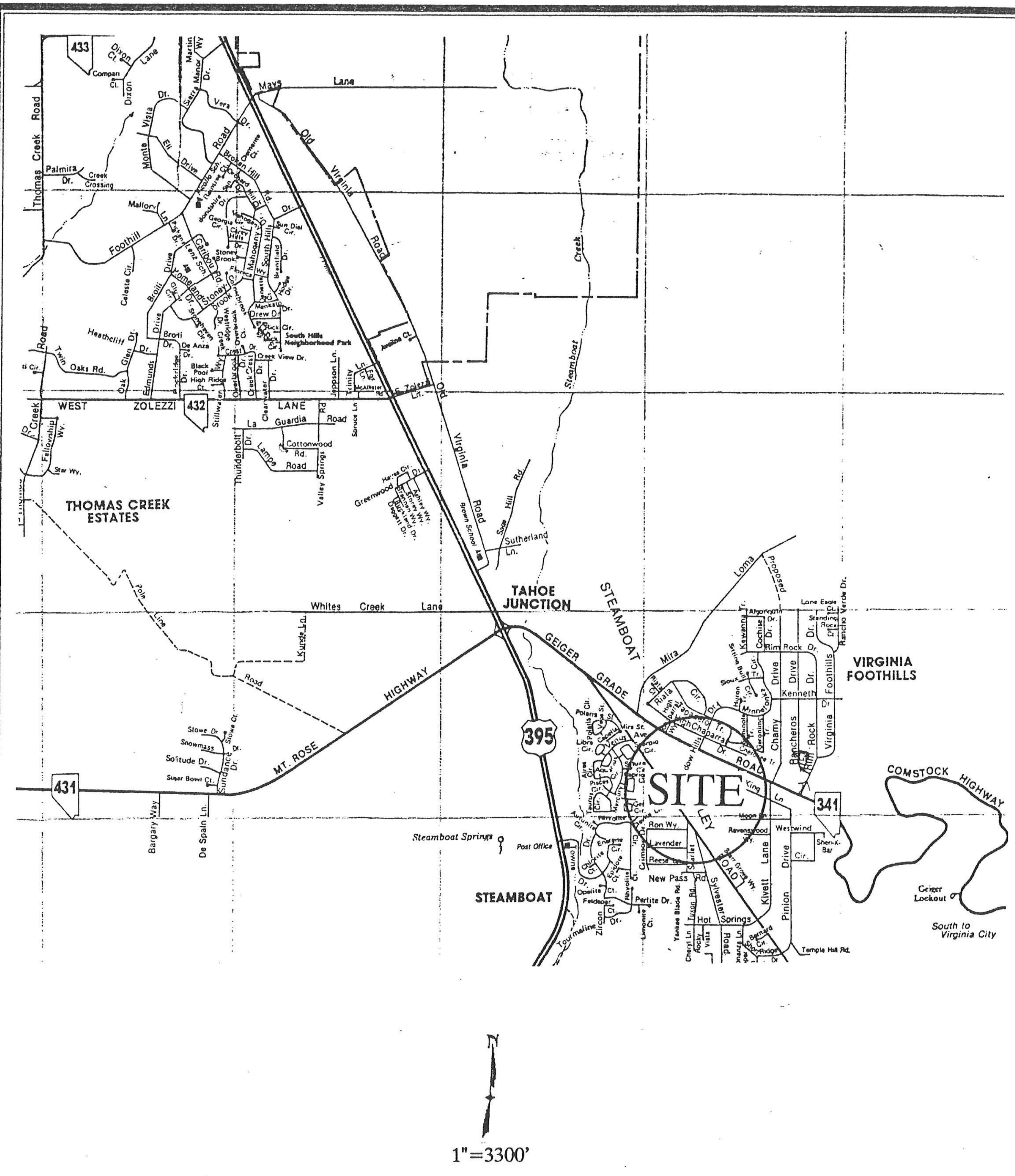
AVERAGE Mr, psi (MPa) = 49,440 (340.9)
STANDARD DEVIATION OF Mr, psi (MPa) = 0 (0.0)

DESIGN Mr, psi (MPa) = 49,440 (340.9)

>>>>>>>>>>>>>>>>>>>> DESIGN CROSS-SECTION <<<<<<<<<<<<<<<<<<<<

ASSUMED AVERAGE ANNUAL CLIMATIC CONDITION : 60 degrees F
15 degrees C

THICKNESS OF UNTREATED AGGREGATE (SUB)BASE, in (mm) = 6.0 (152)
THICKNESS OF EMULSIFIED ASPHALT BASE, in (mm) = 0.0 (0)
THICKNESS OF ASPHALT CONCRETE, in (mm) = 4.0 (102)



VICINITY MAP COMSTOCK ESTATES UNITS 4-11	PLATE 1 Job: 21545 By: LAH Appr: JKG 7:55 AM * 30-JAN-1995	SUMMIT ENGINEERING CORPORATION CONSULTING ENGINEERS AND SURVEYORS 5405 MAE ANNE AVENUE RENO, NEVADA (702)-747-8550

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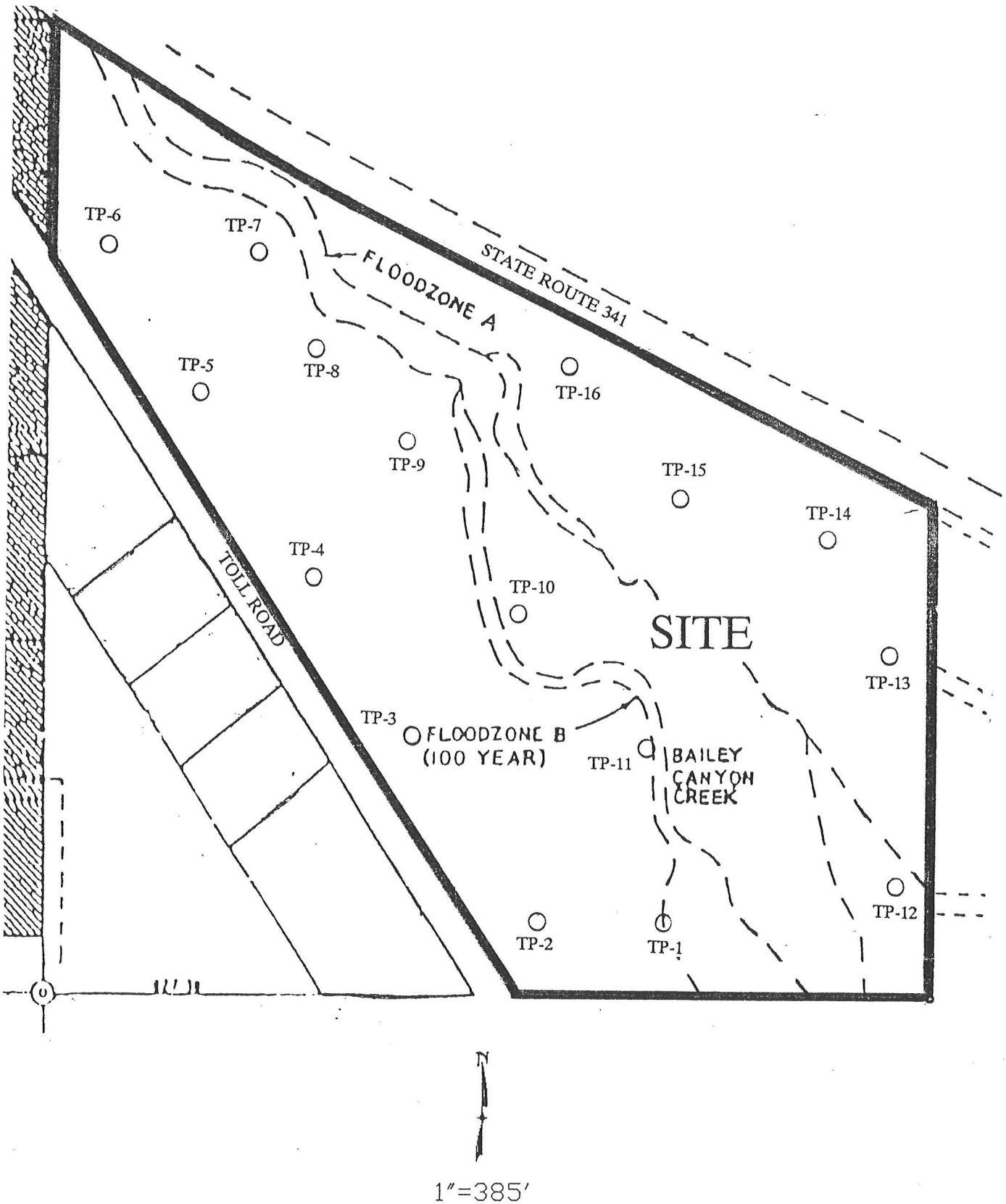


SITE MAP
COMSTOCK ESTATES
UNITS 4-11

PLATE 2

Job: 21545

By: LAH Appr: JKG

8:03 AM * 30-JAN-1995

P:\DWGS\J21545\SITE.DWG

SUMMIT ENGINEERING CORPORATION
CONSULTING ENGINEERS AND SURVEYORS
5405 MAE ANNE AVENUE
RENO, NEVADA (702)-747-8550

LOG OF Test Pit 1

EQUIPMENT: CAT 215

DATE: 1-19-95 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT		
				2	X		GW	Dark Brown Sandy Boulder to Cobble Gravel (GW), rounded boulders up to 16 inches, slightly moist to moist, medium dense to dense.
				4				
				6				Reddish Brown, minor silt.
				8	X			Dense to very dense, moderately cemented.
				10				Bottom of hole at 10 feet. No ground water encountered.
				12				
				14				

SUMMIT ENGINEERING CORPORATION

FILE NO: 21545 DRAWN BY: CRB
DATE: 1-25-95 CHKD. BY: JKG

COMSTOCK ESTATES
UNITS 4 - 11

PLATE 3

LOG OF Test Pit 2

EQUIPMENT: CAT 215

DATE: 1-19-95 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT		
				2			GW	Dark Brown Sandy Boulder to Cobble Gravel (GW), subrounded to rounded boulders up to 18 inches, slightly moist to moist, medium dense to dense.
				4				
				6				Light Brown, slightly cemented, slightly moist to dry.
				8	X			
				10				Bottom of hole at 9.5 feet. No ground water encountered.
				12				
				14				

SUMMIT ENGINEERING CORPORATION

FILE NO: 21545 DRAWN BY: CRB

DATE: 1-25-95 CHKD. BY: JKG

COMSTOCK ESTATES

UNITS 4 - 11

PLATE 4

LOG OF Test Pit 3

EQUIPMENT: CAT 215

DATE: 1-19-95 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT		
				0			SC	Reddish to Dark Brown Sandy Clay (SC), moderately plastic, slightly moist, loose to medium dense.
				2			GW	Dark Brown Sandy Boulder to Cobble Gravel (GW), minor clay, moist, medium dense to dense.
				4				
				6				Light Brown, slightly cemented, dry to slightly moist, dense.
	3.0	5.7		8				
				10				Bottom of hole at 9.5 feet. No ground water encountered.
				12				
				14				

SUMMIT ENGINEERING CORPORATION

FILE NO: 21545 DRAWN BY: CRB

DATE: 1-25-95 CHKD. BY: JKG

COMSTOCK ESTATES

UNITS 4 - 11

PLATE 5

LOG OF Test Pit 4

EQUIPMENT: CAT 215

DATE: 1-19-95 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT		
24	40.5	24.3		2	X		SC	Reddish Brown Clayey Sand (SC), moderately plastic, moist, loose to medium dense.
				4			GW	Light Brown Sandy Cobble to Boulder Gravel (GW), angular to subangular boulders up to 12 inches, slightly moist, dense.
				6				
				8	X			
				10				Bottom of hole at 10 feet. No ground water encountered.
				12				
				14				

SUMMIT ENGINEERING CORPORATION

FILE NO: 21545 DRAWN BY: CRB

DATE: 1-25-95 CHKD. BY: JKG

COMSTOCK ESTATES

UNITS 4 - 11

PLATE 6

LOG OF Test Pit 5

EQUIPMENT: CAT 215

DATE: 1-19-95 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT		
				2			SC	Reddish Brown Clayey Sand (SC), moderately plastic, minor cobbles, moist, medium dense.
				4			GW	Dark Brown to Reddish Sandy Boulder to Cobble Gravel (GW), slightly cemented, slightly moist, medium dense to dense.
				6				
				8				Slightly more sand.
				10				Dry.
				12				Bottom of hole at 10.5 feet. No ground water encountered.
				14				

SUMMIT ENGINEERING CORPORATION

FILE NO: 21545 DRAWN BY: CRB
DATE: 1-25-95 CHKD. BY: JKG

COMSTOCK ESTATES
UNITS 4 - 11

PLATE 7

LOG OF Test Pit 6

EQUIPMENT: CAT 215

DATE: 1-19-95 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT		
				2			SC	Reddish Brown Clayey Sand (SC), minor cobbles, moist, loose to medium dense.
				4			GW	Reddish Brown to Brown Sandy Boulder to Cobble Gravel (GW), moderately cemented, subrounded boulders up to 12 inches in size, slightly moist, dense.
				6	X			Less cemented.
				8				
				10				Bottom of hole at 9.5 feet. No ground water encountered.
				12				
				14				

SUMMIT ENGINEERING CORPORATION

FILE NO: 21545 DRAWN BY: CRB

DATE: 1-25-95 CHKD. BY: JKG

COMSTOCK ESTATES

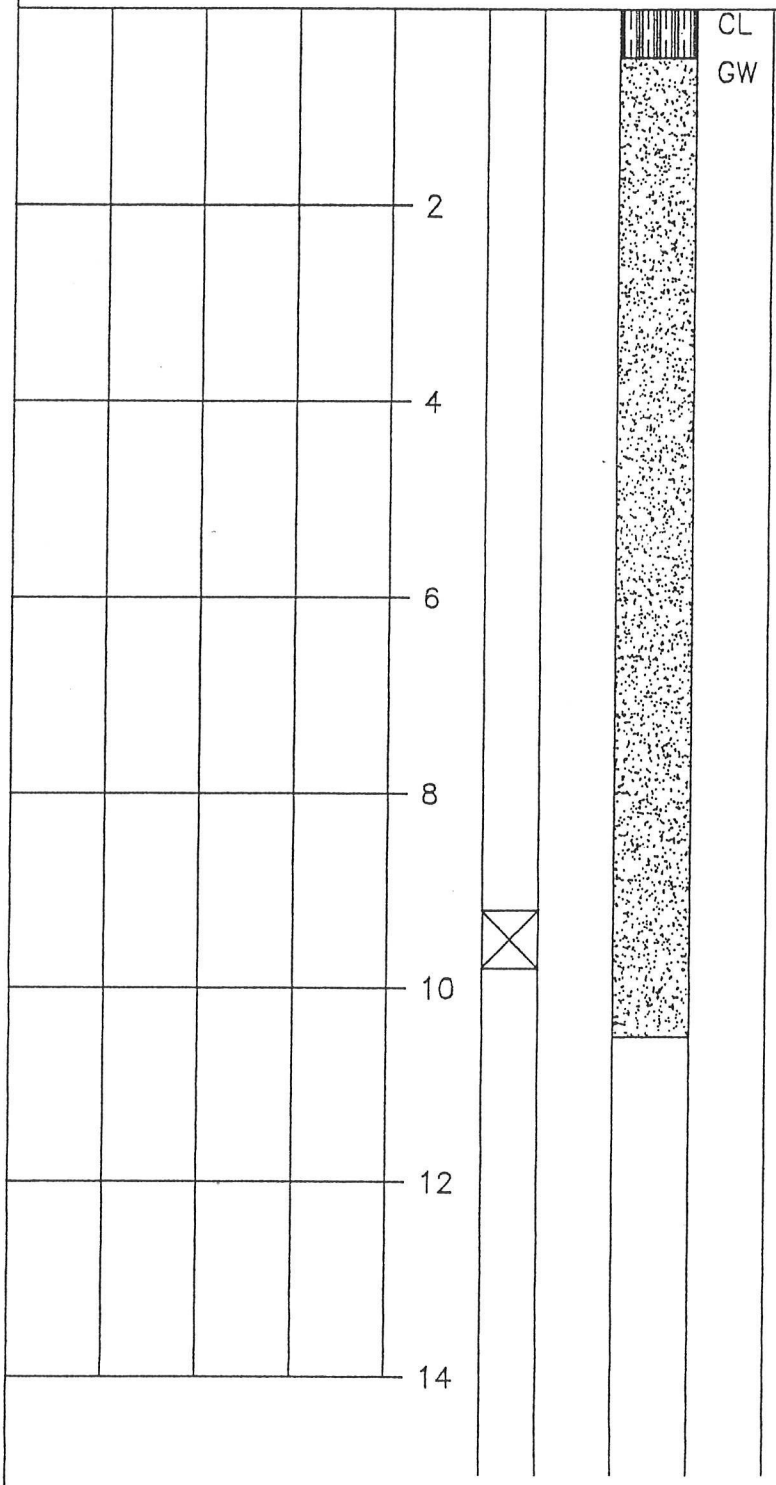
UNITS 4 - 11

PLATE 8

LOG OF Test Pit 7

EQUIPMENT: CAT 215

DATE: 1-19-95 ELEV.



CL Dark Brown Sandy Clay (CL), moist, soft.

GW Reddish Brown Cobble to Boulder Gravel (GW), subrounded boulders up to 12 inches in size, slightly moist, medium dense.

Light brown.

Dark brown, minor silt, slightly moist.

Bottom of hole at 10.5 feet.
No ground water encountered.

SUMMIT ENGINEERING CORPORATION

FILE NO: 21545 DRAWN BY: CRB
DATE: 1-25-95 CHKD. BY: JKG

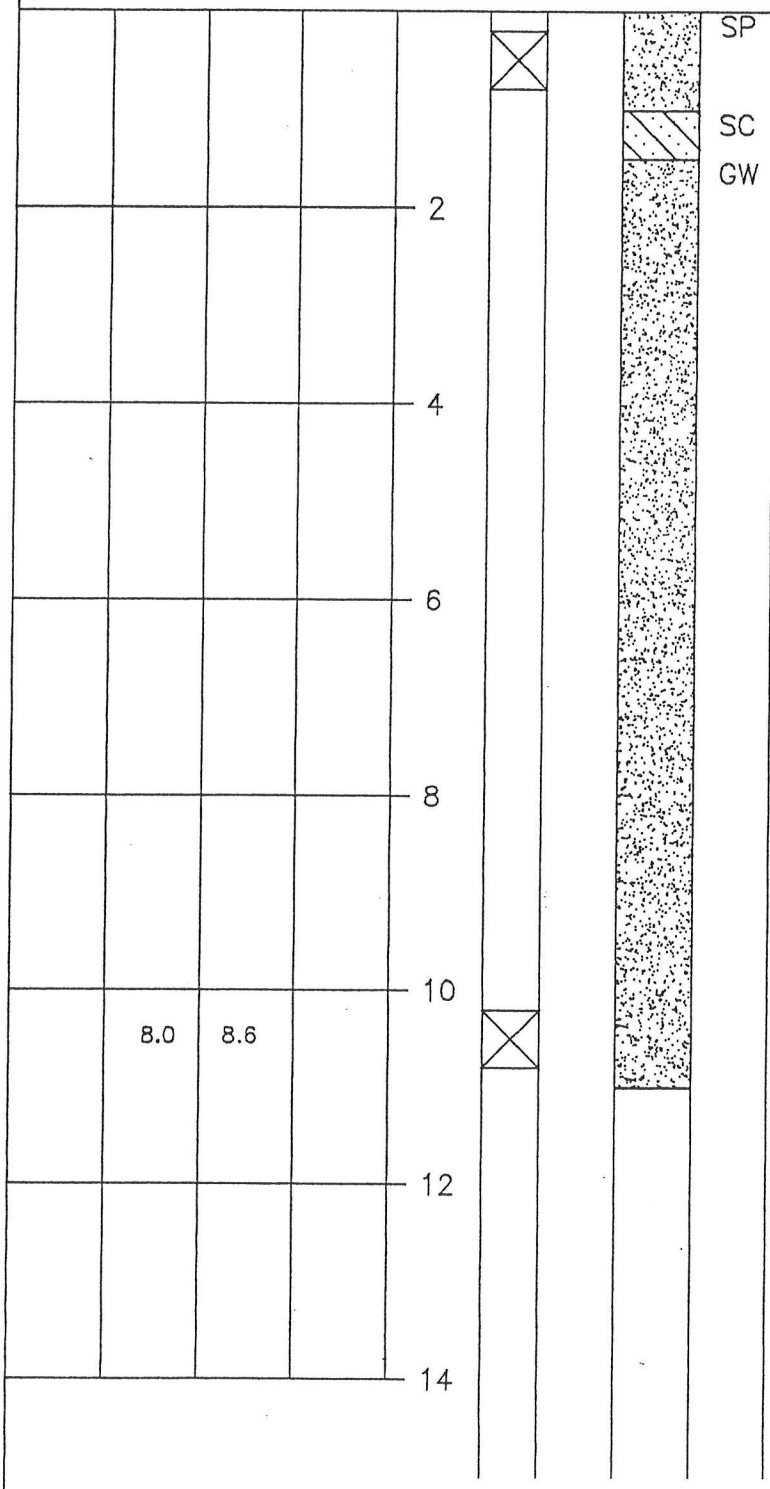
COMSTOCK ESTATES
UNITS 4 - 11

PLATE 9

LOG OF Test Pit 8

EQUIPMENT: CAT 215

DATE: 1-19-95 ELEV.



SP Dark Brown Fine Grained Sand (SP), organics throughout, slightly moist, loose.

SC Reddish Brown Clayey Sand (SC), moist, loose to medium dense.

GW Light Brown Sandy Cobble to Boulder Gravel (GW), subangular to angular boulders up to 18 inches in size, slightly moist to dry, dense.

Bottom of hole at 11 feet.
No ground water encountered.

SUMMIT ENGINEERING CORPORATION

FILE NO: 21545 DRAWN BY: CRB
DATE: 1-25-95 CHKD. BY: JKG

COMSTOCK ESTATES
UNITS 4 - 11

PLATE 10

LOG OF Test Pit 9

EQUIPMENT: CAT 215

DATE: 1-19-95 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT		
	19.0	14.2		0			SM	Dark Brown Silty Sand (SM), slightly moist, loose.
				2			GW	Reddish Brown to Brown Sandy Cobble to Boulder Gravel (GW), subangular boulders up to 18 inches in size, slightly moist to dry, dense.
				4				
				6				
				8				
				10				Bottom of hole at 11 feet. No ground water encountered.
				12				
				14				

SUMMIT ENGINEERING CORPORATION

FILE NO: 21545 DRAWN BY: CRB
DATE: 1-25-95 CHKD. BY: JKG

COMSTOCK ESTATES
UNITS 4 - 11

PLATE 11

LOG OF Test Pit 10

EQUIPMENT: CAT 215

DATE: 1-19-95 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT		
				2			GW	Dark Brown Sandy Cobble to Boulder Gravel (GW), subangular to subrounded boulders up to 18 inches in size, slightly moist to moist, medium dense.
	3.8	7.3		4	X			
				6				
				8				
				10				Bottom of hole at 10 feet. No ground water encountered.
				12				
				14				

SUMMIT ENGINEERING CORPORATION

FILE NO: 21545 DRAWN BY: CRB

DATE: 1-25-95 CHKD. BY: JKG

COMSTOCK ESTATES

UNITS 4 - 11

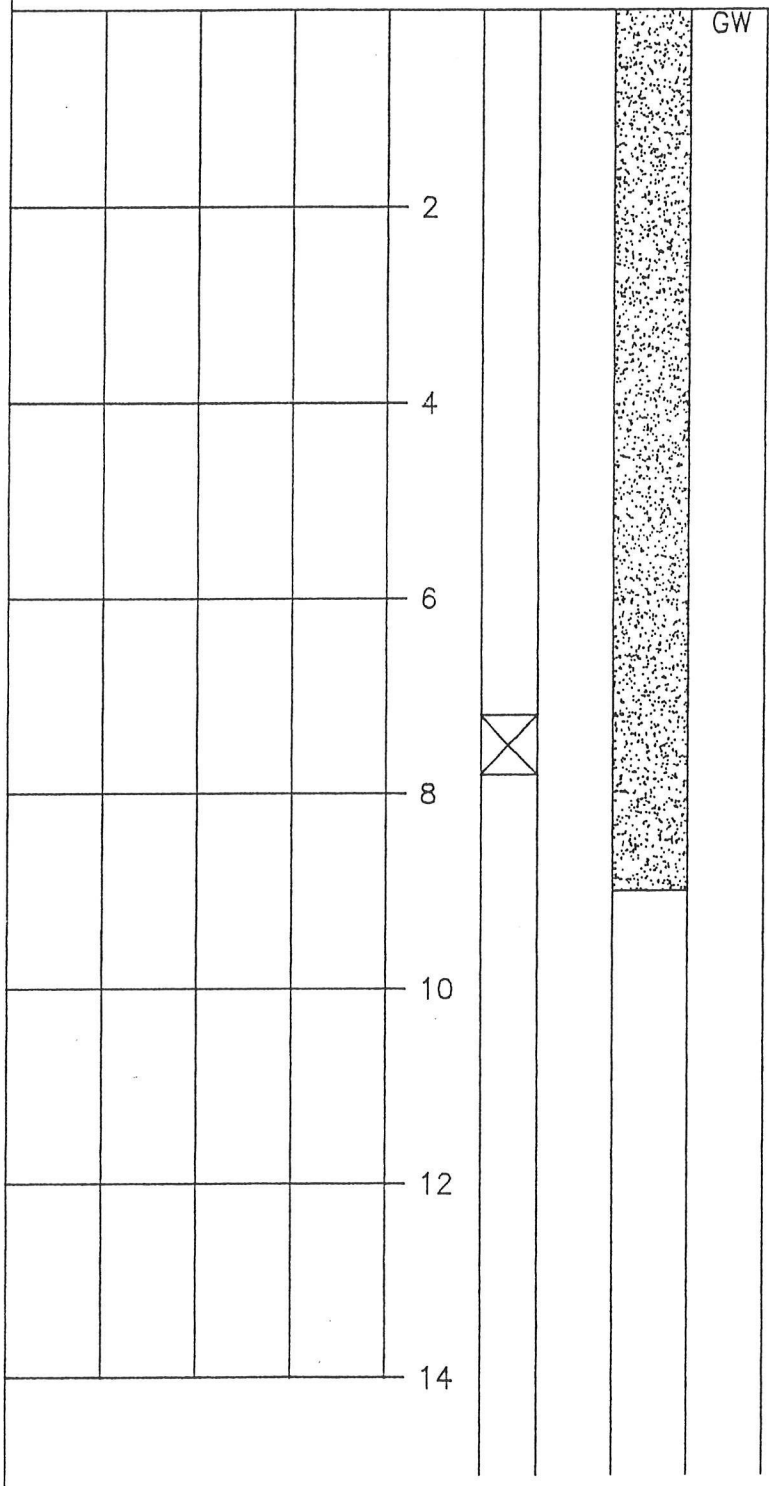
PLATE 12

LOG OF Test Pit 11

EQUIPMENT: CAT 215

DATE: 1-19-95 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT		
				2			GW	Dark Brown Sandy Cobble to Boulder Gravel (GW), subangular boulders up to 18 inches in size, moist, dense.
				4				
				6				
				8	X			Moderately cemented.
				10				Bottom of hole at 9 feet. No ground water encountered.
				12				
				14				



SUMMIT ENGINEERING CORPORATION

FILE NO: 21545 DRAWN BY: CRB
DATE: 1-25-95 CHKD. BY: JKG

COMSTOCK ESTATES
UNITS 4 - 11

PLATE 13

LOG OF Test Pit 12

EQUIPMENT: CAT 215

DATE: 1-19-95 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT		
				2			GW	Dark Brown Sandy Cobble to Boulder Gravel (GW), subangular boulders up to 18 inches in size, slightly moist, dense.
				4	X			
				6				Slightly moist to dry.
				8				Bottom of hole at 9 feet. No ground water encountered.
				10				
				12				
				14				

SUMMIT ENGINEERING CORPORATION

FILE NO: 21545 DRAWN BY: CRB

DATE: 1-25-95 CHKD. BY: JKG

COMSTOCK ESTATES

UNITS 4 - 11

PLATE 14

LOG OF Test Pit 13

EQUIPMENT: CAT 215

DATE: 1-19-95 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT		
18	32.3	21.8		0			SC	Reddish Brown Clayey Sand (SC), moist, medium dense.
				2			GW	Light Reddish Brown Sandy Boulder to Cobble Gravel (GW), slightly cemented, subangular boulders up to 18 inches in size, dry to slightly moist, dense.
				4				
				6				No cementing.
				8				
				10				Bottom of hole at 10 feet. No ground water encountered.
				12				
				14				

SUMMIT ENGINEERING CORPORATION

FILE NO: 21545 DRAWN BY: CRB

DATE: 1-25-95 CHKD. BY: JKG

COMSTOCK ESTATES

UNITS 4 - 11

PLATE 15

LOG OF Test Pit 14

EQUIPMENT: CAT 215

DATE: 1-19-95 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT		
				2			GW	Reddish Brown Sandy Cobble to Boulder Gravel (GW), subangular boulders up to 18 inches in size, slightly moist, dense.
				4				
				6	X			Dry.
				8				Bottom of hole at 8 feet. No ground water encountered.
				10				
				12				
				14				

SUMMIT ENGINEERING CORPORATION

FILE NO: 21545 DRAWN BY: CRB

DATE: 1-25-95 CHKD. BY: JKG

COMSTOCK ESTATES

UNITS 4 - 11

PLATE 16

LOG OF Test Pit 15

EQUIPMENT: CAT 215

DATE: 1-19-95 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT		
				2	X		SW	Reddish Brown Gravelly Sand (SW), coarse grained, minor silt, slightly moist, loose to medium dense.
				4			GW	Reddish Brown Sandy Cobble to Boulder Gravel (GW), slightly cemented, subrounded boulders up to 12 inches in size, slightly moist, dense.
				6				
				8				
				10				Bottom of hole at 10 feet. No ground water encountered.
				12				
				14				

SUMMIT ENGINEERING CORPORATION

FILE NO: 21545 DRAWN BY: CRB

DATE: 1-25-95 CHKD. BY: JKG

COMSTOCK ESTATES

UNITS 4 - 11

PLATE 17

LOG OF Test Pit 16

EQUIPMENT: CAT 215

DATE: 1-19-95 ELEV.

PLASTICITY INDEX	% PASSING #200	MOISTURE CONTENT % OF DRY WT.	DRY DENSITY (PCF)	DEPTH (FT.)	SAMPLE LOCATION	BLOWS / FOOT		
				2			SW	Dark Brown Sand (SW), minor gravel, fine grained, minor silt, moist, loose.
				4			GW	Light Brown Sandy Cobble to Boulder Gravel (GW), subrounded boulders up to 12 inches in size, slightly moist to dry, dense.
				6				
				8				
				10				Bottom of hole at 10.5 feet. No ground water encountered.
				12				
				14				

SUMMIT ENGINEERING CORPORATION

FILE NO: 21545 DRAWN BY: CRB

DATE: 1-25-95 CHKD. BY: JKG

COMSTOCK ESTATES

UNITS 4 - 11

PLATE 18

MAJOR DIVISIONS		GRAPHIC SYMBOL	GROUP SYMBOL	TYPICAL NAMES
COARSE GRAINED SOILS, LESS THAN 50% PASSING No. 200 SIEVE	GRAVELS, LESS THAN 50% COARSE FRACTION PASSES THE No.4 SIEVE — CLEAN GRAVELS WITH LITTLE OR NO FINES		GW	WELL GRADED GRAVELS, GRAVEL/SAND MIXTURE
			GP	POORLY GRADED GRAVELS, GRAVEL/SAND MIXTURE
	GRAVELS WITH OVER 12% FINES		GM	SILTY GRAVEL, POORLY GRADED GRAVEL/SAND/SILT MIXTURE
			GC	CLAYEY GRAVEL, POORLY GRADED GRAVEL/SAND/CLAY MIXTURE
	SANDS, MORE THAN 50% COARSE FRACTION PASSES THE No.4 SIEVE — CLEAN SANDS WITH LITTLE OR NO FINES		SW	WELL GRADED SANDS, GRAVELLY SANDS
			SP	POORLY GRADED SANDS, GRAVELLY SANDS
	SANDS WITH OVER 12% FINES		SM	SILTY SANDS, POORLY GRADED SAND/CLAY MIXTURES
			SC	CLAYEY SAND, POORLY GRADED SAND/CLAY MIXTURES
FINE GRAINED SOILS, MORE THAN 50% PASSING No. 200 SIEVE	SILTS AND CLAYS, LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS & VERY FINE SANDS OF LOW PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, LEAN CLAYS
			OL	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS, LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
ORGANIC RICH SOILS			PT	TOPSOIL, PEAT, ORGANIC RICH SOILS
OTHER SOILS			F	FILL MATERIALS

UNIFIED SOIL CLASSIFICATION SYSTEM

UNDISTURBED SAMPLE

BULK SAMPLE

NO RECOVERY

MEASURED DEPTH TO GROUNDWATER

COMSTOCK ESTATES
UNITS 4 – 11
WASHOE COUNTY

JOB NO: 21545
APPR: JKG BY: CRB
PLATE 19
7:42 AM * 30-JAN-1995

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SUMMIT
CONSULTING ENGINEERS AND SURVEYORS
5405 MAE ANNE AVENUE
RENO, NEVADA (702)-747-8550

SUMMIT ENGINEERING CORPORATION

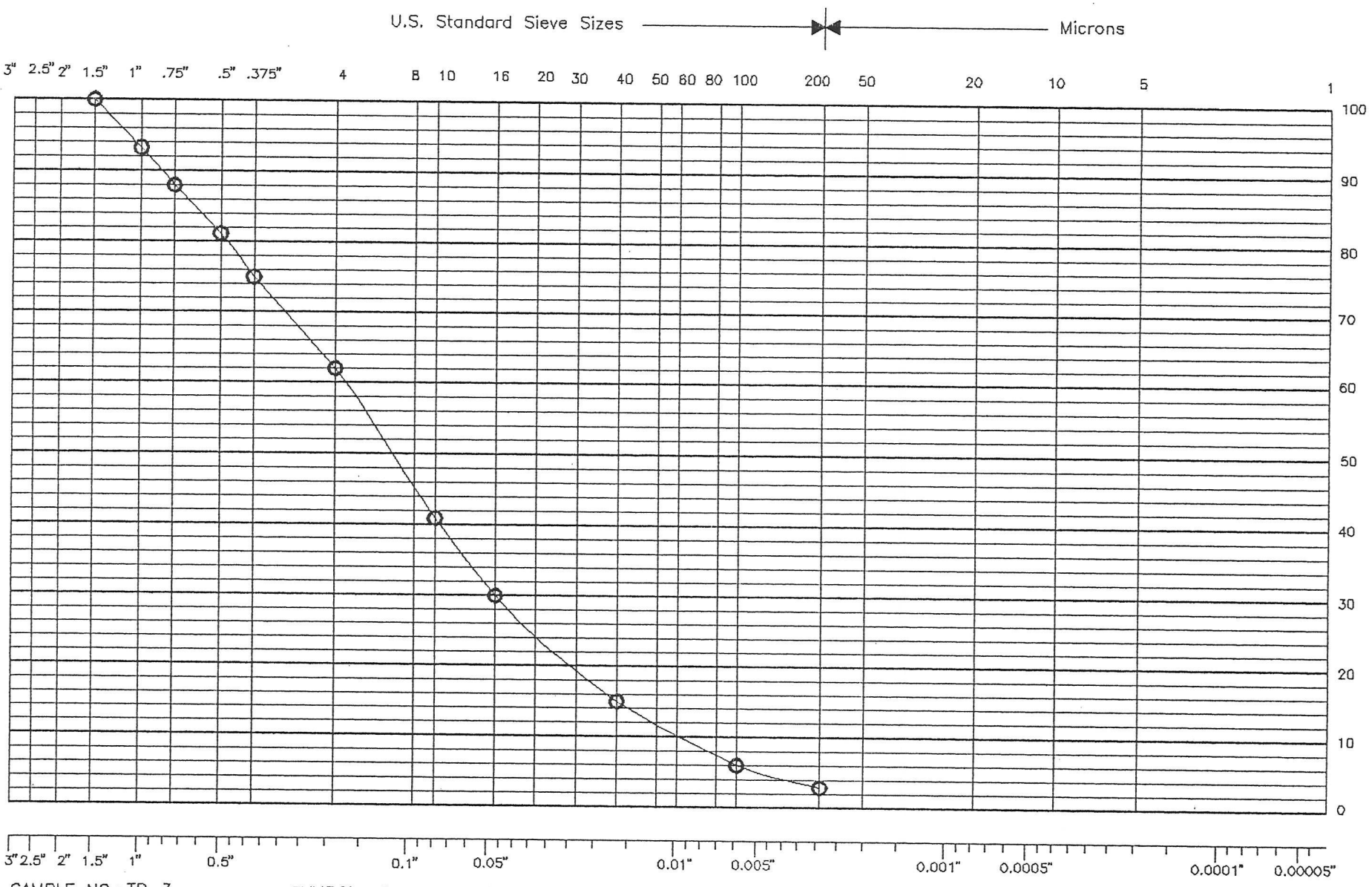
FILE NO: 21545
DATE: 1-25-95
DRAWN BY: CRB
CHKD. BY: JKG

COMSTOCK ESTATES UNITS 4-11

GRADING ANALYSIS

PLATE 20

UNIFIED SOIL CLASSIFICATION SYSTEM				
GRAVEL	COARSE SAND	MEDIUM SAND	FINE SAND	SILT AND CLAY



SAMPLE NO.: TP-3
LOCATION: 7.5 - 8.5 FEET

SYMBOL: ○
D-60 = 0.18"

D-30 = 0.047"
D-10 = 0.0099"

CU = 18.2
CC = 1.24

DESCRIPTION\CLASSIFICATION: GW-Material is coarser than sample.

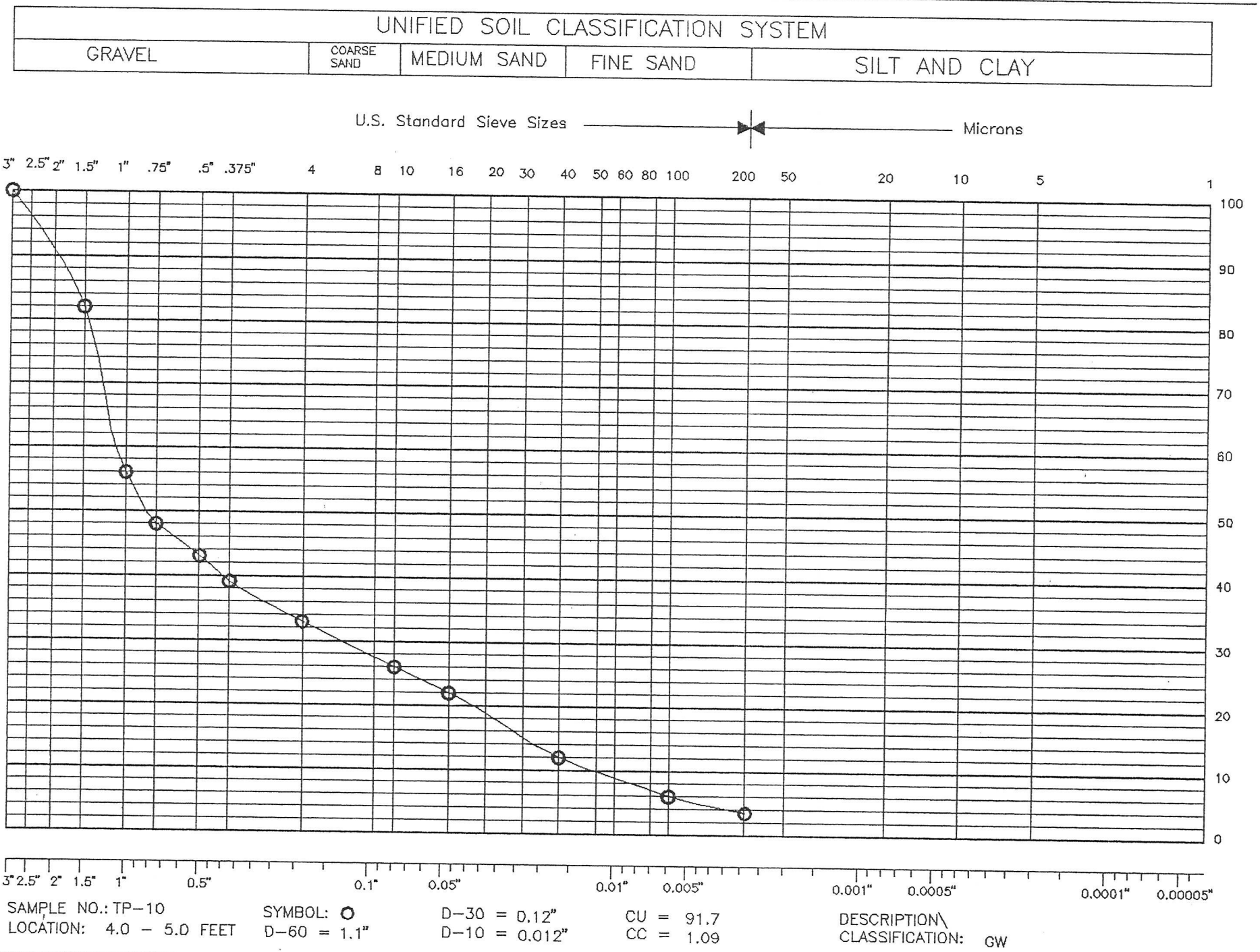
SUMMIT ENGINEERING CORPORATION

FILE NO: 21545
DATE: 1-25-95
DRAWN BY: CRB
CHKD. BY: JKG

COMSTOCK ESTATES UNITS 4-11

GRADING ANALYSIS

PLATE 21



SAMPLE NO.: TP-10
LOCATION: 4.0 - 5.0 FEET

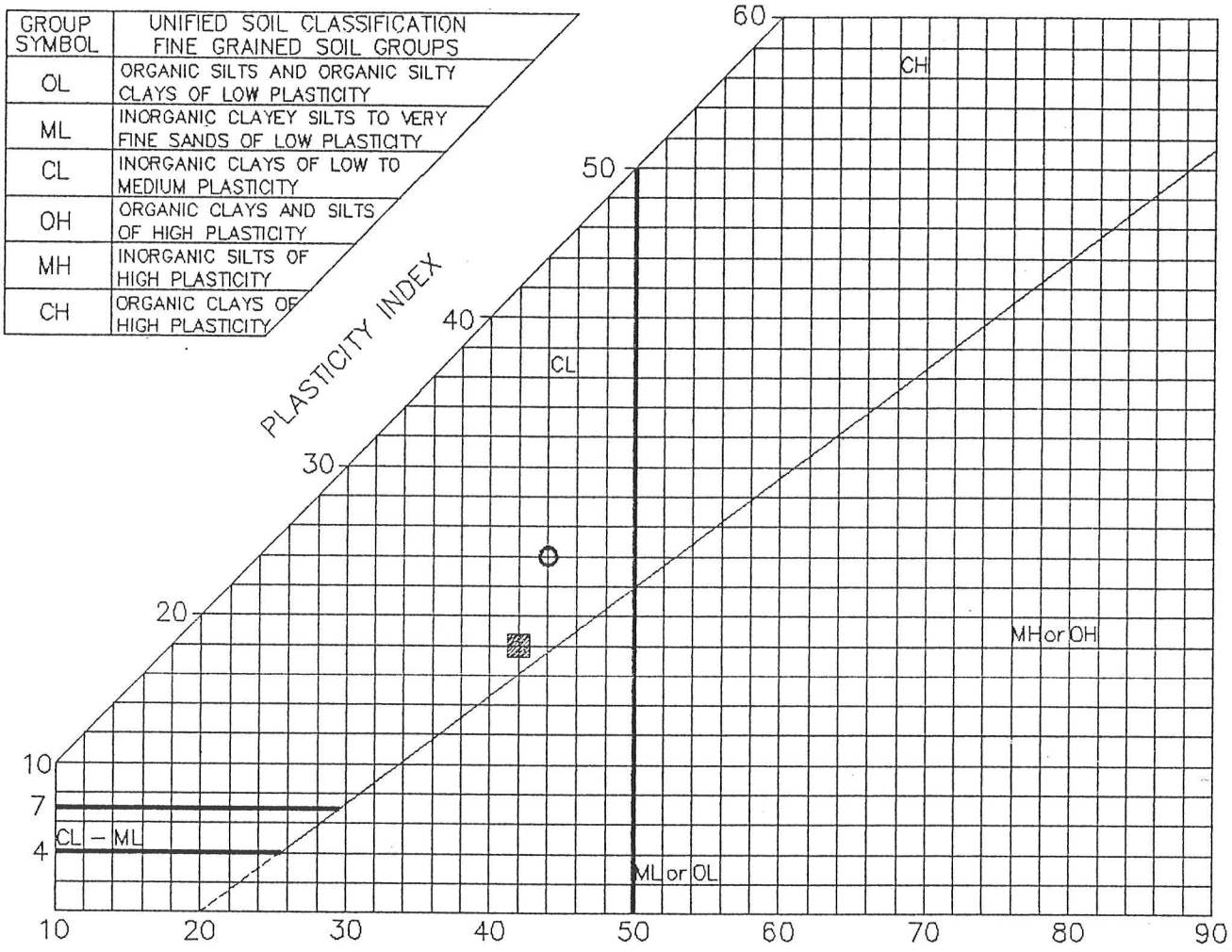
SYMBOL: O
D-60 = 1.1"

D-30 = 0.12"
D-10 = 0.012"

CU = 91.7
CC = 1.09

DESCRIPTION\
CLASSIFICATION: GW

GROUP SYMBOL	UNIFIED SOIL CLASSIFICATION FINE GRAINED SOIL GROUPS
OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
ML	INORGANIC CLAYEY SILTS TO VERY FINE SANDS OF LOW PLASTICITY
CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY
OH	ORGANIC CLAYS AND SILTS OF HIGH PLASTICITY
MH	INORGANIC SILTS OF HIGH PLASTICITY
CH	ORGANIC CLAYS OF HIGH PLASTICITY



TEST SYMBOL	BORING NUMBER	SAMPLE NUMBER	% PASSING #200 SIEVE	LIQUID LIMIT	PLASTICITY INDEX	CLASSIFICATION
○	TP–4	0.5–1.5'	40.5	44	24	SC
▨	TP–13	0.5–1.5'	32	42	18	SC

PLASTICITY INDEX
COMSTOCK ESTATES
UNITS 4–11, NEVADA

JOB NO: 21545
APPR: JKG BY: CRB
PLATE 22
7:29 AM * 30-JAN-1995

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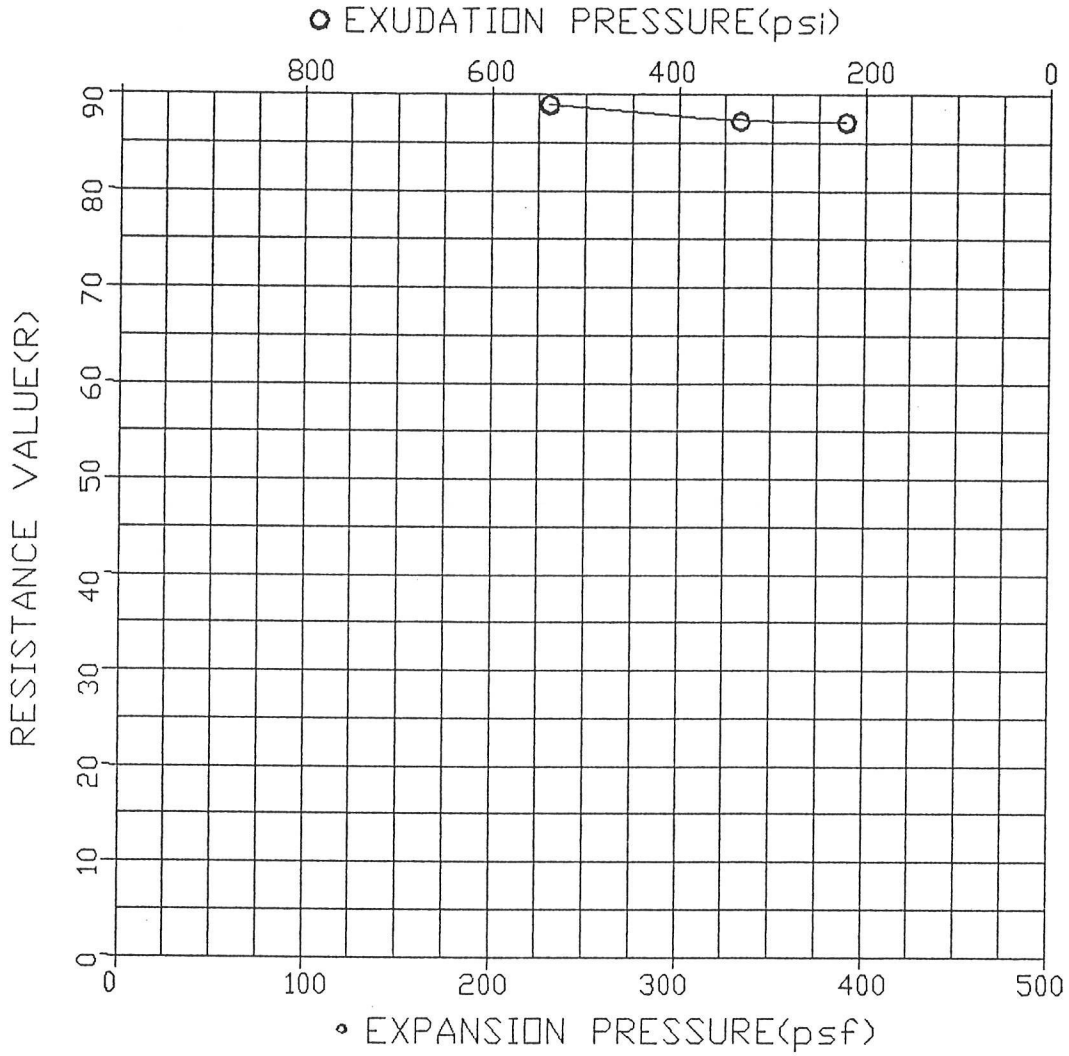
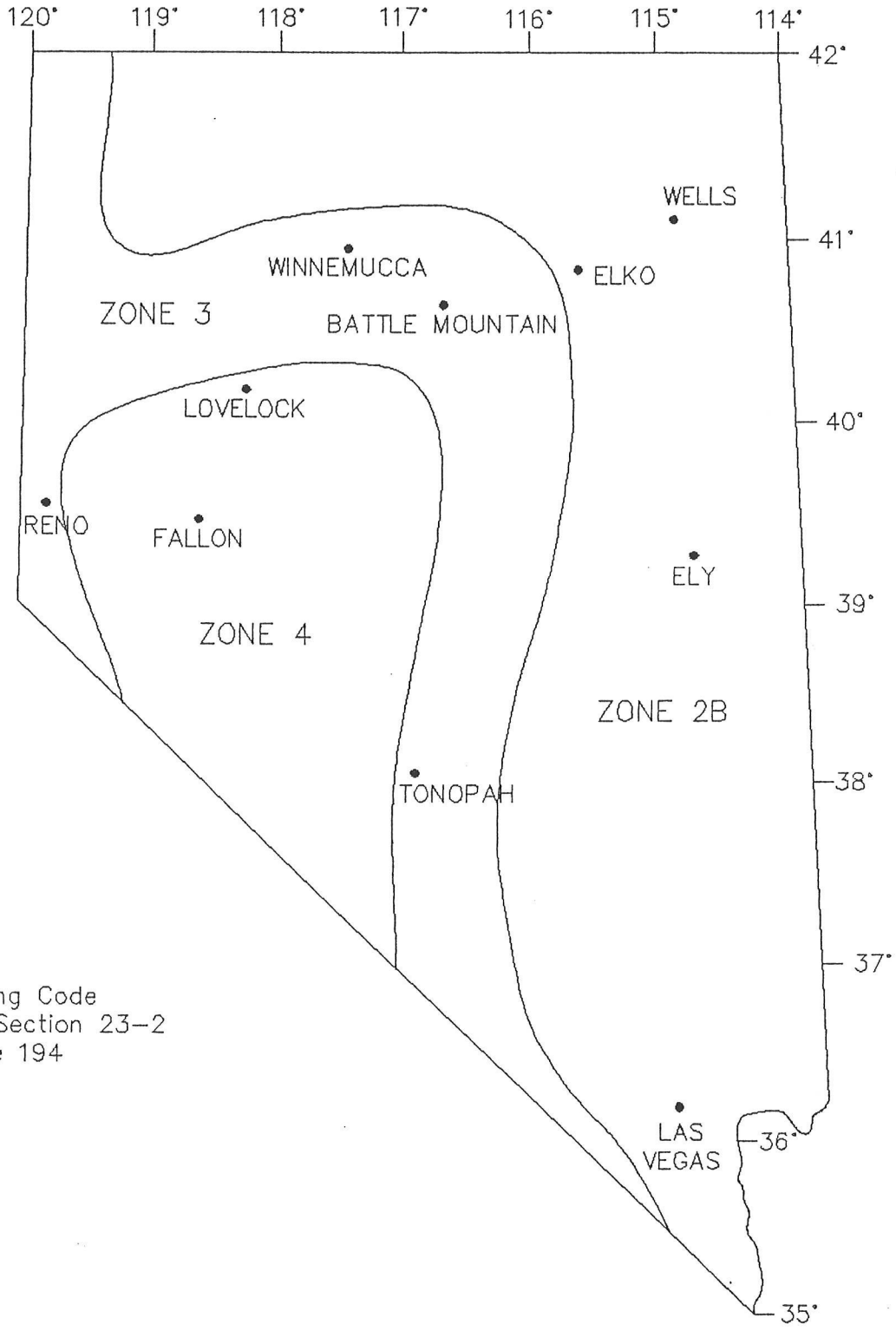


Specimen No.	A	B	C
Water Content(%)	13.3	11.7	12.5
Dry Density(pcf)	118.3	112.8	120.8
Exudation Pressure(psi)	207	541	334
Expansion Pressure(psf)	-	-	-
Resistance Value(R)	87	89	87

Sample Source	Classification	Sand Equivalent	Values Interpolated at 300 psi Exudation press.	
			Expansion Pressure	R-value
TP-1 2-3 FEET	BROWN SANDY GRAVEL (GW)	----	-	87

SUMMIT ENGINEERING CORPORATION	COMSTOCK ESTATES	PLATE
FILE NO: 21545 DRAWN BY: LAH DATE: 1-30-95 CHKD. BY: JKG	UNITS 4 - 11	23



Reference

Uniform Building Code
1991 Edition, Section 23-2
Figure 2, Page 194

SEISMIC ZONE MAP
COMSTOCK UNITS 4-11
WASHOE COUNTY

JOB NO. 21545
APPR.: JKG BY: CRB
PLATE 24
7:38 AM * 30-JAN-1995

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CONSULTING ENGINEERS AND SURVEYORS
5405 MAE ANNE AVENUE
RENO, NEVADA (702)-747-8550

PRELIMINARY DRAINAGE REPORT

FOR

BAILEY CREEK ESTATES TENTATIVE MAP

Prepared for:

STL Company, Inc
16500 Wedge Parkway, Bldg A Suite 2
Reno, NV 89511

December 15, 2016

Prepared by:

Wood Rodgers, Inc.
1361 Corporate Blvd.
Reno, NV 89502
(775) 823-4068
Steven Strickland, P.E. - Principal

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

TABLE OF CONTENTS

APPENDIX

1 INTRODUCTION

This report shall serve as the preliminary drainage report for the Bailey Creek Estates Tentative Map, which will consist of 56 single family lots. The purpose of this report is to address the drainage issues that result from development of the proposed project site in accordance with Truckee Meadows Regional Drainage Manual (TMRDM) and Washoe County development standards. 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 PROJECT LOCATION/HISTORIC DRAINAGE

The proposed project site (APNs 017-520-03 and 017-480-02) is approximately 28.7± acres in size and is located within Section 34 of T18N, R20E, MDM, Washoe County, Nevada.

The project site is bounded by Geiger Grade to the north, Cottonwood Creek Estates and Comstock Estates to the south, and Medium Density Suburban (MDS) lots to the east. A Vicinity Map is included in the **Appendix** of this report for reference.

The parcel is currently unimproved open land. Bailey Creek runs adjacent to the southern boundary of the property. The creek flows on adjacent common area from southeast to northwest. Offsite stormwater from the MDS parcels to the east flow onto the project site and generally run parallel to and into Bailey Creek. The majority of the proposed project site will be mass graded and will be improved/disturbed.

The project site is located in FEMA Zone X, areas outside the determined to be outside the 500-year annual chance floodplain, and Shaded Zone X, areas of 0.2% annual chance of flood; areas of 1% annual chance of flood with depths less than 1 foot or with drainage areas of less than one square mile. The site can be located on FEMA FIRM Panel 3263G. An exhibit identifying the FEMA zone boundaries and the project site is included in the **Appendix**.

1.2 BACKGROUND/PREVIOUS STUDIES

Bailey Creek Estates was originally part of the Cottonwood Estates Tentative Map. Cootonwood Estates was developed on the southwest side of Bailey Creek and a portion of the Bailey Creek Estates project site had recorded lots and approved improvement plans. The Cottonwood Creek Tentative Map has since expired and the previously recorded lots were reverted back to acreage.

A LOMR on Bailey Creek was completed on Bailey Creek in 2001 and the base flood elevations were established along the Bailey Creek. The project boundaries are outside of the current FEMA AE zone on the creek, but is anticipated that the final drainage analysis would include an updated review of the flood limits based upon current topographic information.

1.3 Regulatory Perspective

The Project site is located within the Washoe County jurisdiction. The onsite pipes and drain inlet drainage facilities will be operated and maintained by Washoe County. The Baily Creek Estates HOA will be responsible for maintenance of the detention basins and Bailey Creek.

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. Onsite flows will be directed to detention basins or directly to Bailey Creek. We have estimated five outfalls from the project into Bailey Creek. Two of those outfalls will be directed to detention basins to mitigate for flow rate increases due to development. Offsite flows from the MDS parcels to the east will be picked up in v-ditches located on the project's east boundary. The ditches will pick up the sheet flow from the east and convey it to the underground storm drain system. One detention basin is proposed in the common area with in the project boundary and one detention basin is proposed in the adjacent common area along Bailey Creek.

3 HYDROLOGIC ANALYSIS

Preliminary flows were estimated for the 5-year and 100-year design events using the rational method per the Truckee Meadows Drainage Manual. NOAA Atlas 14 was used for rainfall intensities. The basin calculations are included in the Appendix. There are five outfalls that will drain onsite and offsite flows into Bailey Creek. Q5's ranged from 0.8 cfs to 25.0 cfs, and Q100's ranged from 2.7 cfs to 75.6 cfs. These flow rates are manageable in storm drain pipes within the street Right of Way. Excluding flows coming down Bailey Creek the predevelopment flows coming through the project site have been estimated at 23.3 cfs for the Q5 and 75.5 cfs for the Q100. Total post development flows, prior to detention, have been estimated to be 40.5 cfs for the Q5 and 127.1 cfs for the Q100. These are cumulative rational method summaries and are therefore conservative. It's likely the flows will be slightly smaller when routed through the drainage system in greater detail with a final design analysis. The detention basins will be sized to reduce the total post development flows to the maximum of the total predevelopment flow prior to the storm drainage leaving the site.

4 CONCLUSIONS

The drainage facilities for the Bailey Creek Estates subdivision will be designed to capture and perpetuate the design storm event flows to an underground storm drain system and detention basins. The conveyance of flows is in conformance with the Washoe County Development 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 storms due to the implementation of the proposed storm water management system. 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 Version.

APPENDIX

VICINITY MAP

FEMA FIRM Flood Zone Exhibit

PRELIMINARY BASIN FLOW CALCULATIONS (5-YEAR)

PRELIMINARY BASIN FLOW CALCULATIONS (100-YEAR)

PRELIMINARY STORM DRAIN SYSTEM LAYOUT AND HYDROLOGIC BASIN MAP

0 0.25 0.5
MILES

Vicinity Map

Bailey Creek Estates
Washoe County
December, 2016

WOOD RODGERS
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Fax: 775.823.4066

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0 300 600

FEET

FEMA Flood Zone

Bailey Creek Estates
Washoe County
December, 2016

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TIME OF CONCENTRATION																	5-YEAR STORM EVENT	
Drainage Basin	Drainage Area (AC)	Weighted Average C-Factor 5-Year	Initial Flow Time, T_i			Travel Time, T_t								Total (T_i+T_t)	Urbanized Basins Check	Final	NOAA ATLAS 14 Rainfall Intensity	Rational Flow
			Overland Flow			Channelized Flow				Gutter Flow								
			L_i (ft)	S (ft/ft)	T_i (min)	L_s(ft)	S (ft/ft)	V(ft/s)	T_{t1} (min)	L_t (ft)	S (ft/ft)	V (ft/s)	T_{t2} (min)	T_c (min)	T_c*(min)	T_c (min)	$I_{5\text{-year}}$ (in/hour)	$Q_{5\text{-year}}$ (cfs)
A-1	1.50	0.41	204	0.0200	14.0	144	0.0200	2.3	1.1					14.0	11.9	**11.9**	**1.22**	**0.8**
B-1	1.67	0.42	153	0.0200	12.1					346	0.0200	2.9	2.0	14.1	12.8	**12.8**	**1.19**	**0.8**
C-1	0.33	0.40	90	0.0200	9.5	91	0.0200	2.3	0.7					10.1	11.0	**10.1**	**1.30**	**0.2**
C-2	1.93	0.50	164	0.0200	11.0					408	0.0200	2.9	2.4	13.4	13.2	**13.2**	**1.17**	**1.1**
C-3	1.37	0.41	167	0.0200	12.7					267	0.0200	2.9	1.6	14.3	12.4	**12.4**	**1.20**	**0.7**
C-4	1.71	0.41	173	0.0200	13.0					396	0.0200	2.9	2.3	15.3	13.2	**13.2**	**1.17**	**0.8**
C-5	1.01	0.50	174	0.0200	11.3					134	0.0200	2.9	0.8	12.1	11.7	**11.7**	**1.23**	**0.6**
C-6	1.55	0.50	116	0.0200	9.3					301	0.0200	2.9	1.7	11.0	12.3	**11.0**	**1.27**	**1.0**
C-7	2.37	0.50	142	0.0200	10.2					309	0.0200	2.9	1.8	12.0	12.5	**12.0**	**1.22**	**1.4**
C-8	1.71	0.40	213	0.0200	14.7					278	0.0200	2.9	1.6	16.3	12.7	**12.7**	**1.19**	**0.8**
C-9	1.04	0.50	187	0.0200	11.8					236	0.0200	2.9	1.4	13.1	12.4	**12.4**	**1.21**	**0.6**
C-10	1.14	0.39	178	0.0234	12.8					216	0.0137	2.4	1.5	14.3	12.2	**12.2**	**1.21**	**0.5**
D-1	1.68	0.49	152	0.0200	10.8					407	0.0200	2.9	2.4	13.1	13.1	**13.1**	**1.17**	**1.0**
D-2	1.56	0.40	152	0.0137	14.0					194	0.0137	2.4	1.4	15.4	11.9	**11.9**	**1.23**	**0.8**
D-3	1.23	0.50	84	0.0013	19.7					394	0.0179	2.7	2.4	22.1	12.7	**12.7**	**1.19**	**0.7**
D-4	1.42	0.45								529	0.0183	2.8	3.2	5.0	12.9	**5.0**	**1.73**	**1.1**
D-5	0.23	0.41	260	0.0200	16.0	555	0.0200	2.3	4.1					20.0	14.5	**14.5**	**1.11**	**0.1**
E-1	1.41	0.50								351	0.0188	2.8	2.1	5.0	12.0	**5.0**	**1.73**	**1.2**
E-2	2.26	0.61	171	0.0234	8.6					392	0.0254	3.2	2.0	10.7	13.1	**10.7**	**1.28**	**1.8**
E-3	0.16	0.36	36	0.0178	6.6					264	0.0178	2.7	1.6	8.2	11.7	**8.2**	**1.46**	**0.1**
E-4	0.13	0.35	29	0.0320	5.0					195	0.0320	3.6	0.9	5.9	11.2	**5.9**	**1.66**	**0.1**
E-5	0.14	0.35	64	0.0492	6.4					193	0.0492	4.5	0.7	7.1	11.4	**7.1**	**1.55**	**0.1**
E-6	0.18	0.50	118	0.0200	9.3	387	0.0200	2.3	2.8					12.1	12.8	**12.1**	**1.22**	**0.1**
O-1	0.10	0.35	51	0.0200	7.7	230	0.0200	2.3	1.7					9.4	11.6	**9.4**	**1.36**	**0.0**
O-2	0.15	0.36								416	0.0179	2.7	2.5	5.0	12.3	**5.0**	**1.73**	**0.1**
O-3	5.43	0.35	212	0.0400	12.5					610	0.0340	3.7	2.7	15.2	14.6	**14.6**	**1.11**	**2.1**
O-4	8.58	0.35	324	0.0384	15.6	587	0.0276	2.7	3.6					19.2	15.1	**15.1**	**1.09**	**3.3**
O-5	6.13	0.35	217	0.0337	13.3	823	0.0202	2.3	6.0					19.3	15.8	**15.8**	**1.07**	**2.3**
O-6	0.29	0.35	168	0.0576	9.8	80	0.0576	3.9	0.3					10.2	11.4	**10.2**	**1.30**	**0.1**
O-7	1.26	0.35	305	0.0428	14.6	180	0.0298	2.8	1.1					15.7	12.7	**12.7**	**1.19**	**0.5**
O-8	1.44	0.35	176	0.0372	11.6	391	0.0310	2.8	2.3					13.9	13.1	**13.1**	**1.17**	**0.6**
O-9	5.15	0.35	133	0.0235	11.7	499	0.0187	2.2	3.8					15.5	13.5	**13.5**	**1.16**	**2.1**
O-10	5.60	0.35	238	0.0245	15.5	777	0.0271	2.7	4.9					20.4	15.6	**15.6**	**1.07**	**2.1**

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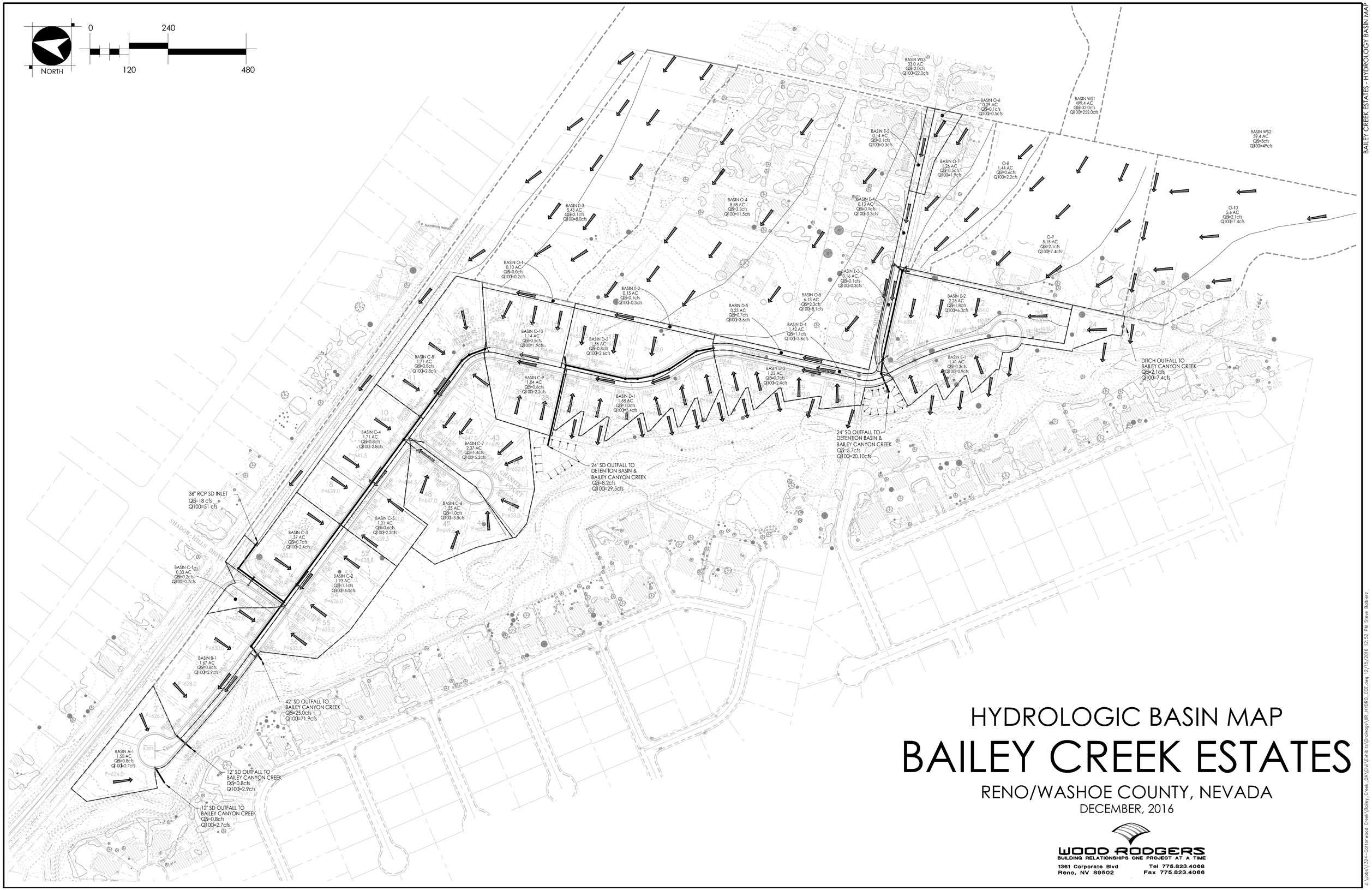
TIME OF CONCENTRATION																100-YEAR STORM EVENT	
Drainage Basin	Drainage Area (AC)	Weighted Average C-Factor $_{100\text{-Year}}$	Initial Flow Time, T_i			Travel Time, T_t								Total (T_i+T_t)	Urbanized Basins Check	Final	NOAA ATLAS 14 Rainfall Intensity	Rational Flow
			Overland Flow			Channelized Flow				Gutter Flow								
			L_i (ft)	S (ft/ft)	T_i (min)	L_s(ft)	S (ft/ft)	V(ft/s)	T_{t1} (min)	L_t (ft)	S (ft/ft)	V (ft/s)	T_{t2} (min)	T_c (min)	T_c*(min)	T_c (min)	$I_{100\text{-year}}$ (in/hour)	$Q_{100\text{-year}}$ (cfs)
A-1	1.50	0.56	204	0.0200	11.0	144	0.0200	2.3	1.1					11.0	11.9	**11.0**	**3.14**	**2.7**
B-1	1.67	0.57	153	0.0200	9.4					346	0.0200	2.9	2.0	11.4	12.8	**11.4**	**3.09**	**2.9**
C-1	0.33	0.55	90	0.0200	7.4	91	0.0200	2.3	0.7					8.1	11.0	**8.1**	**3.63**	**0.7**
C-2	1.93	0.65	164	0.0200	8.2					408	0.0200	2.9	2.4	10.6	13.2	**10.6**	**3.18**	**4.0**
C-3	1.37	0.56	167	0.0200	10.0					267	0.0200	2.9	1.6	11.5	12.4	**11.5**	**3.08**	**2.4**
C-4	1.71	0.56	173	0.0200	10.2					396	0.0200	2.9	2.3	12.5	13.2	**12.5**	**2.97**	**2.8**
C-5	1.01	0.65	174	0.0200	8.5					134	0.0200	2.9	0.8	9.3	11.7	**9.3**	**3.40**	**2.2**
C-6	1.55	0.65	116	0.0200	6.9					301	0.0200	2.9	1.7	8.7	12.3	**8.7**	**3.51**	**3.5**
C-7	2.37	0.65	142	0.0200	7.7					309	0.0200	2.9	1.8	9.5	12.5	**9.5**	**3.36**	**5.2**
C-8	1.71	0.55	213	0.0200	11.5					278	0.0200	2.9	1.6	13.2	12.7	**12.7**	**2.94**	**2.8**
C-9	1.04	0.65	187	0.0200	8.8					236	0.0200	2.9	1.4	10.2	12.4	**10.2**	**3.23**	**2.2**
C-10	1.14	0.54	178	0.0234	10.1					216	0.0137	2.4	1.5	11.6	12.2	**11.6**	**3.07**	**1.9**
D-1	1.68	0.64	152	0.0200	8.1					407	0.0200	2.9	2.4	10.5	13.1	**10.5**	**3.19**	**3.4**
D-2	1.56	0.55	152	0.0137	11.0					194	0.0137	2.4	1.4	12.4	11.9	**11.9**	**3.03**	**2.6**
D-3	1.23	0.65	84	0.0013	14.8					394	0.0179	2.7	2.4	17.2	12.7	**12.7**	**2.95**	**2.4**
D-4	1.42	0.60								529	0.0183	2.8	3.2	5.0	12.9	**5.0**	**4.26**	**3.6**
D-5	0.23	0.56	260	0.0200	12.5	555	0.0200	2.3	4.1					16.5	14.5	**14.5**	**2.73**	**0.3**
E-1	1.41	0.65								351	0.0188	2.8	2.1	5.0	12.0	**5.0**	**4.26**	**3.9**
E-2	2.26	0.76	171	0.0234	6.0					392	0.0254	3.2	2.0	8.0	13.1	**8.0**	**3.66**	**6.3**
E-3	0.16	0.51	36	0.0178	5.3					264	0.0178	2.7	1.6	6.9	11.7	**6.9**	**3.88**	**0.3**
E-4	0.13	0.50	29	0.0320	4.0					195	0.0320	3.6	0.9	5.0	11.2	**5.0**	**4.26**	**0.3**
E-5	0.14	0.50	64	0.0492	5.1					193	0.0492	4.5	0.7	5.8	11.4	**5.8**	**4.10**	**0.3**
E-6	0.18	0.65	118	0.0200	6.9	387	0.0200	2.3	2.8					9.8	12.8	**9.8**	**3.30**	**0.4**
O-1	0.10	0.50	51	0.0200	6.2	230	0.0200	2.3	1.7					7.8	11.6	**7.8**	**3.69**	**0.2**
O-2	0.15	0.51								416	0.0179	2.7	2.5	5.0	12.3	**5.0**	**4.26**	**0.3**
O-3	5.43	0.50	212	0.0400	10.0					610	0.0340	3.7	2.7	12.7	14.6	**12.7**	**2.95**	**8.0**
O-4	8.58	0.50	324	0.0384	12.5	587	0.0276	2.7	3.6					16.1	15.1	**15.1**	**2.68**	**11.5**
O-5	6.13	0.50	217	0.0337	10.7	823	0.0202	2.3	6.0					16.6	15.8	**15.8**	**2.63**	**8.1**
O-6	0.29	0.50	168	0.0576	7.9	80	0.0576	3.9	0.3					8.2	11.4	**8.2**	**3.61**	**0.5**
O-7	1.26	0.50	305	0.0428	11.7	180	0.0298	2.8	1.1					12.7	12.7	**12.7**	**2.94**	**1.9**
O-8	1.44	0.50	176	0.0372	9.3	391	0.0310	2.8	2.3					11.6	13.1	**11.6**	**3.07**	**2.2**
O-9	5.15	0.50	133	0.0235	9.4	499	0.0187	2.2	3.8					13.2	13.5	**13.2**	**2.89**	**7.4**
O-10	5.60	0.50	238	0.0245	12.4	777	0.0271	2.7	4.9					17.3	15.6	**15.6**	**2.64**	**7.4**



HYDROLOGIC BASIN MAP

BAILEY CREEK ESTATES

RENO/WASHOE COUNTY, NEVADA

DECEMBER, 2016

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

BAILEY CREEK ESTATES - HYDROLOGY BASIN MAP

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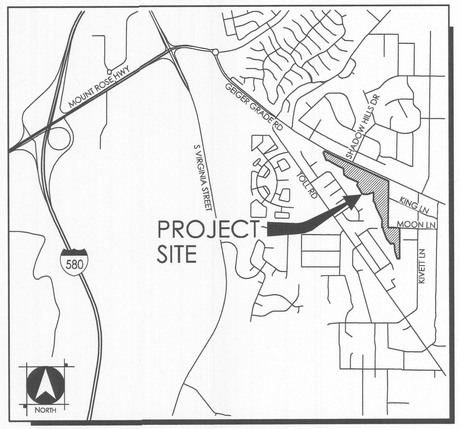
BAILEY CREEK ESTATES
TENTATIVE MAP
TITLE SHEET

OWNER:
CHARLES B. MADDOX PO
BOX 70577 RENO, NV 89570

APPLICANT:
STL COMPANY, LLC.
16500 WEDGE PARKWAY,
BLDG A, STE 200 RENO, NV

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 "WSZOLEZZI" - S62SM01279 AND "RNW RENO" - N74SM01028 IS TAKEN AS NORTH 40°39'41" WEST. 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 1988 (NAVD 88) AS TAKEN FROM CITY OF RENO BENCHMARK 3091, WITH A PUBLISHED ELEVATION OF 4555.77 FT. BENCHMARK 3091 IS DESCRIBED AS BEING1 ½" DIA STEEL CAP - AT SW'LY TRAFFIC ISLAND OF VETERANS PKWY AND CURTI RANCH RD – 7' NW'LY OF S'LY APEX OF THE ISLAND.



VICINITY MAP
NOT TO SCALE

SITE PLAN
NOT TO SCALE

SITE INFORMATION:

LOT SUMMARY
- SITE AREA: 28.76 AC
- LARGEST LOT AREA: 0.81 AC
- SMALLEST LOT AREA: 0.33 AC
- AVERAGE LOT AREA: 0.41 AC

COMMON AREA
- COMMON AREA 1: 0.05 AC
- COMMON AREA 2: 0.28 AC
- COMMON AREA 3: 0.05 AC
- COMMON AREA 4: 0.24 AC
- COMMON AREA 5: 0.13 AC
- TOTAL COMMON AREA: 0.75 AC

ASSESSOR PARCEL NUMBER
- 017-520-03, 017-480-02

ENGINEERS STATEMENT:

I, STEVEN P. STRICKLAND, DO HEREBY CERTIFY THAT THIS PLAN HAS BEEN PREPARED BY ME OR UNDER MY SUPERVISION AND WAS COMPLETED ON THE 15th DAY OF DECEMBER, 2016.

12/15/16
STEVEN P. STRICKLAND, P.E. #51192

PROFESSIONAL ENGINEER-STATE OF NEVADA
STEVEN P. STRICKLAND
Exp: 6-30-18
CIVIL
No. 15972

SHEET INDEX

SHT No.	DWG ID	DRAWING DESCRIPTION
1	T-1	TITLE SHEET
2	LB-1	PRELIMINARY LOT AND BLOCK PLAN
3	G-1	PRELIMINARY GRADING PLAN
4	U-1	PRELIMINARY UTILITY PLAN
5	L-1	PRELIMINARY LANDSCAPE PLAN

BAILEY CREEK ESTATES
TITLE SHEET

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

1324006 DECEMBER, 2016

SHEET T-1 OF 5

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BAILEY CREEK ESTATES

TENTATIVE MAP

PRELIMINARY LOT AND BLOCK PLAN

A 42' STREET
NOT TO SCALE

B MOON LANE
NOT TO SCALE

BAILEY CREEK ESTATES

PRELIMINARY LOT AND BLOCK PLAN

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1324006

DECEMBER, 2016

SHEET LB-1 OF 5

BAILEY CREEK ESTATES

TENTATIVE MAP

PRELIMINARY GRADING PLAN

GRADING STATISTICS

ESTIMATED CUT	50,000 cu.yd.
ESTIMATED FILL	50,000 cu.yd.
AREA OF DISTURBANCE	2.3 Ac

BAILEY CREEK ESTATES
PRELIMINARY GRADING PLAN

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DECEMBER, 2016

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BAILEY CREEK ESTATES

TENTATIVE MAP

PRELIMINARY UTILITY PLAN

DETAIL A

DETAIL B

BAILEY CREEK ESTATES
PRELIMINARY UTILITY PLAN

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DECEMBER, 2016

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STATE ROUTE 341

SHADOW HILLS DRIVE

STERLING HILLS COURT

STERLING HILLS WAY

GRANITE MINE COURT

STERLING HILLS WAY

MOON LANE

COMMON AREA PER PREVIOUS TENTATIVE MAP

DETENTION

COMMON AREA

COMMON AREA

GENERAL NOTES

1) ALL PLANTING AND IRRIGATION SHALL BE INSTALLED PER LOCAL GOVERNING CODES.

2) 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 THE AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1-1990).

3) ALL LANDSCAPING WILL BE AUTOMATICALLY IRRIGATED. CONTAINER PLANTINGS WILL BE DRIP IRRIGATED BASED ON THE SPECIFIC HORTICULTURAL REQUIREMENTS OF EACH SPECIES. A REDUCED-PRESSURE-TYPE BACKFLOW PREVENTOR WILL BE PROVIDED ON THE IRRIGATION SYSTEM AS REQUIRED PER CODE.

4) PLAN IS CONCEPTUAL. PLANT LOCATIONS, FINAL SPECIES SELECTION, AND SIZE AT PLANTING SHALL BE DETERMINED DURING DEVELOPMENT OF THE FINAL CONSTRUCTION DOCUMENTS.

LANDSCAPE LEGEND

FRONT YARD TREES - ALL FRONT YARDS SHALL INCLUDE AT LEAST ONE (1) TREE FOR EVERY FIFTY (50) LINEAR FEET OF STREET FRONTAGE, OR FRACTION THEREOF.

NARROW EVERGREEN TREES IN 5' BUFFER STRIP ALONG STATE ROUTE 341 (AT 50 FT ON CENTER AVERAGE SPACING) WITH SIX (6) FT PRIVACY FENCING. PROVIDE APPROX. (4) TREES PER LOT.

NATIVE VEGETATION - APPLY NATIVE REVEGETATION SEED BLEND IN THESE AREAS AS NEEDED TO MITIGATE IMPACTS TO EXISTING VEGETATION FROM DEVELOPMENT ACTIVITIES.

0' 100' 200' 300'

Scale: 1" = 100'

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

Preliminary Landscape Plan

BAILEY CREEK

Silver Crest Homes

Washoe County, Nevada

No.	Revision Date

LA No:	588-503-11-16
Designed:	LA
Drawn:	LA
Checked:	RMH
CAD File:	LI-588-503
Date:	12/15/16

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L1
of
1