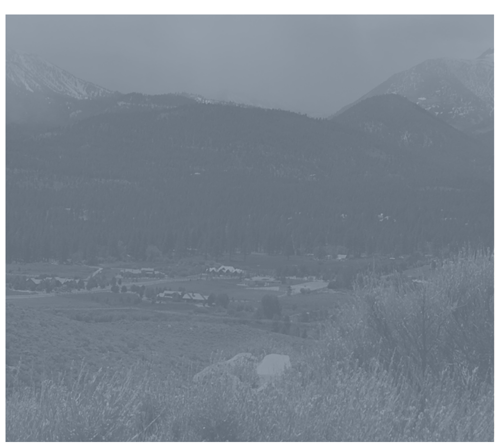
ASCENTÉ TENTATIVE MAP AND SPECIAL USE PERMIT

APRIL 17, 2017



Prepared by:

DESIGNWORKSHOP

Prepared for:

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Appendices

Maps

Project Request

This application package includes the following request:

1) A **Tentative Map** to create a 225-lot single-family residential subdivision.
2) A **Special Use Permit** for Utility Services located in the MDS, LDS and OS zoning districts per Washoe County Development Code Table 110.302.05.2. The utilities include a water tank, sewer lift station and water booster bump.
3) A **Special Use Permit** for Grading per Washoe County Development Code Section 110.438.35(a)

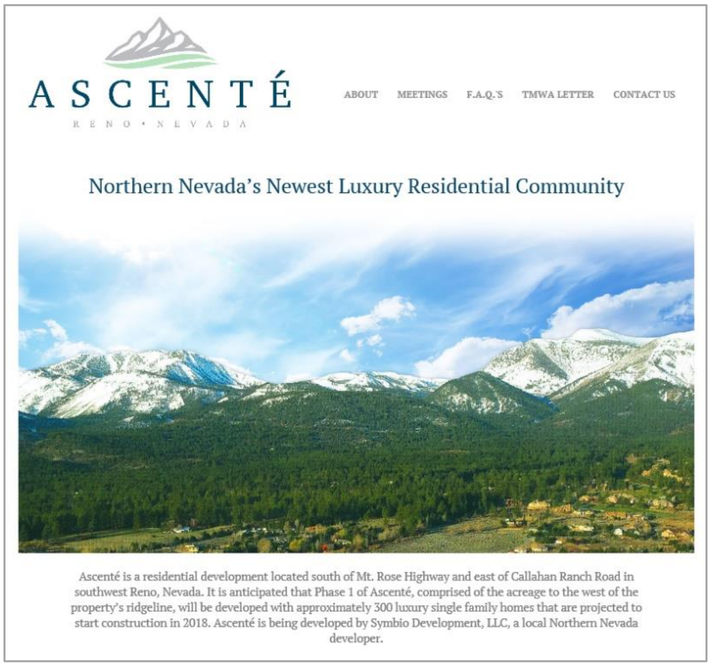
The proposed request is for a 225-lot single-family residential subdivision referred to as Ascenté. The project encompasses 225 acres of land located on a greater 632-acre property. The site is located at the southern terminus of Fawn Lane and eastern end of Shawna Lane. The project is located within parcel 045-252-14 (59.067 acres) and the adjacent western portion of parcel 045-252-15 (572.465 acres). The property is surrounded by residential development to the west and north, and vacant land to the south and east. The property has a mix of zoning designations including Medium Density Suburban (MDS), Low Density Suburban (LDS) and Open Space (OS). The project area is within the Forest Area Plan, and within the Matera Ridge Mixed Use Overlay District (MRMUOD). The property has a Master Plan designation of Suburban Residential (SR) and Open Space (OS).

Leading up to the adoption of the 2010 Forest Area Plan, the County and surrounding community spent several years working together to determine the most appropriate mix of land uses on the larger 632-acre parcel. Based on historical meetings minutes and Washoe County staff reports, the adopted Forest Area Plan was founded on the County's desire to balance its commitment to existing community character with its regional responsibilities to accommodate a portion of future growth in an efficient and orderly manner. Part of the discussion concerning land use and intensity required conformance with the Truckee Meadows Regional Plan and the governing policies related to future growth. The property is located within the Truckee Meadows Service Area (TMSA) boundary, identified as areas within which municipal services and infrastructure will be provided. Considering the parcels adjacency to developed land and access to designated Collector roadways (Fawn Lane and Callahan Road), the property was given a designation of MDS, LDS and Open Space.

The zoning allows for an overall density of 632 residential units on the 632-acre property. The Forest Area Plan also identifies the need to preserve the surrounding developments suburban/rural character by encouraging clustering of homes and preservation of open space corridors on steep slopes. The proposed tentative map provides for the clustering of 225 lots on a total of 225 acres, of which 80 acres or 35%, will be open space.

Community Outreach Process

An extensive community outreach process was held prior to the initial October submission of the Ascenté Tentative Map and Special Use Permit application. The voluntary outreach and collection of community input started three months prior to the submittal. This was done to provide an opportunity for residents and neighbors to be involved in the design and to gain an understanding of their concerns. The process was effective and allowed for residents to positively impact the project design in terms of lot sizing, the addition of trails, road and access connections and common open space. Additional information on the community outreach process is included in Appendix B of this application.



An informational website was set up at AscenteNevada.com, where the community meeting dates, times, and locations were posted. The website also provided links to the frequently asked questions (FAQ's), TMWA water information and data on utility connections. An e-mail link, info@AscenteNevada.com, was also provided for direct inquiries concerning the project.

The Ascenté development was initially introduced at the June 9, 2016 South Truckee Meadows/Washoe Valley Citizen Advisory Board (CAB) meeting. The project was agendized as a non-action item to invite CAB members and the public to attend informational meetings to learn about and provide input on the Ascenté residential development.

Prior to initial submission of the Ascenté Tentative Map in October of 2016, the developer voluntarily hosted two open house meetings to provide an opportunity for public input and community engagement. The first meeting was held on Saturday, June 25th from 10 a.m.-11:30 a.m. at the South Valleys Library. Prior to the meeting, 423 letters were mailed to nearby

residents informing them of the proposed Ascenté development and inviting them to attend an open house event to learn more about the project and provide input into the development. The invitations went out to property owners generally located south of Mt. Rose Highway and east of Callahan Road. The open house event was set up with large mounted maps detailing existing conditions to roads and access points, utilities, slopes, regional services and schools and potential design standards to be used in the project. In addition, representatives from Symbio Development and the design team were available to answer questions. Approximately 118 people attended the first event. Most the comments and questions focused on roads, trails, schools and infrastructure.

Based on the feedback from the open house, the community input was incorporated into the preliminary concept design, and a second open house meeting was held on Thursday, August 4th from 5:30 p.m.-7:00 p.m. at the South Valleys Library. Approximately 57 people attended the event. The second open house provided more detailed site information including proposed development areas, access connections, utilities, regional services, trail connections and design standards. Executives from the Washoe County School District and TMWA were at the meeting and provided information on impacts to Washoe County schools and water. Similar to the first open house meeting, an updated FAQ handout was given to each attendee and representatives from Symbio Development and the design team were available to answer questions.

In addition to the two voluntary open house meetings, representatives from Symbio Development met with individual property owners along Fawn Lane and with adjacent property owners that share common property lines with the Ascenté property. Most of the discussions with the individual meetings centered on infrastructure and preferences for fence styles and landscaping buffers. These meetings resulted in Ascenté placing a building height restriction on homes that border existing property owners, as well as the landscape buffering proposed in the Tentative map.

Feedback obtained at the voluntary public meetings lead to the development of the proposed site plan and incorporated elements such as trails, lighting, access locations, landscape buffering techniques and lot layout.

The South Truckee Meadows/Washoe Valley CAB meeting was held on November 10, 2016 at the South Valleys Library. Concerned citizens filled the room and took turns providing specific comments and concerns on the project. While there was no opportunity for questions or responses by the development team, the outcome was that the applicant made the decision to put the project on hold and spend the next six months redesigning the project and resubmitting a new tentative map application package. Significant changes were made in the process that addressed the neighbor's concerns. Specifically, the project went from a **281-lot subdivision, down to a 225-lot subdivision, through the removal of 56 lots**. The impacts from removing lots also allowed for **a reduction in the overall disturbed area by 46 acres, a reduction of the grading cuts and fills by over 64%** and a **reduction in the traffic generated by almost 30%**. Additional elements were added to the project that included common open space landscape buffers between every adjacent existing lot and the proposed homes, a more efficiently designed trail system, increased storm drain detention capacity, physical roadway and pathway improvements to Fawn Lane and the addition of an acceleration lane on Mt. Rose Highway.

Comparison Between October Submittal and April Redesign			
Area of Impact	**October Design**	**April Redesign**	**Improvements**
Number of lots	281 lots	225 lots	Reduction of 56 lots
Project size	281 acres	225 acres	Reduction of 56 acres
Impacts on schools	76 students	61 students	Reduction of 15 students
Traffic	2,674 Average Daily Trips	2,141 Average Daily Trips	Reduced traffic by 20%
Fawn Lane	No roadway improvements proposed	Installation of traffic calming devices and construction of a pedestrian pathway along Fawn Lane right-of-way.	Increased safety for both vehicular and pedestrians on Fawn Lane.
Storm Drain	On-site storm drain mitigation meets County standards	Added on-site flood mitigation and designed detention basins to be over sized to handle additional storm drainage.	Improves drainage design for overall Callahan Ranch area and protects neighboring homes.
Lot Buffering Between Existing Neighborhoods and New Development	Limited perimeter homes to single-story	Added 40' wide buffer adjacent to existing homes. Added 20' wide buffer next to Patti Lane.	Buffer areas will be HOA maintained.

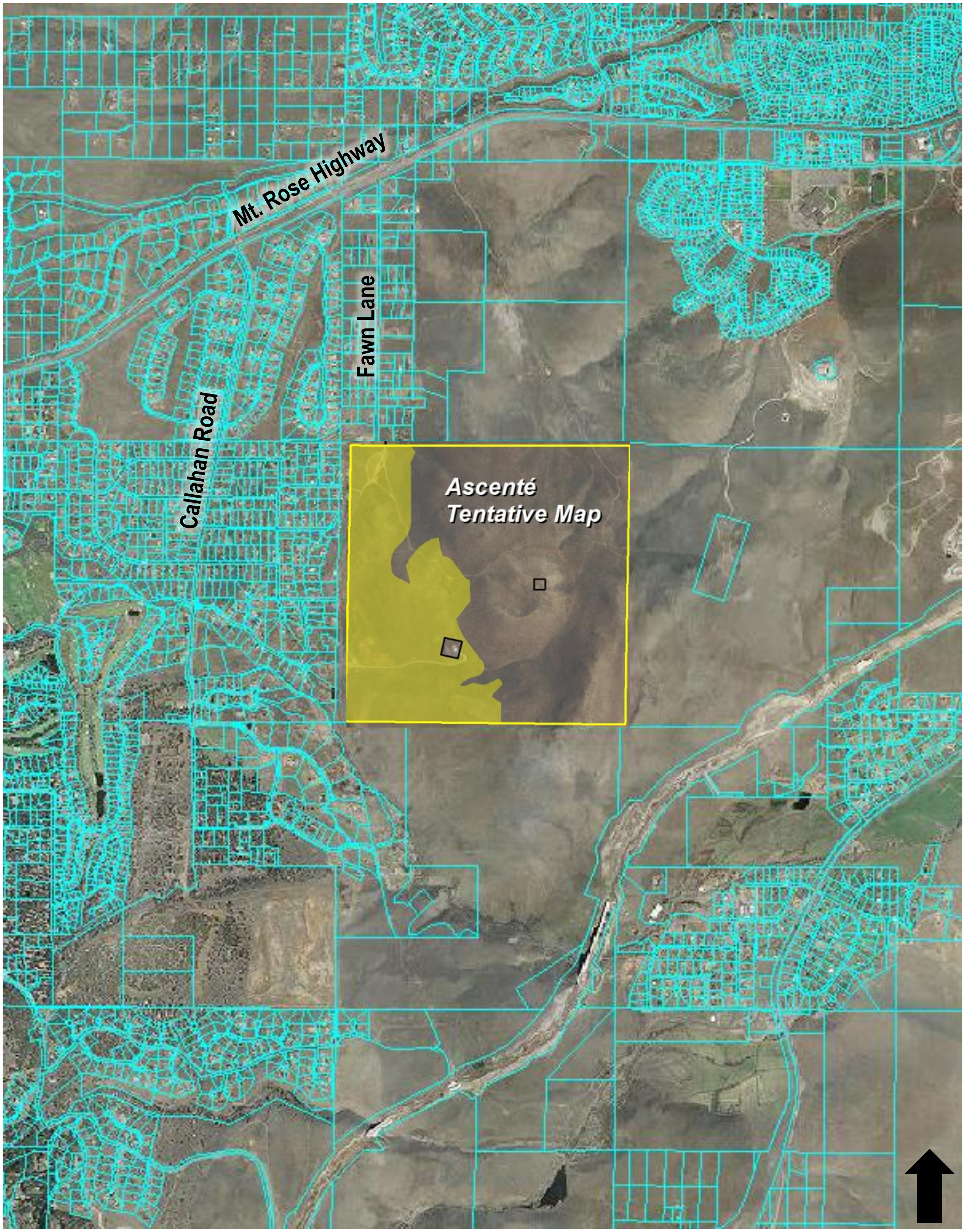
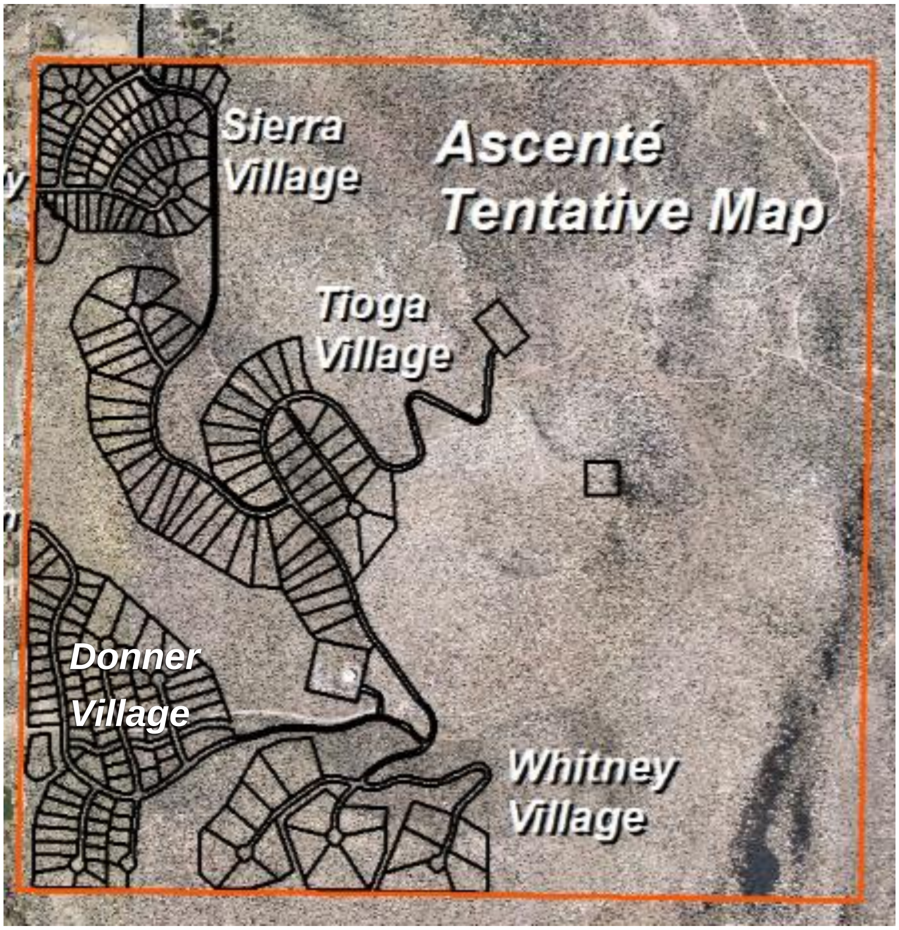


Figure 1 - Vicinity Map

Tentative Map Design

The 225-lot tentative map has been designed based on feedback gathered during the community outreach process and feedback heard during the CAB meeting. Development is based on the site's topographic constraints and preserves areas with steep slopes as open space. As required in the Forest Area Plan, lots are clustered and provide the following benefits:



- The preserved open space provides the community with larger recreation area for walking, biking and horseback riding.
- The preserved open space protects the environmental landscape by providing habitat for wildlife, naturally filtering storm water, reducing storm water runoff from impervious surfaces, and protecting the natural features of the site.
- The clustered design helps to maintain the rural character by allowing for more open space and keeping the developed portion to smaller geographic areas.

The project is divided into four development areas, each containing clustered single-family homes.

- Sierra Village – 65 units
- Tioga Village – 59 units
- Donner Village – 84 units
- Whitney Village – 17 units

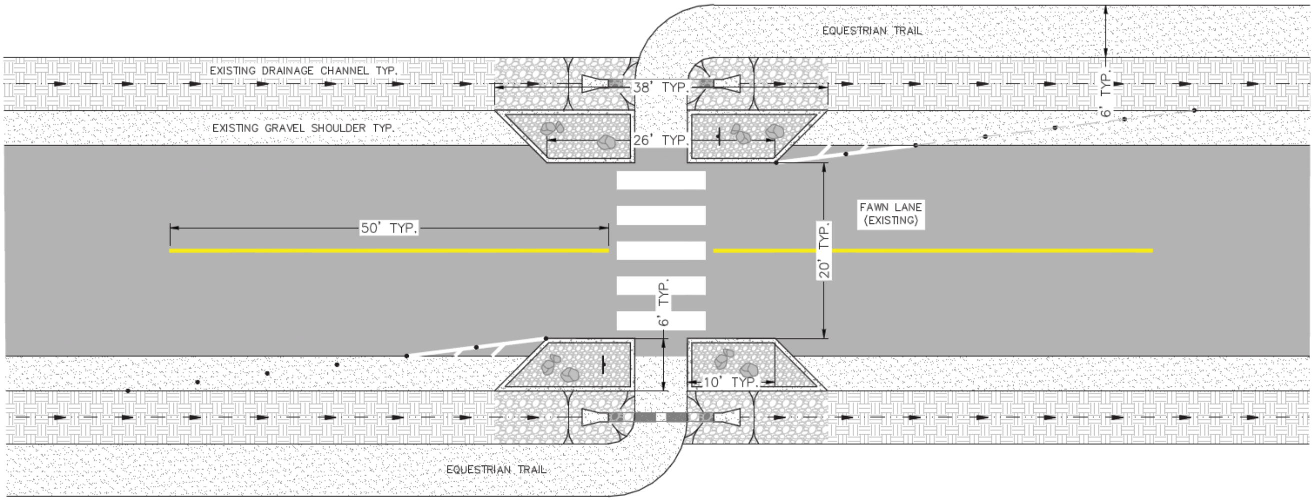
TOTAL 225 units

Lot sizes vary between 10,120 square feet up to 91,450 square feet or 2 acres in size. The average lot size is 24,450 square feet, or .56 of an acre. Lot setbacks vary, based on the village location and include the following setbacks:

Sierra Village:	**Tioga/Whitney Villages**	**Donner Village**
Front: 20'	Front: 30'	Front: 30'
Side: 8'	Side: 12'	Side: 12'
Rear: 20'	Rear: 30'	Rear: 30'
		Lots on cul-de-sacs have a reduced front and rear setback of 20'.

Access into the project will be from Fawn Lane to the north and Shawna Lane to the west. Brushwood, to the west, will have a gated access and only be used for Emergency Vehicle Access (EVA), such as fire responders. Washoe County has designated Fawn Lane as a Collector roadway and Shawna Lane as a Local street. A full traffic analysis is provided in the appendices portion of this application. The areas designated as common open space include detention basins, drainage areas, trailheads, points of access, easements, and undeveloped areas that preserve natural features, such as rock outcroppings and native vegetation. The proposed trail network provides the opportunity for equestrian, mountain biking and pedestrian access to common open spaces areas within Ascenté, as well as connectivity to public properties outside of the project boundaries. The trail connections are intended to provide recreation and scenic value through the site and connect to adjacent existing neighborhoods. The trails and common open space will be maintained by the HOA and restrict non-motorized uses.

The project will mitigate any impacts to the surrounding neighborhood by adding amenities that the entire community can benefit from and enjoy. This includes improvements to Fawn Lane to add traffic calming features and safe roadway crossings for pedestrians that want to walk, bike or ride a horse on Fawn Lane. The proposed trail system will be designed so that residents living off Fawn Lane will have an improved pathway along the Fawn Lane right-of-way that connects to Forest Service property and to the trail system within Ascenté. Improvements to Mt. Rose Highway will also be incorporated. An acceleration lane will be constructed on Mt. Rose Highway, so that vehicles turning right from Fawn Lane to Mt. Rose Highway will be able to safely enter traffic on Mt. Rose Highway headed east, into Reno.



Example of Traffic Calming Feature and Crosswalk on Fawn Lane

Specifically, improvements to the surrounding area will include:

- Speed management and traffic calming features on Fawn Lane, as depicted above.
- An equestrian/mountain bike/pedestrian path on Fawn Lane.
- An acceleration lane on Mt. Rose Highway at Fawn Lane.
- Construction of a school bus waiting area at the Shawna Lane/Millie Lane intersection.
- Move STOP signs at the Cherrywood Drive/Cedarwood Drive intersection for proactive distribution of project traffic between Goldenrod Drive and Tannerwood Drive.
- Install a STOP sign on the Goldenrod Drive/Cherrywood Drive intersection's westbound approach for safety purposes.
- An extensive trail system will be added to the entire length of Fawn Lane connecting it with the Ascenté trail system that further connects to the existing trails into the US Forest Service lands.

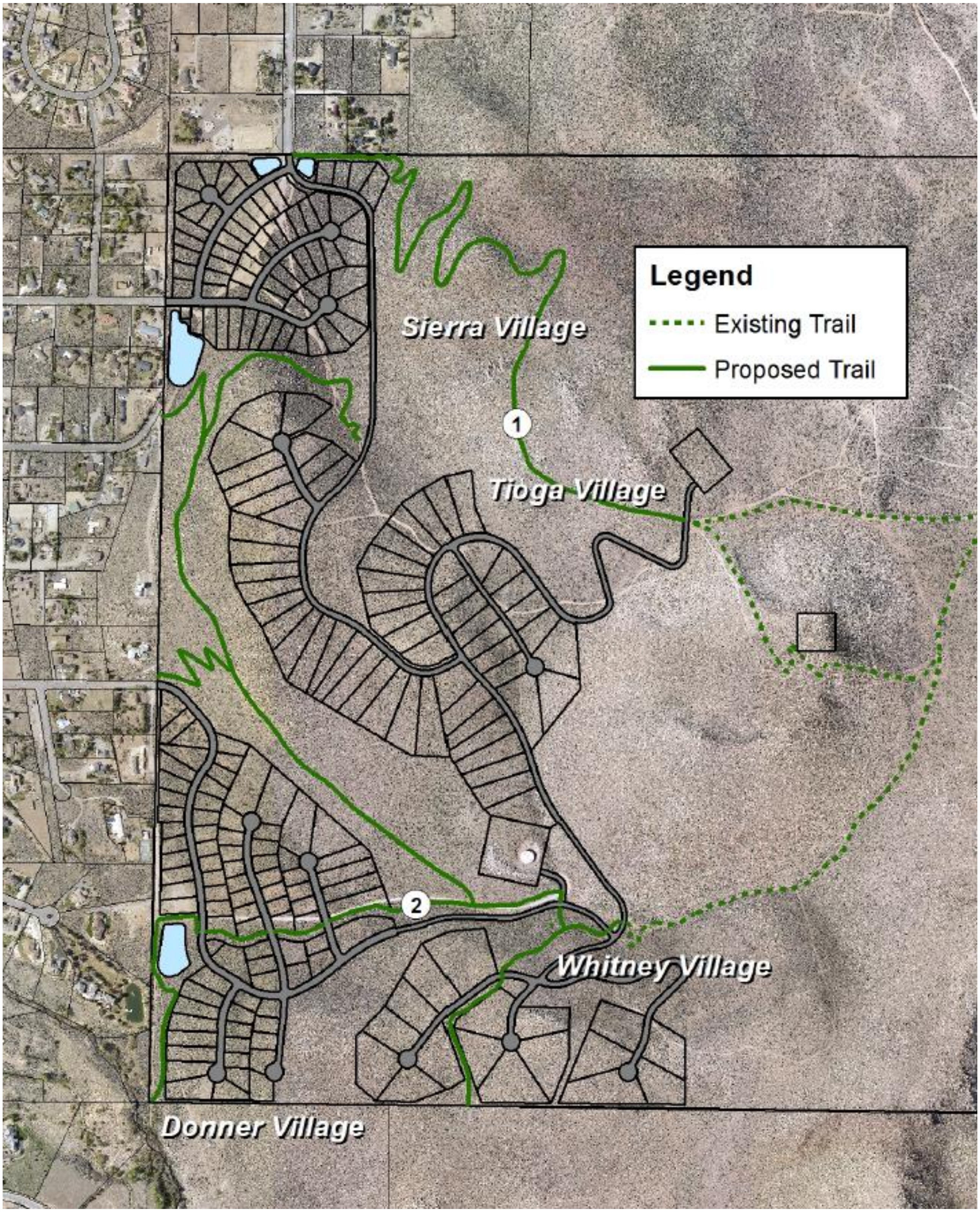


Figure 2 - Trail Design

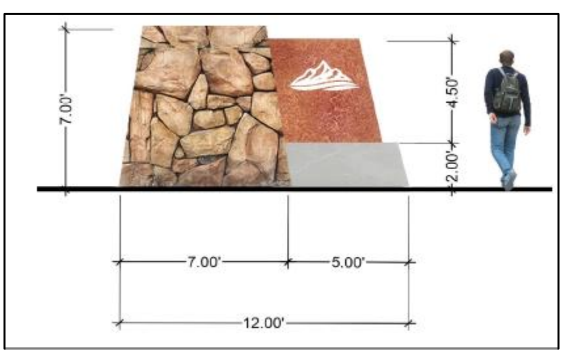
Design Guidelines

The proposed project is for a tentative map and special use permit and is not requesting a change to the zoning. The adoption of the Forest Area Plan and the project zoning occurred in 2010, thereby establishing the maximum density and allowed land use. Those policies are still in place today and are incorporated in the design of the development. For example, the Forest Area Plan identifies the site as appropriate for development of single family homes, but specifies that the maximum density shall not exceed 632 units. The Forest Area Plan acknowledges the surrounding neighborhoods rural character and requires that development of the subject site take into consideration the need to protect and preserve open space through clustered development design and by creating buffer areas between existing development and proposed development. While the Forest Area Plan does not specify minimum requirements for buffering between lots or standards for maintaining the areas rural character, the Ascenté project identifies key elements that will be implemented into the project that go above and beyond the requirements of the Forest Area Plan, and have been incorporated to better serve the surrounding community.

To provide an overall cohesive look and feel for Ascenté and insure design standards and guidelines are carried forward for implementation into the final map design and construction, the Ascenté Design Guidelines (Appendix C) handbook has been prepared to accompany the proposed tentative map. The intent in creating the design guidelines is to create a community that incorporates and maintains the site's natural setting, and ties in with the surrounding residential development, in conformance to the Forest Area Plan. These standards and design guidelines will ensure that the surrounding rural character is protected. The Design Guidelines set the standards for the following elements:

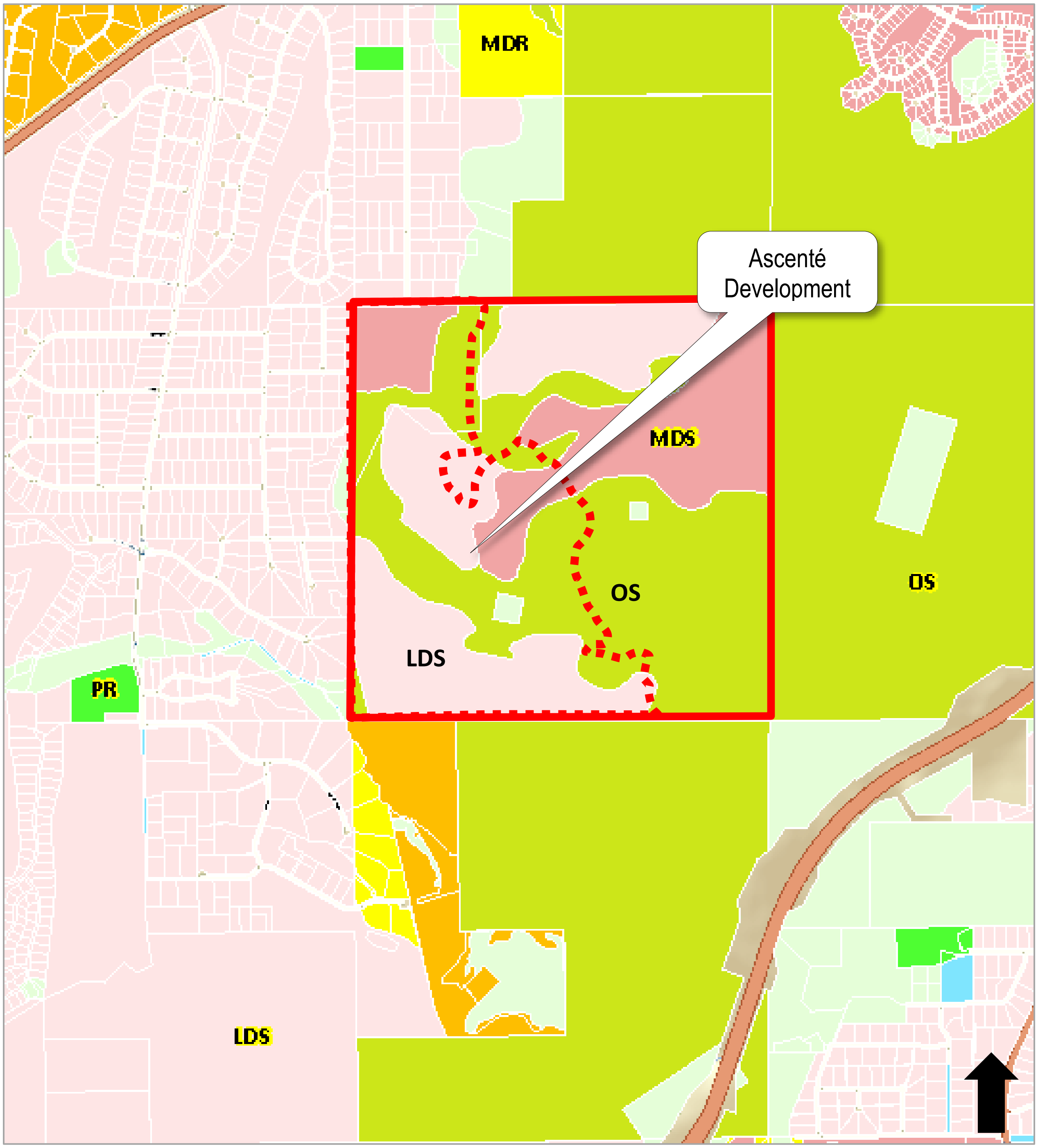
- Site planning
- Fencing standards
- Defensible space requirements
- Lighting standards
- Grading & walls
- Landscaping standards
- Implementation

Example of natural wall materials



Example of Community Gateway

Example of built-in lighting to maintain Dark Sky's effect



MDS – Medium Density Suburban (3 du/acre)
LDS – Low Density Suburban (1 du/acre)
OS – Open Space

Figure 3 - Zoning Vicinity Map

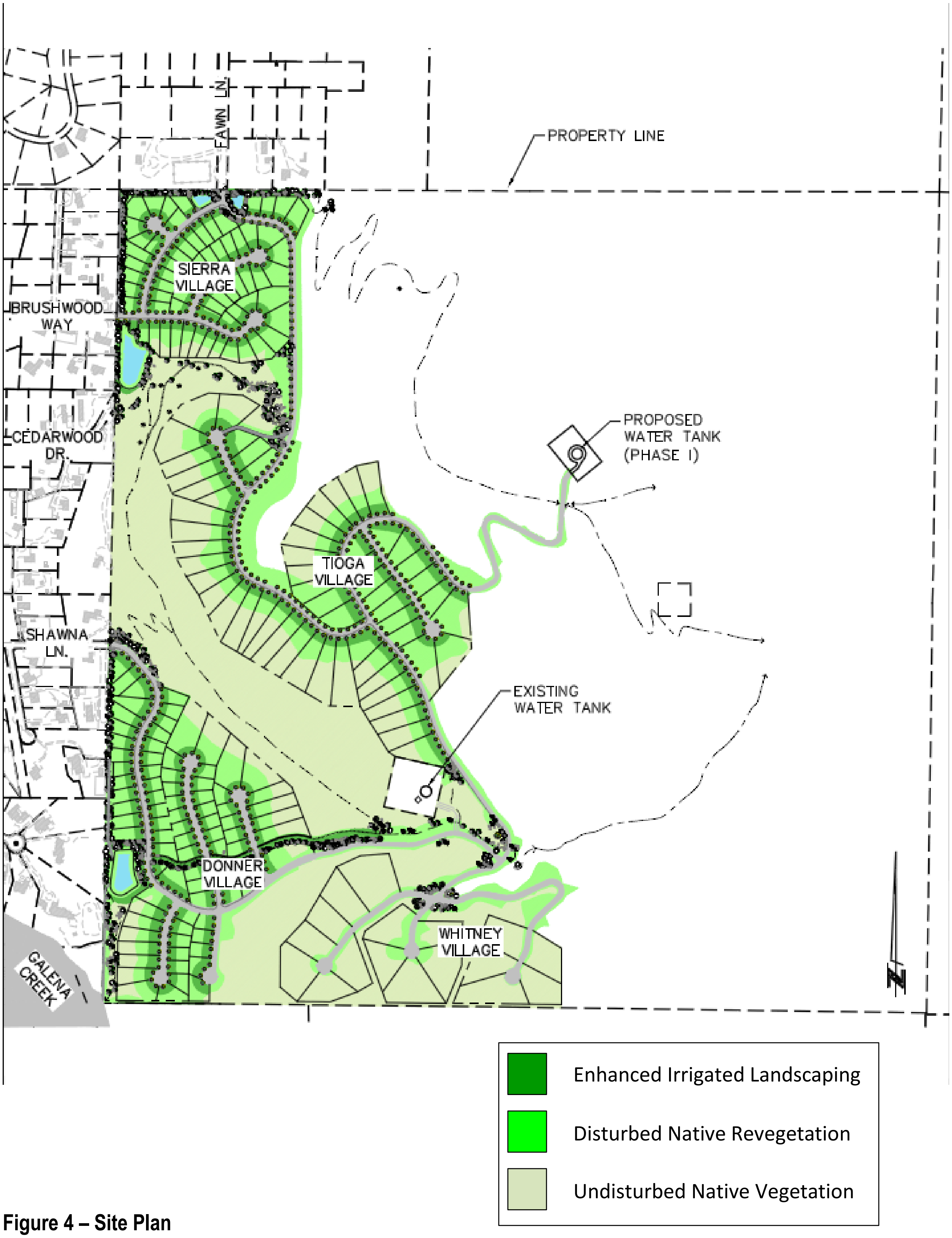


Figure 4 – Site Plan

Grading/Hillside Development

The tentative map has been prepared in accordance with Washoe County Development Code article 438 (Grading) and article 424 (Hillside Development). Grading has been minimized throughout the project by incorporating the following techniques:

- Cluster development design
- Minimizing development on slopes over 30%
- Limiting grading within individual lots
- Reducing the overall number of lots
- Limiting on-street parking in specific areas where significant grading would have otherwise been necessary.

The overall site encompasses 225 acres, of which, 123 acres is proposed to have some level of disturbance. Approximately 610,000 cubic yards will be excavated on the site. However, only spoils from the clear and grub process will be exported and only virgin base for roadway and concrete will be imported. The North Village and the Upper Village will balance together by using cut material from the Upper Village location and bringing it downhill to balance the earthwork. The South Village earthwork will balance independently. All proposed rockery walls will be generated from the rock excavated on site.

The maximum cut and fill slopes proposed on the site are designed using a maximum 3:1 ratio. Hydro seeding with temporary irrigation in combination with silt fences, fiber rolls, or straw matting will be utilized to prevent erosion. Policy F.2.18.(e) of the Forest Area Plan identifies the need for alternative design standards which serve to preserve the natural features of the landscape and minimize the perception of an engineered landscape, including the use of extensive terracing. The project has been designed to avoid unsightly terracing and instead will use retaining walls at tie in points to the existing grade or to create a benching effect in between lots. Terraced rockery walls are proposed with a maximum height of 10' and a minimum bench width of 6'.

Low Impact Development (LID) techniques have been incorporated into the design to better manage stormwater runoff. Design features include the following:

- Cluster development on less sensitive portions of the site, while leaving the remaining land in a natural undisturbed stated.
- Limiting clearing and grading of native vegetation to the minimum area needed to build the home, to allow safe vehicular access and to provide fire protection.
- Utilizing natural drainage flows and minimizing runoff discharge through the four proposed detention basins.
- Incorporating Best Management Practices (BMP's) into the project design.

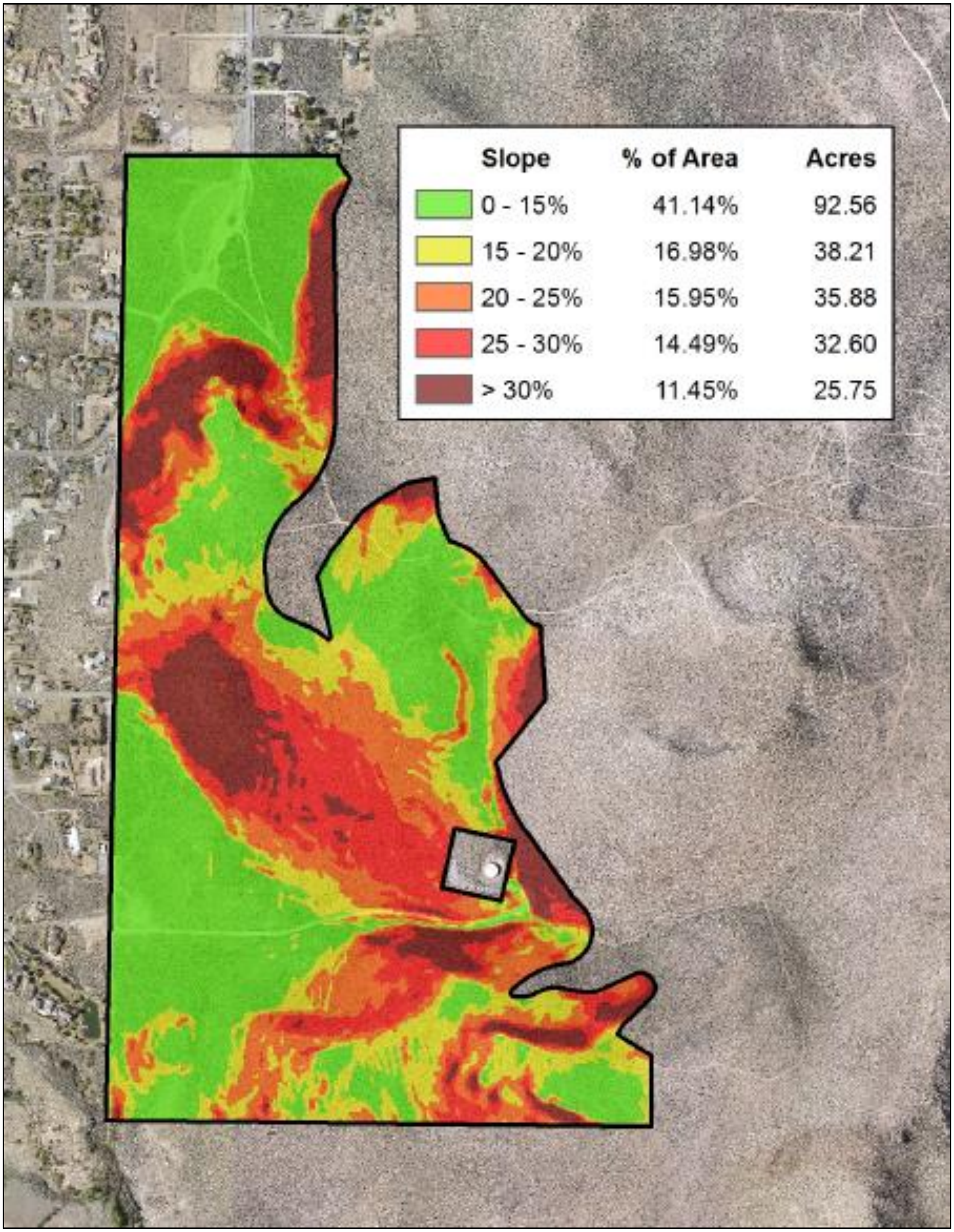


Figure 5 - Slope Map

Traffic

The project is anticipated to generate up to 2,143 average daily trips (ADT's), 169 AM peak hour trips, and 225 PM peak hour trips. There are no significant traffic impacts associated with the project. All the local roadway segments will operate at acceptable levels of service conditions, characterized as Level of Service (LOS) "C" or better. The project has been designed to minimize traffic on adjacent "Local" classification streets, while maintaining Washoe County design standards for "Collector" classification streets. All local streets will carry less than 1,000 ADT's and Fawn Lane will carry less than 2,000 ADT's, consistent with the County's rural livability goals.

To mitigate the project's effects on the local street network and to help maintain rural livability for existing and future residents, the Ascenté project proposes the following improvements:

- Speed management and traffic calming features on Fawn Lane (two narrowing's/crosswalks) – To be implemented before the start of Sierra Village construction.
- An equestrian/mountain bike/pedestrian path on Fawn Lane – Final plans to be submitted with the Sierra Village Final Map.
- An acceleration lane on Mt. Rose Highway at Fawn Lane – Final plans to be submitted with the Sierra Village Final Map.
- School bus waiting area at the Shawna Lane/Millie Lane intersection – Final plans to be submitted with the Donner Village Final Map.
- Move STOP signs at the Cherrywood Drive/Cedarwood Drive intersection for proactive distribution of project traffic between Goldenrod Drive and Tannerwood Drive.
- Install a STOP sign on the Goldenrod Drive/Cherrywood Drive intersection's westbound approach for safety purposes.

In addition to the voluntary improvements described above, the project will contribute approximately $982,238 in Regional Road Impact Fees (RRIF) for the offset of minor traffic impacts through the regional road network.

Segment	**# Lanes**	**Existing Traffic**	
		Daily Volume	**LOS**
Callahan Road	2	3,787	55% of LOS C
Fawn Lane	2	433	6% of LOS C
Tannerwood Drive	2	514	8% of LOS C
Goldenrod Drive	2	199	3% of LOS C
Cherrywood Drive	2	168	3% of LOS C

Schools

The project area is zoned for Hunsberger Elementary School, Pine Middle School and Galena High School. The project is also in close proximity to several private schools including Sage Ridge and Bishop Manogue Catholic High School. Based on Washoe County School District calculations, the project is anticipated to generate 34 elementary aged students, 10 middle school aged students and 17 high school age students which, based on anticipated move-ins, would be added over a period of 5 years or more.

Infrastructure/Services

Water Service

Truckee Meadows Water Authority will be the water purveyor for this project. Subject to final design, the project will connect to four existing water main stubs located at Brushwood Way, Cedarwood Drive, Shawna Lane, and to a water main that extends from Cross Creek Lane between APNs 045-722-01 and 045-471-54.

TMWA took over the water system serving the Callahan Ranch area as of January 1, 2015. The water system was previously owned and operated by Washoe County. Since taking over, TMWA has implemented new rules for water rights dedication to mitigate existing and new groundwater pumping. The adopted rules, water rights dedication policies and Water Service Facility Charges for this area require developers to dedicate supplemental surface water supplies when dedicating groundwater for new service in the area. Supplemental surface water resources (Truckee River, Whites and Thomas Creeks) are a key component of the area's water resource management plan and are necessary to ensure a sustainable water supply for existing customers, domestic well owners and new development in the area.

Earlier this spring, TMWA completed construction of the Arrowcreek / Mt. Rose Conjunctive-Use Phase 1 Facilities as described in the Groundwater Sustainability Plan. These improvements are operational and have been delivering Truckee River water to the Callahan Ranch area as of about May 4, 2016. These improvements do not provide 100% of the water supply, but have allowed for a reduction in pumping at several wells in the Arrowcreek and Mt. Rose water systems increasing groundwater storage in the area.

TMWA is expanding its Aquifer Storage and Recovery (ASR) Program in the area. ASR occurs during the fall, winter and spring when water use in the community drops to approximately one-fourth of its peak summer usage, making Truckee River water available for recharge. ASR is the process of injecting treated surface water into the groundwater aquifer when the wells are not in use. Recently, as part of the ASR program, TMWA performed rehabilitation work (preventive maintenance) on wells referred to as Tessa East, off Napoleon Drive. TMWA also reduced the pumping rate at the two Tessa wells by about 40% to further reduce local impacts to nearby domestic wells.

Future plans to bring supplemental surface water resources to the area as described in the Groundwater Sustainability Plan include a new water main along Arrowcreek Parkway, and construction of a small drinking water treatment plant off Whites Creek. By expanding the ASR Program and supplementing the local groundwater supplies with Truckee River and creek water in the near future, TMWA's goal is to pump less groundwater from the Mt. Rose and Galena fan aquifer than exists today, increasing groundwater storage.

The new TMWA rules for water rights dedication will mitigate new groundwater pumping from the development, and the groundwater sustainability improvements which TMWA is implementing will allow TMWA to recharge the wells and supplement the local groundwater supplies with Truckee River and creek water. As a result, TMWA has stated that the project will have a net zero impact on the groundwater resources on an annual basis. Depending on the water dedication requirements calculated at the time of final map, it is estimated that the project will contribute nearly +/- $4.0 million towards supplemental recharge and treatment facilities through payment of service area fees.

Storm Drain

Historical flooding conditions were analyzed based on FEMA FIRM Panel 32031C3331G, dated March 16, 2009. Drainage improvements to the site shall convey anticipated storm drain flows throughout the community via a network of drainage swales, drop structures, culverts and detention basins. This includes the design of four separate detention basins, which will maintain the predevelopment conditions. As a result, the overall developed peak flow is reduced by 115.5 cfs. The basins shall allow storage for the community without changing the existing peak flow for the major and minor storm events. The plan will provide drainage and storage system for the 5-year and 100-year storm events, which exceeds the minimum required by Washoe County Code. This has been done to ensure the safety and well-being of both the existing neighborhoods and future surrounding residents.

The design and hydrologic studies of the proposed Ascenté community have been conducted in compliance with the drainage guidelines for the Truckee Meadows Regional Drainage Manual (TMRDM). Adverse effects to the drainage system due to increased storm runoff with the construction of this proposed development have been addressed by the implementation of over-sized detention basins. The design significantly reduces peak flows entering the adjacent community and ultimately reduces the peak flow entering Galena Creek.

Groundwater recharge areas shall be incorporated into the site planning and enhanced whenever possible. Low Impact Development (LID) standards shall be incorporated to enhance groundwater recharge and manage stormwater runoff.

Sanitary Sewer

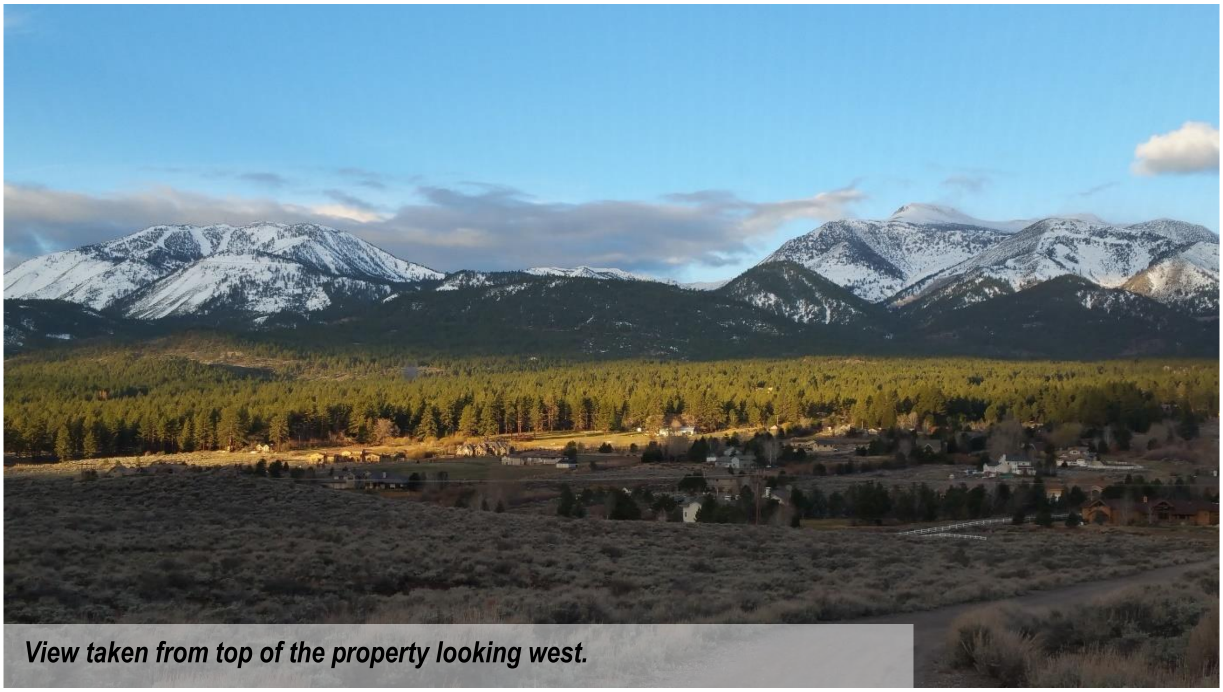
Most villages of Ascenté will utilize gravity sanitary sewer systems to convey wastewater flows to lift stations, located at regional low points on the project, that will transport wastewater to existing Washoe County facilities. However, some of the parcels in Whitney Village will require individual sanitary sewer force mains. Due to geographical constraints, two lift stations will be needed prior to project build-out. One lift station will be required in Sierra Village and another will be required in Donner Village. An 8” gravity system will convey wastewater to the two on-site lift stations (Sierra & Donner Lift Stations), and will pump to the existing Washoe County sanitary sewer facilities.

Dry Utilities

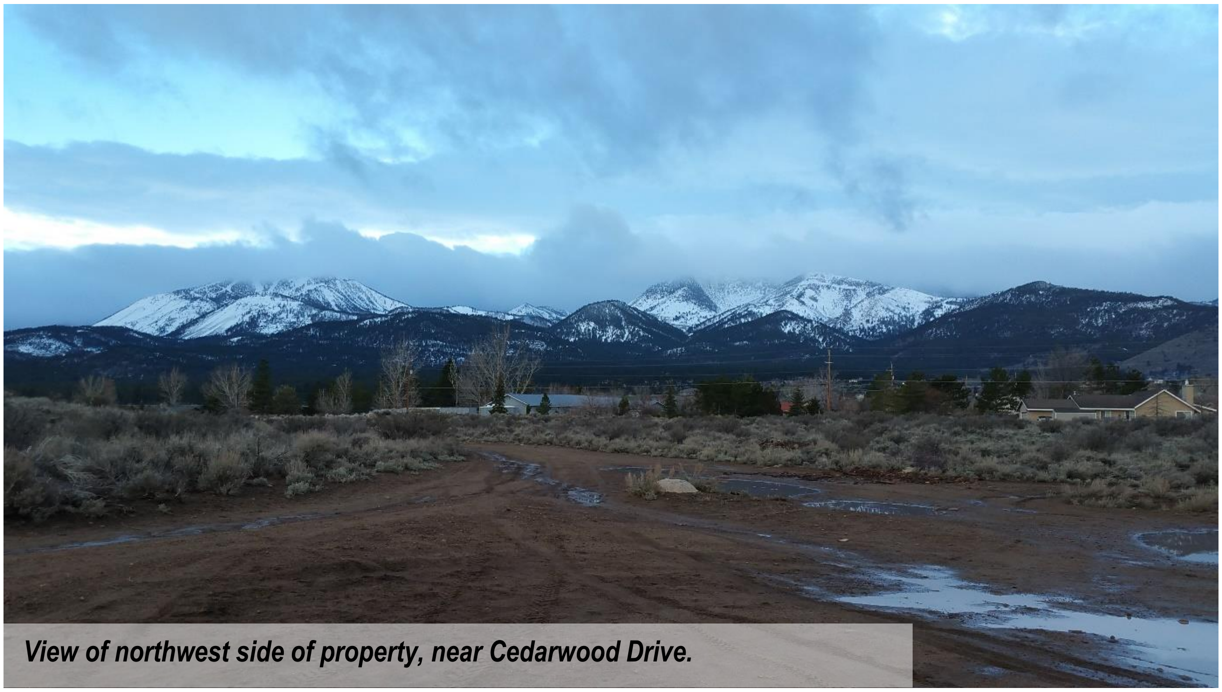
Electric service will be provided by NV Energy, telephone service by AT&T, and cable television by Charter Communications. Waste Management will provide garbage service.

Police and Fire Services

Truckee Meadows Fire Protection District Station #36 is located approximately 2.7 miles to the north and will provide fire service. Washoe County sheriff will provide law enforcement protection to the site.



View taken from top of the property looking west.



View of northwest side of property, near Cedarwood Drive.

Figure 6 - Site Photographs


View looking south from Fawn Lane.


View at the top of the northwestern plateau.

Figure 7 - Site Photographs

Special Use Permit Findings

Prior to approving an application for a special use permit, the Planning Commission, Board of Adjustment or a hearing examiner shall find that all of the following are true:

a. Consistency – The proposed use is consistent with the action programs, policies, standards and maps of the Master Plan and the applicable area plan;

The proposed project is in conformance with Washoe County Master Plan and the Forest Area Plan. Specific policies and standards include the following:

Compliance with the Forest Area Plan

Within the Forest Area Plan, the property is designated in the Matera Ridge Mixed-Use Overlay District (MRMUOD) and conforms to the following:

F.2.16 The Matera Ridge Mixed-Use Overlay District (MRMUOD) is hereby established as depicted on the Forest Area Plan Character Management Plan map. Development in the Matera Ridge Overlay District is subject to the additional minimum review standards and development guidelines found below.

The following factors combine to create the need to establish special criteria for development in this area:

a. Relatively large geographic area.
b. Historical role as a "community separator."
c. Potential to significantly contribute to the implementation of the Washoe County Land Use and Transportation Element and the Truckee Meadows Regional Plan.
d. Location relative to existing development and infrastructure.
e. Existence of key resources as identified in the Regional Open Space Plan

F.2.17 The intent of the MRMUOD is to ensure:

a. Opportunities for residential development of mixed housing types.
b. Opportunities for local serving non-residential uses.
c. Diverse employment opportunities.
d. Development will be sited to blend with the surrounding developed and open space lands located south of the Mt. Rose Highway.
e. Development will minimize and mitigate its impacts on those key resources identified in the Regional Open Space Plan.
f. Development will be compatible with and enhance the scenic quality of the Mt. Rose Highway corridor.
g. Development will promote the sustainable development goals of Washoe County.
h. Development will contribute to the community character, promote neighborhood, and create a sense of place founded in the quality of life that comes with environmental and community responsibility.

F.2.18 The Washoe County Development Code will further incorporate and describe this district. MRMUOD Development Criteria:

a. All development, including buildings, site plans, and civic or public uses shall be constructed consistent with an established green building standard for energy efficiency, renewable content, waste management, and general environmental performance.
b. Any necessary public infrastructure such as water or waste water facilities shall be located, landscaped and designed in a manner that prevents any negative impact to any existing residential development.
c. The development shall incorporate a view shed plan that will direct the location and intensity of development within the overlay district. Infrastructure that impacts the view shed of adjacent properties shall be designed such that negative impacts to the view shed are mitigated. The view of the property shall be designed such that architectural styles, lighting, infrastructure, landscaping, and site design blend with the natural features of the land.
d. Alternative design standards which serve to preserve the natural features of the landscape and minimize the perception of an engineered landscape should be utilized whenever possible. These alternative designs can include but are not limited to hillside adaptive development standards. These standards are intended to prevent the extensive use of terracing and similar site preparation techniques that severely reconfigure the natural landscape.
e. Primary structures shall be buffered from the adjacent residential areas outside the MRMUOD in a manner that preserves the suburban/rural character of the existing development. Buffering can include but is not limited to: areas of open space, clustering or otherwise locating behind ridges or outcroppings, and significant landscaping.
f. Key cultural and natural resources will be protected in development plans. The Regional Open Space Plan will be consulted and when indicated archaeological and wildlife surveys shall be conducted to determine areas of concern for key natural and cultural resources. The results of these surveys will be used to plan for the best possible maintenance of these resources. Mitigation plans must be provided for identified resources not protected in development plans.
g. Gated-communities shall be limited to small clusters of residential units such that through access for the public is maintained on all collectors and arterials. No more than one third of the total residential units proposed in the proposed development may be "gated."
h. A comprehensive trails plan shall be developed that maintains access to public lands that border the planning area. The trails plan will be consistent with the Forest Recreational Opportunities Plan map.
i. The development plan must include a civic use component such as, but not limited to, public art, recreation, or assembly.
j. Commercial development should be primarily focused on providing a range of services or employment to the local community. Civic and recreational uses may serve the sub-region.

Non-residential uses which seek to take advantage of the nearby recreational opportunities in the Sierra are also encouraged.

k. Secure bicycle storage and parking must be provided for all development proposals that will generate employment and/or inbound customer trips that access services offered by the development.

l. Ground water recharge areas shall be incorporated into the site planning and enhanced whenever possible. Low Impact Development (LID) standards shall be utilized to enhance groundwater recharge and manage storm water runoff.

Conformance with the Land Use and Transportation Element

The purpose of the Land Use and Transportation Element (LUTE) is to set goals, policies, and action items that will shape communities throughout Washoe County through the year 2025. The current LUTE was adopted by the County Commission in 2011and guides the County toward growth policies focused more strongly on sustainability, infrastructure efficiency, neighborhood sense of place, and general principals of smart growth. The following are excerpts from the LUTE that support the proposed development.

LUT.2.2 Allow flexibility in development proposals to vary lot sizes, cluster dwelling units, and use innovative approaches to site planning providing that the resulting design is compatible with adjacent development and consistent with the purposes and intent of the policies of the Area Plan. Development applications shall be evaluated with the intent to satisfy the minimum following criteria:

a. Directs development away from hazardous and sensitive lands.

b. Preserves areas of scenic and historic value.

c. Provides access to public land.

d. Retains agricultural uses, fire and windbreaks, wildlife habitat, wetlands, streams, springs and other natural resources. An adequate amount of prime resources must be retained in order to sustain a functioning ecosystem.

e. Accommodates the extension and connection of trail systems and other active and passive recreational uses.

f. Furthers the purposes and intent of the respective Area Plan.

g. Prevents soil erosion. h. Encourages a minimum distance from residential dwellings to active recreation in parks.

LUT.2.3 Require existing suburban neighborhoods to integrate their street network with new development to create connectivity and promote walking and cycling as safe and desirable modes of transportation and recreation.

a. Require appropriate buffers to mitigate conflicting land uses.

b. Encourage development patterns and land uses that can coexist with existing noise generating activities such as high volume roadways, rail lines, flight paths and intense employment activities.

c. Require transitioning techniques to preserve rural areas from suburban encroachment.

d. Encourage existing neighborhoods to integrate their street network with the new development to create connectivity and fluidity.

Goal Three: The majority of growth and development occurs in existing or planned communities, utilizing smart growth practices.

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

LUT.3.2 In order to provide a sufficient supply of developable land to meet the needs of the population, Area Plans shall establish growth policies that provide for a sufficient supply of developable land throughout the planning horizon of the next 20 years, with considerations to phase future growth and development based on the carrying capacity of the infrastructure and environment.

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

LUT.3.4 Strengthen existing neighborhoods and promote infill development.

a. Identify and assist in revitalizing older maturing neighborhoods to ensure their long-term stability.

b. Promote commercial revitalization.

c. Capital Improvements Program (CIP) expenditures should be directed to infrastructure development in existing areas with inadequate services.

d. Promote funding resources such as the Nevada Brownfields Program to redevelop properties. e. Create density bonuses and other innovative development tools to encourage infill in targeted areas.

LUT.10.3 Ensure that development proposals provide adequate public access to adjacent public lands. The access should be designed so it does not restrict development on adjacent private lands.

Goal Nineteen: Incentives to promote more sustainable development.

Policies LUT.19.1 Certain development practices provide broad benefits to the local community and to the public at large. In order to realize these benefits, residential units in addition to the base density may be earned by committing to one or more of the following development practices:

d. Common open space development: In order to earn incentive units, development proposals must commit to the following practices in addition to any standards specified under Article 410 of the Washoe County Development Code:

i. Maintain viable habitat or wildlife corridors.

ii. Create viable passive recreational opportunities.

iii. Propagate an overall design that utilizes open space, parcel design, road design, and pedestrian facilities in a manner that is consistent with the community character and sensitive to the design of existing neighboring development.

iv. Utilizes low impact grading techniques

Goal Twenty-nine: Transportation systems are seamless and efficient. Policies LUT.29.1 Promote the connectivity of the neighborhoods within the larger community and region by:

d. Design new developments to contain stubs for connection to future adjacent developments.

b. Improvements – Adequate utilities, roadway improvements, sanitation, water supply, drainage, and other necessary facilities have been provided, the proposed improvements are properly related to existing and proposed roadways, and an adequate public facilities determination has been made in accordance with Division Seven;

Adequate utilities, roadways and public services and facilities either exist or are proposed with the project, as described below.

The project is anticipated to generate up to 2,143 average daily trips (ADT's), 169 AM peak hour trips, and 225 PM peak hour trips. There are no significant traffic impacts associated with the project. All the local roadway segments will operate at acceptable levels of service conditions, characterized as Level of Service (LOS) "C" or better. The project has been designed to minimize traffic on adjacent "Local" classification streets, while maintaining Washoe County design standards for "Collector" classification streets. All local streets will carry less than 1,000 ADT's and Fawn Lane will carry less than 2,000 ADT's, consistent with rural livability goals.

To mitigate the project's effects on the local street network and to help maintain rural livability for existing and future residents, the Ascenté project proposes the following improvements:

- Speed management and traffic calming features on Fawn Lane (two narrowing's/crosswalks) – To be implemented before the start of Sierra Village construction.

- An equestrian/mountain bike/pedestrian path on Fawn Lane – Final plans to be submitted with the Sierra Village Final Map.
- An acceleration lane on Mt. Rose Highway at Fawn Lane – Final plans to be submitted with the Sierra Village Final Map.
- School bus waiting area at the Shawna Lane/Millie Lane intersection – Final plans to be submitted with the Donner Village Final Map.
- Move STOP signs at the Cherrywood Drive/Cedarwood Drive intersection for proactive distribution of project traffic between Goldenrod Drive and Tannerwood Drive.
- Install a STOP sign on the Goldenrod Drive/Cherrywood Drive intersection's westbound approach for safety purposes.

Truckee Meadows Water Authority will be the water purveyor for this project. Subject to final design, the project will connect to four existing water main stubs located at Brushwood Way, Cedarwood Drive, Shawna Lane, and to a water main that extends from Cross Creek Lane between APNs 045-722-01 and 045-471-54.

Storm drain improvements to the site shall convey anticipated storm drain flows throughout the community through a network of drainage swales, drop structures, culverts and detention basins. This includes the design of four separate detention basins, which will maintain the predevelopment conditions. As a result, the overall developed peak flow is reduced by 115.5 cfs. The basins shall allow storage for the community without changing the existing peak flow for the major and minor storm events. The plan will provide drainage and storage system for the 5-year and 100-year storm events, which exceeds the minimum required by Washoe County Code. This has been done to ensure the safety and well-being of both the existing neighborhoods and future surrounding residents.

The design and hydrologic studies of the proposed Ascenté community have been conducted in compliance with the drainage guidelines for the Truckee Meadows Regional Drainage Manual (TMRDM). Adverse effects to the drainage system due to increased storm runoff with the construction of this proposed development have been addressed by the implementation of over-sized detention basins. The design significantly reduces peak flows entering the adjacent community and ultimately reduces the peak flow entering Galena Creek.

Groundwater recharge areas shall be incorporated into the site planning and enhanced whenever possible. Low Impact Development (LID) standards shall be incorporated to enhance groundwater recharge and manage stormwater runoff.

Most villages of Ascenté will utilize gravity sanitary sewer systems to convey wastewater flows to lift stations, located at regional low points on the project, that will transport wastewater to existing Washoe County facilities. However, some of the parcels in Whitney Village will require individual sanitary sewer force mains. Due to geographical constraints, two lift stations will be needed prior to project build-out. One lift station will be required in Sierra Village and another will be required in Donner Village. An 8" gravity system will convey wastewater to the two on-site lift stations (Sierra & Donner Lift Stations), and will pump to the existing Washoe County sanitary sewer facilities.

Electric service will be provided by NV Energy, telephone service by AT&T, and cable television by Charter Communications. Waste Management will provide garbage service.

Truckee Meadows Fire Protection District Station #36 is located approximately 2.7 miles to the north and will provide fire service. Washoe County sheriff will provide law enforcement protection to the site.

c. Site Suitability – The site is physically suitable for the type of development and for the intensity of development;

The proposed tentative map complies with the Forest Area Plan and Washoe County zoning density and intensity requirements. The site plan incorporates a clustered development design and provides for 80 acres of common open space that also preserves and protects steep slopes and rock outcroppings. The clustered development provides the community with designated trails for walking, biking and horseback riding. The design also creates a more environmentally friendly design by providing habitat for wildlife, naturally filtering storm water, reducing storm water runoff from impervious surfaces, and protecting the natural features of a site. The subject property has been approved for development, as part of the Forest Area Plan that was adopted in 2010, and the proposed project is in conformance with that approved plan. That Forest Area Plan characterizes the area as rural and requires that development within the boundaries of the Area Plan incorporate elements that maintain a rural character. The proposed project exceeds the Forest Area Plan requirements by establishing the Design Guidelines Handbook, which define how Ascenté will incorporate rural characteristic elements including dark sky lighting, lot buffering requirements, common open space, trail design standards, fencing standards and site monumentation standards.

d. Issuance Not Detrimental – Issuance of the permit will not be significantly detrimental to the public health, safety or welfare; injurious to the property or improvements of adjacent properties; or detrimental to the character of the surrounding area;

Issuance of the permit will not be significantly detrimental to the public health, safety or welfare or injurious to the property or improvements of adjacent properties, or detrimental to the character of the surrounding area. All land use and planning documents, including the Truckee Meadows Regional Plan, Washoe County Master Plan and Forest Area Plan, identify this area as appropriate for residential development with an overall density of one unit per acre. This proposed site plan also conforms to the land use policies for development on hillsides using cluster development design to protect the environment and preserve open space. Wide common open space buffers have been incorporated on all parcel located adjacent to and existing neighborhood. In addition, those lots are limited to only allow single story homes, so as not to block the view of existing residence.

Infrastructure, including water and sewer lines will be brought to the site and will not negatively impact any surrounding neighbors on well and/or septic systems. The water infrastructure serving the project will benefit the surrounding community on wells by using supplemental surface water resources. TMWA took over the water system serving the Callahan Ranch area as of January 1, 2015. The water system was previously owned and operated by Washoe County. Since taking over, TMWA has implemented new rules for water rights dedication to mitigate existing and new groundwater pumping. The adopted rules, water rights dedication policies and Water Service Facility Charges for this area require developers to dedicate supplemental surface water supplies when dedicating groundwater for new service in the area. Supplemental surface water resources (Truckee River, Whites and Thomas Creeks) are a key component of the area's water resource management plan and are necessary to ensure a sustainable water supply for existing customers, domestic well owners and new development in the area.

In terms of traffic and access, both Callahan Road and Fawn Lane are County Roads and have been designated as Collector roadways. Both roadways currently operate at a Level of Service (LOS) "C". With the proposed traffic, both roadways will continue to operate at a LOS "C". Considering that both roadways were designed to carry this level of traffic, the proposed project does not detrimentally impact the surrounding area or roadways.

e. Effect on a Military Installation – Issuance of the permit will not have a detrimental effect on the location, purpose or mission of the military installation.

The proposed project has no effect on the location, purpose or mission of military installation. There are no military installations in the area.

Tentative Map Considerations

Prior to approving an application for a tentative map, the Planning Commission shall find that all of the following are true:

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

The proposed project is in conformance with Washoe County Master Plan and the Forest Area Plan. Specific policies and standards include the following:

Compliance with the Forest Area Plan

Within the Forest Area Plan, the property is designated in the Matera Ridge Mixed-Use Overlay District (MRMUOD) and conforms to the following:

F.2.16 The Matera Ridge Mixed-Use Overlay District (MRMUOD) is hereby established as depicted on the Forest Area Plan Character Management Plan map. Development in the Matera Ridge Overlay District is subject to the additional minimum review standards and development guidelines found below.

The following factors combine to create the need to establish special criteria for development in this area:

a. Relatively large geographic area.
b. Historical role as a "community separator."
c. Potential to significantly contribute to the implementation of the Washoe County Land Use and Transportation Element and the Truckee Meadows Regional Plan.
d. Location relative to existing development and infrastructure.
e. Existence of key resources as identified in the Regional Open Space Plan

F.2.17 The intent of the MRMUOD is to ensure:

a. Opportunities for residential development of mixed housing types.
b. Opportunities for local serving non-residential uses.
c. Diverse employment opportunities.
d. Development will be sited to blend with the surrounding developed and open space lands located south of the Mt. Rose Highway.
e. Development will minimize and mitigate its impacts on those key resources identified in the Regional Open Space Plan.
f. Development will be compatible with and enhance the scenic quality of the Mt. Rose Highway corridor.
g. Development will promote the sustainable development goals of Washoe County.
h. Development will contribute to the community character, promote neighborhood, and create a sense of place founded in the quality of life that comes with environmental and community responsibility.

F.2.18 The Washoe County Development Code will further incorporate and describe this district. MRMUOD Development Criteria:

a. All development, including buildings, site plans, and civic or public uses shall be constructed consistent with an established green building standard for energy efficiency, renewable content, waste management, and general environmental performance.
b. Any necessary public infrastructure such as water or waste water facilities shall be located, landscaped and designed in a manner that prevents any negative impact to any existing residential development.
c. The development shall incorporate a view shed plan that will direct the location and intensity of development within the overlay district. Infrastructure that impacts the view shed of adjacent properties shall be designed such that negative impacts to the view shed are mitigated. The view of the property shall be designed such that architectural styles, lighting, infrastructure, landscaping, and site design blend with the natural features of the land.

d. Alternative design standards which serve to preserve the natural features of the landscape and minimize the perception of an engineered landscape should be utilized whenever possible. These alternative designs can include but are not limited to hillside adaptive development standards. These standards are intended to prevent the extensive use of terracing and similar site preparation techniques that severely reconfigure the natural landscape.
e. Primary structures shall be buffered from the adjacent residential areas outside the MRMUOD in a manner that preserves the suburban/rural character of the existing development. Buffering can include but is not limited to: areas of open space, clustering or otherwise locating behind ridges or outcroppings, and significant landscaping.
f. Key cultural and natural resources will be protected in development plans.
The Regional Open Space Plan will be consulted and when indicated archaeological and wildlife surveys shall be conducted to determine areas of concern for key natural and cultural resources. The results of these surveys will be used to plan for the best possible maintenance of these resources. Mitigation plans must be provided for identified resources not protected in development plans.
g. Gated-communities shall be limited to small clusters of residential units such that through access for the public is maintained on all collectors and arterials. No more than one third of the total residential units proposed in the proposed development may be “gated.”
h. A comprehensive trails plan shall be developed that maintains access to public lands that border the planning area. The trails plan will be consistent with the Forest Recreational Opportunities Plan map.
i. The development plan must include a civic use component such as, but not limited to, public art, recreation, or assembly.
j. Commercial development should be primarily focused on providing a range of services or employment to the local community. Civic and recreational uses may serve the sub-region. Non-residential uses which seek to take advantage of the nearby recreational opportunities in the Sierra are also encouraged.
k. Secure bicycle storage and parking must be provided for all development proposals that will generate employment and/or inbound customer trips that access services offered by the development.
l. Ground water recharge areas shall be incorporated into the site planning and enhanced whenever possible. Low Impact Development (LID) standards shall be utilized to enhance groundwater recharge and manage storm water runoff.

Conformance with the Land Use and Transportation Element

The purpose of the Land Use and Transportation Element (LUTE) is to set goals, policies, and action items that will shape communities throughout Washoe County through the year 2025. The current LUTE was adopted by the County Commission in 2011and guides the County toward growth policies focused more strongly on sustainability, infrastructure efficiency, neighborhood sense of place, and general principals of smart growth. The following are excerpts from the LUTE that support the proposed development.

LUT.2.2 Allow flexibility in development proposals to vary lot sizes, cluster dwelling units, and use innovative approaches to site planning providing that the resulting design is compatible with adjacent development and consistent with the purposes and intent of the policies of the Area Plan. Development applications shall be evaluated with the intent to satisfy the minimum following criteria:

a. Directs development away from hazardous and sensitive lands.

b. Preserves areas of scenic and historic value.

c. Provides access to public land.

d. Retains agricultural uses, fire and windbreaks, wildlife habitat, wetlands, streams, springs and other natural resources. An adequate amount of prime resources must be retained in order to sustain a functioning ecosystem.

e. Accommodates the extension and connection of trail systems and other active and passive recreational uses.

f. Furthers the purposes and intent of the respective Area Plan.

g. Prevents soil erosion. h. Encourages a minimum distance from residential dwellings to active recreation in parks.

LUT.2.3 Require existing suburban neighborhoods to integrate their street network with new development to create connectivity and promote walking and cycling as safe and desirable modes of transportation and recreation.

a. Require appropriate buffers to mitigate conflicting land uses.

b. Encourage development patterns and land uses that can coexist with existing noise generating activities such as high volume roadways, rail lines, flight paths and intense employment activities.

c. Require transitioning techniques to preserve rural areas from suburban encroachment.

d. Encourage existing neighborhoods to integrate their street network with the new development to create connectivity and fluidity.

Goal Three: The majority of growth and development occurs in existing or planned communities, utilizing smart growth practices.

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

LUT.3.2 In order to provide a sufficient supply of developable land to meet the needs of the population, Area Plans shall establish growth policies that provide for a sufficient supply of developable land throughout the planning horizon of the next 20 years, with considerations to phase future growth and development based on the carrying capacity of the infrastructure and environment.

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

LUT.3.4 Strengthen existing neighborhoods and promote infill development.

a. Identify and assist in revitalizing older maturing neighborhoods to ensure their long-term stability.

b. Promote commercial revitalization.

c. Capital Improvements Program (CIP) expenditures should be directed to infrastructure development in existing areas with inadequate services.

d. Promote funding resources such as the Nevada Brownfields Program to redevelop properties. e. Create density bonuses and other innovative development tools to encourage infill in targeted areas.

LUT.10.3 Ensure that development proposals provide adequate public access to adjacent public lands. The access should be designed so it does not restrict development on adjacent private lands.

Goal Nineteen: Incentives to promote more sustainable development.

Policies LUT.19.1 Certain development practices provide broad benefits to the local community and to the public at large. In order to realize these benefits, residential units in addition to the base density may be earned by committing to one or more of the following development practices:

d. Common open space development: In order to earn incentive units, development proposals must commit to the following practices in addition to any standards specified under Article 410 of the Washoe County Development Code:

i. Maintain viable habitat or wildlife corridors.

ii. Create viable passive recreational opportunities.

iii. Propagate an overall design that utilizes open space, parcel design, road design, and pedestrian facilities in a manner that is consistent with the community character and sensitive to the design of existing neighboring development.

iv. Utilizes low impact grading techniques

Goal Twenty-nine: Transportation systems are seamless and efficient. Policies LUT.29.1 Promote the connectivity of the neighborhoods within the larger community and region by:

d. Design new developments to contain stubs for connection to future adjacent developments.

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

The tentative map has been designed to incorporate the Forest Area Plan goals and policies. This includes protection and preservation of open space through clustered development, incorporation of Low Impact Development (LID) techniques, providing trail connections to public lands, and limiting gated communities. The adoption of the Forest Area Plan in 2010 established the allowed density for this property to not exceed 632 units and requires that all development maintain a rural character. The proposed project density meets the one unit per acre minimum and has been designed to incorporate clustered development, thereby preserving 80 acres as common open space. That common open space also incorporates a trail system that connects to trails outside of the project limits. The Design Guidelines Handbook further creates a cohesive design that will complement the surrounding neighborhood, and be developed and maintained to a higher-level standard than is required in the Forest Area Plan.

c. Type of Design – That the site is physically suited for the type of development proposed;

The proposed tentative map complies with the Forest Area Plan and Washoe County zoning density and intensity requirements. The site plan incorporates a clustered development design and provides for 80 acres of common open space that also preserves and protects steep slopes and rock outcroppings. The clustered development provides the community with designated trails for walking, biking and horseback riding. The design also creates a more environmentally friendly design by providing habitat for wildlife, naturally filtering storm water, reducing storm water runoff from impervious surfaces, and protecting the natural features of a site. The subject property has been approved for development, as part of the Forest Area Plan that was adopted in 2010, and the proposed project is in conformance with that approved plan. That Forest Area Plan characterizes the area as rural and requires that development within the boundaries of the Area Plan incorporate elements that maintain a rural character. The proposed project exceeds the Forest Area Plan requirements by establishing the Design Guidelines Handbook, which define how Ascenté will incorporate rural characteristic elements including dark sky lighting, lot buffering requirements, common open space, trail design standards, fencing standards and site monumentation standards.

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

Adequate utilities, roadways and public services and facilities either exist or are proposed with the project, as described below.

The project is anticipated to generate up to 2,143 average daily trips (ADT's), 169 AM peak hour trips, and 225 PM peak hour trips. There are no significant traffic impacts associated with the project. All the local roadway segments will operate at acceptable levels of service conditions, characterized as Level of Service (LOS) "C" or better. The project has been designed to minimize traffic on adjacent "Local" classification streets, while maintaining Washoe County design standards for "Collector" classification streets. All local streets will carry less than 1,000 ADT's and awn Lane will carry less than 2,000 ADT's, consistent with rural livability goals.

To mitigate the project's effects on the local street network and to help maintain rural livability for existing and future residents, the Ascenté project proposes the following improvements:

- Speed management and traffic calming features on Fawn Lane (two narrowing's/crosswalks) – To be implemented before the start of Sierra Village construction.
- An equestrian/mountain bike/pedestrian path on Fawn Lane – Final plans to be submitted with the Sierra Village Final Map.
- An acceleration lane on Mt. Rose Highway at Fawn Lane – Final plans to be submitted with the Sierra Village Final Map.
- School bus waiting area at the Shawna Lane/Millie Lane intersection – Final plans to be submitted with the Donner Village Final Map.
- Move STOP signs at the Cherrywood Drive/Cedarwood Drive intersection for proactive distribution of project traffic between Goldenrod Drive and Tannerwood Drive.
- Install a STOP sign on the Goldenrod Drive/Cherrywood Drive intersection's westbound approach for safety purposes.

Truckee Meadows Water Authority will be the water purveyor for this project. Subject to final design, the project will connect to four existing water main stubs located at Brushwood Way, Cedarwood Drive, Shawna Lane, and to a water main that extends from Cross Creek Lane between APNs 045-722-01 and 045-471-54.

Storm drain improvements to the site shall convey anticipated storm drain flows throughout the community through a network of drainage swales, drop structures, culverts and detention basins. This includes the design of four separate detention basins, which will maintain the predevelopment conditions. As a result, the overall developed peak flow is reduced by 115.5 cfs. The basins shall allow storage for the community without changing the existing peak flow for the major and minor storm events. The plan will provide drainage and storage system for the 5-year and 100-year storm events, which exceeds the minimum required by Washoe County Code. This has been done to ensure the safety and well-being of both the existing neighborhoods and future surrounding residents.

The design and hydrologic studies of the proposed Ascenté community have been conducted in compliance with the drainage guidelines for the Truckee Meadows Regional Drainage Manual (TMRDM). Adverse effects to the drainage system due to increased storm runoff with the construction of this proposed development have been addressed by the implementation of over-sized detention basins. The design significantly reduces peak flows entering the adjacent community and ultimately reduces the peak flow entering Galena Creek.

Groundwater recharge areas shall be incorporated into the site planning and enhanced whenever possible. Low Impact Development (LID) standards shall be incorporated to enhance groundwater recharge and manage stormwater runoff.

Most villages of Ascenté will utilize gravity sanitary sewer systems to convey wastewater flows to lift stations, located at regional low points on the project, that will transport wastewater to existing Washoe County facilities. However, some of the parcels in Whitney Village will require individual sanitary sewer force mains. Due to geographical constraints, two lift stations will be needed prior to project build-out. One lift station will be required in Sierra Village and another will be required in Donner Village. An 8" gravity system will convey wastewater to the two on-site lift stations (Sierra & Donner Lift Stations), and will pump to the existing Washoe County sanitary sewer facilities.

Electric service will be provided by NV Energy, telephone service by AT&T, and cable television by Charter Communications. Waste Management will provide garbage service.

Truckee Meadows Fire Protection District Station #36 is located approximately 2.7 miles to the north and will provide fire service. Washoe County sheriff will provide law enforcement protection to the site.

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

The site plan provides for large corridors and open space areas for wildlife and habitat. The clustered development design allows for those areas to be left undisturbed. There are no known endangered species associated with the property.

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

The design of the subdivision has no negative impact on public health. The preserved open space protects the environment by providing habitat for wildlife, naturally filtering storm water, reducing storm water runoff from impervious surfaces, and protecting the natural features of a site.

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

There are no easements by the public at large for access through or use of the property within the project area. Existing utility easements and access easements to water tanks will be maintained.

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

Access into the project will be from Fawn Lane to the north and Shawna Lane to the west. Brushwood will have a gated access and only be used for Emergency Vehicle Access (EVA), such as fire responders. Washoe County has designated Fawn Lane as a Collector roadway and Shawna Lane as a Local street, which empties out onto Callahan Ranch Road, also a Collector roadway. A full traffic analysis is provided in the appendices portion of this application.

Increased traffic generated by the development creates no significant impacts. All the studied local roadway segments will operate at acceptable level of service conditions (at LOS "C" or better) with addition of the Ascenté project's traffic and meet Washoe County standards. The project has been intentionally designed to minimize increased traffic on adjacent "Local" classification streets while maintaining County design standards for "Collector" classification streets. All local streets will carry less than 1,000 ADT and Fawn Lane (which is a "collector" with driveways) will carry less than 2,000 ADT consistent with rural livability goals.

i. Dedications – That any land or improvements to be dedicated to the County is consistent with the Master Plan;

This application does not propose to dedicate any land to Washoe County, other than public roads.

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

The design of the tentative map provides for cluster development, so that additional open space can be left undisturbed. By creating more open space, the development provides for a land use pattern that provides for less building coverage and a better built environment.

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: Ascenté Tentative Map and Special Use Permit	
Project Description: Request for a 225 lot tentative map and special use permit for utility services located in the MDS, LDS and OS zoning districts and for grading.	
Project Address: Undeveloped land located south of Fawn Lane and east of Shawna Lane	
Project Area (acres or square feet): 225 acres	
Project Location (with point of reference to major cross streets **AND** area locator): Located south of Fawn Lane and east of Shawna Lane.	

Assessor's Parcel No.(s):	Parcel Acreage:	Assessor's Parcel No.(s):	Parcel Acreage:
045-252-14	59.067		
045-252-15	572.465 acres		

Section(s)/Township/Range: Section 1, T17N, R19E

Indicate any previous Washoe County approvals associated with this application:
Case No.(s). DLP16-0004, CR09-022, AC06-005, TM03-013/TM06-003, V06-004, TM

Applicant Information (attach additional sheets if necessary)

Property Owner: see attached	**Professional Consultant:** CFA
Name:	Name: Angela Fuss
Address:	Address: 1150 Corporate Blvd. Reno, NV
Zip:	Zip: 89502
Phone: Fax:	Phone: 856-7073 Fax: 856-1160
Email:	Email: afuss@cfareno.com
Cell: Other:	Cell: 771-6408 Other:
Contact Person:	Contact Person: Angela Fuss
Applicant/Developer:	**Other Persons to be Contacted:**
Name:	Name: Lumos & Associates
Address:	Address: 9222 Prototype Drive, Suite 200 Reno, NV
Zip:	Zip: 89521
Phone: Fax:	Phone: 827-6111 Fax:
Email:	Email: tyoung@lumosinc.com
Cell: Other:	Cell: Other:
Contact Person:	Contact Person: Tom Young, P.E.

For Office Use Only

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

Property Owner Affidavit

Applicant Name: Symbio Development, LLC

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

STATE OF NEVADA)
)
COUNTY OF WASHOE)

I, NNV1 Partners, LLC,
(please print name)

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

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

Assessor Parcel Number(s): 045-252-14

Printed Name Paul Tanguay, Manager

Signed ____

Address 6151 Lakeside, Ste. 1000
Reno, Nv. 89521

Subscribed and sworn to before me this 13th day of APRIL, 2017.

____
Notary Public in and for said county and state

My commission expires: 9-1-2018

(Notary Stamp)

VANESSA VIRDEN
Notary Public-State of Nevada
APPT. NO. 10-2877-2
My App. Expires September 01, 2018

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

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

Property Owner Affidavit

Applicant Name: Symbio Development, LLC

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

CO-TRUSTEES OF THE C.W.H. IRREVOCABLE TRUST AND THE W.B.H IRREVOCABLE TRUST, BOTH DATED DECEMBER 29, 2011

STATE OF NEVADA)
)
COUNTY OF WASHOE)

I, GARY NELSON & JEANNIE JANNING,
(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): 045-252-15

Printed Name GARY NELSON JEANNIE JANNING

Signed [signature]

Address 355 BOXINGTON WAY

SPARKS, NV 89434

(Notary Stamp)

Subscribed and sworn to before me this 13th day of April, 2017.

[signature]

Notary Public in and for said county and state

My commission expires: 09/01/2020

KIMBERLY BROWN
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 16-3500-2 - Expires September 1, 2020

*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

Property Owner #1:

Name: Gary Nelson and Jeannie Janning, Trustee

Address: 355 Boxington Sparks, NV 89434

Phone: 775-329-0777

Fax:

E-mail: Nick@pavich-assoc.com

Cell: 775-351-9998

Other: Gary Nelson 775-358-6100

Contact Person: Nick Pavich

Property Owner #2:

Name: NNV1 Partners LLC

Address: 6151 Lakeside Drive, Suite 1000 Reno, NV 89511

Phone: 775-233-9233

Fax:

E-mail: paul@symbiopartners.com and michael@symbiopartners.com

Cell: 775-233-9233

Other: 775-843-4300

Contact Person: Paul Tanguay & Michael Barnes

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)?

Southern terminus of Fawn Lane and eastern end of Shawna Lane. The project is located within parcel 045-252-14 and 045-252-15.

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

Ascenté Subdivision

3. Density and lot design:

a. Acreage of project site	225 acres
b. Total number of lots	225 lots
c. Dwelling units per acre	1 du/acre
d. Minimum and maximum area of proposed lots	Minimum lot size: 10,120 SF Maximum lot size: 2 acres
e. Minimum width of proposed lots	70 feet
f. Average lot size	24,450 SF

4. Utilities:

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

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

a. Acreage of common open space:

79.83 acres

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

The property contains slopes over 30%, which will be maintained as common open space.

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

Minimum lot size: 10,120 SF Maximum lot size: 2 acres

d. Average lot size:

24,450 SF

e. Proposed yard setbacks if different from standard:

The minimum yard setbacks varying between Villages but the minimums include: Front: 20' Side: 8' Rear: 20'

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

The project has been designed with cluster development. In order to reduce grading impacts, reduced setbacks are needed.

g. Identify all proposed non-residential uses:

The 225 lot subdivision includes common open space, utility services (water tank, booster pumps and sewer lift stations.

h. Improvements proposed for the common open space:

The areas designated as common open space include detention basins, drainage areas, trail heads, easements and undeveloped natural features. The proposed trail network will provide opportunities for equestrian, mountain biking and pedestrian access.

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

Refer to the Trail Map included in Appendix C - Design Guidelines.

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

The proposed trail network will connect to existing trails on adjacent properties including Fawn Lane and Forest Service property.

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

Significant ridgelines will be left undisturbed.

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

Fencing will be allowed but will be limited in size, location, type and materials. The fencing standards are defined in Appendix C - Design Guidelines.

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

The Home Owners Association (HOA) will be responsible for maintenance of the common open space.

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?

NA

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?

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?

A special use permit will be required for utility services including a water tank, booster pump station and sewer lift stations.

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

A cultural survey has been included in Appendix K of the application package. No cultural resources eligible to the National Register of Historic Places are located within the development.

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

a. Permit #	see attachment in appendix G	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):

Refer to water rights information in Appendix G.

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

The project has been designed as a common open space and cluster development. By creating more open space, the development provides for a land use pattern with less building coverage and a better built environment to conserve energy.

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 only potential area of impact is the winter range mule deer habitat. The project provides for 80 acres of open space, which allows for wildlife corridors.

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

Whitney Village and the southern most end of the subdivision allows for 17 custom lots, which may or may not be gated.

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 Cooperative Planning portion of Development Code has expired and is no longer applicable. The tentative map proposes single story homes next to existing developments and open space buffering between lots.

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 is required to comply with the Forest Area Plan goals and policies. A full explanation of that compliance is included in the application submittal.

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 tentative map complies with the Washoe County Development Code.

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

The project will likely be developed in multiple phases, depending on the market conditions.

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?

610,000 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?

610,000 cubic yards of cut 521,000 cubic yards of fill Only spoils from the clear and grub process will be exported from the site and only virgin base for roadway and concrete will be imported to the site. The North Village and the Upper Village will balance together by using cut material from the Upper Village location and bringing it downhill to balance the earthwork. The South Village earthwork will balance on its own. All proposed rockery walls will be generated from the rock excavated on site.

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 disturbed area will be seen from off-site and will be mitigated through cluster development and common open space design. The site will also incorporate new landscaping to help mitigate the disturbance.

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?

The maximum cut and fill slopes proposed on the site are 3:1. Hydro seeding with temporary irrigation in combination with silt fences, fiber rolls, or straw matting will be used to prevent erosion.

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?

NA

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?

Policy F.2.18.(e) of the Forest Area Plan identifies the need for alternative design standards which serve to preserve the natural features of the landscape and minimize the perception of an engineered landscape, including the use of extensive terracing. The project has been designed to avoid unsightly terracing and instead will use retaining walls at tie in points to the existing grade or to create a benching effect in between lots. Terraced rockery walls are proposed with a maximum height of 10' and a minimum bench width of 6'.

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

There are no trees on the site.

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

A standard dry land mix, either hand broadcast at 32 lbs/acre, or drill seeded at 20 lbs/acre (PLS) will be used. If mulch is to be used, applicable rate of no less than 2,000 lbs/acre, applied hydraulically.

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

NA

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

The landscape plan incorporates recommended standards as identified in the Washoe Storey Conservation District.

Request to Reserve New Street Name(s)

The Applicant is responsible for all sign costs.

Applicant Information

Name: ______________________________

Address: ______________________________

____

Phone : ______________ 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.)

Ascente	Mt. Kaweah
Mt. Muir	Keeler Needle
Mt. Tallac	Mt. Genevra
Jobs Peak	Mt. Agassiz
Broken Finger Peak	Tunnabora Peak
Mt. Whitney	Polemonium Peak
Merriam Peak	Royce Peak
Table Mountain	

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

Location

Project Name: Ascente

☐ Reno ☐ Sparks ☑ Washoe County

Parcel Numbers: ______________________________

☐ Subdivision ☐ Parcelization ☐ Private Street

Please attach maps, petitions and supplementary information.

Approved: ______________________________ Date: ______________

Regional Street Naming Coordinator

☐ Except where noted

Denied: ______________________________ Date: ______________

Regional Street Naming Coordinator

Washoe County Geographic Information Services

Post Office Box 11130 - 1001 E. Ninth Street

Reno, NV 89520-0027

Phone: (775) 328-2325 - Fax: (775) 328-6133

Special Use Permit Application for Grading 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 special use permits may be found in Article 810, Special Use Permits. Article 438, Grading, and Article 418, Significant Hydrologic Resources, are the ordinances specifically involved in this request.

1. What is the purpose of the grading?

   Development of the property requires grading of the property. This provides for lots and roads.

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

   610,000+/- cubic yards will be excavated on site.

3. How many square feet of surface of the property are you disturbing?

   The total area of disturbance is 5,365,000+/- square feet (approx 123 acres)

4. How many cubic yards of material are you exporting or importing? If none, how are you managing to balance the work on-site?

   Only spoils from the clear and grub process will be exported from the site and only virgin base for roadway and concrete will be imported to the site. The North Village and the Upper Village will balance together by using cut material from the Upper Village location and bringing it downhill to balance the earthwork. The South Village earthwork will balance on its own. All proposed rockery walls will be generated from the rock excavated on site.

5. Is it possible to develop your property without surpassing the grading thresholds requiring a Special Use Permit? (Explain fully your answer.)

No, development of the site requires grading in quantities that require a special use permit. The site plan has been designed using common open space and cluster development, as a method to reduce the overall grading and impacts to the land. Due to the large acreage of the property (225 acres), there are areas that will require grading, such as roadway connections between development areas.

6. Has any portion of the grading shown on the plan been done previously? (If yes, explain the circumstances and the year the work was done.)

No, the land is currently undisturbed.

7. Have you shown all areas on your site plan that are proposed to be disturbed by grading? (If no, explain fully your answer.)

Yes, refer to the grading plans included in the application package.

8. Can the disturbed area be seen from off-site? If yes, from which directions, and which properties or roadways?

Yes, the disturbed area will be seen from off-site and will be mitigated through the techniques including cluster development and common open space design. The site will also include new landscaping to help mitigate the impacts.

9. Could neighboring properties also be served by the proposed access/grading requested (i.e. if you are creating a driveway, would it be used for access to additional neighboring properties)?

The project will tie into Fawn Lane and Shawna Lane. These roads will not be gated and will allow for access from adjacent existing development.

10. 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?

The maximum cut and fill slopes proposed on the site are 3:1 (H:V). Methods to prevent erosion are hydroseeding with temporary irrigation in combination with silt fences, fiber rolls, or straw matting.

11. Are you planning any berms?

☐ Yes	☑ No	If yes, how tall is the berm at its highest?

12. If your property slopes and you are leveling a pad for a building, are retaining walls going to be required? If so, how high will the walls be and what is their construction (i.e. rockery, concrete, timber, manufactured block)?

Retaining walls will be used at tie in points to the existing grade or to create a benching effect in between lots. Terraced rockery walls are proposed with a maximum height of 10' and a minimum bench width of 6'.

13. What are you proposing for visual mitigation of the work?

The visual impacts will be mitigated through landscaping and through the site design that reduces the overall grading in areas that are more visible from adjacent properties.

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

No trees will be removed

15. 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?

A standard dry land mix, either hand broadcast at 32 lbs/acre, or drill seeded at 20 lbs/acre (PLS). If mulch is to be used, application rate of no less than 2,000 lbs/acre, applied hydraulically.

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

N/A

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

The landscape plan incorporates recommended standards as identified by the Washoe County Conservation District.

18. Are there any restrictive covenants, recorded conditions, or deed restrictions (CC&Rs) that may prohibit the requested grading?

☐ Yes	☑ No	If yes, please attach a copy.

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 Account Detail | Change of Address | Print this Page

Washoe County Parcel Information

Parcel ID	Status	Last Update
04525214	Active	4/17/2017 2:10:22 AM

Current Owner:
NNV1 PARTNERS LLC

6151 LAKESIDE DR STE 1000
RENO, NV 89511

SITUS:
0 BRUSHWOOD WAY
WASHOE COUNTY NV

Taxing District
4000

Geo CD:

Legal Description

Township 17 Section 1 Lot 1 Block Range 19 SubdivisionName _UNSPECIFIED

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	$1,007.06	$1,019.53	$0.00	$0.00	$0.00
				Total	$0.00

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

No payment due for this account.

$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

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

Washoe County Parcel Information

Parcel ID	Status	Last Update
04525215	Active	4/17/2017 2:10:22 AM

Current Owner:
CWH 2011 IRREVOCABLE TRUST
C/O GARY NELSON TTEE
355 BOXINGTON WAY
SPARKS, NV 89434

SITUS:
0 SHAWNA LN
WASHOE COUNTY NV

Taxing District
4000

Geo CD:

Legal Description

Block Range 19 SubdivisionName _UNSPECIFIED Township 17 Section 1 Lot 2

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	$9,738.17	$10,821.86	$0.00	$0.00	$0.00
				Total	$0.00

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

No payment due for this account.

$0.00

Pay By Check

Please make checks payable to:
WASHOE COUNTY TREASURER

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

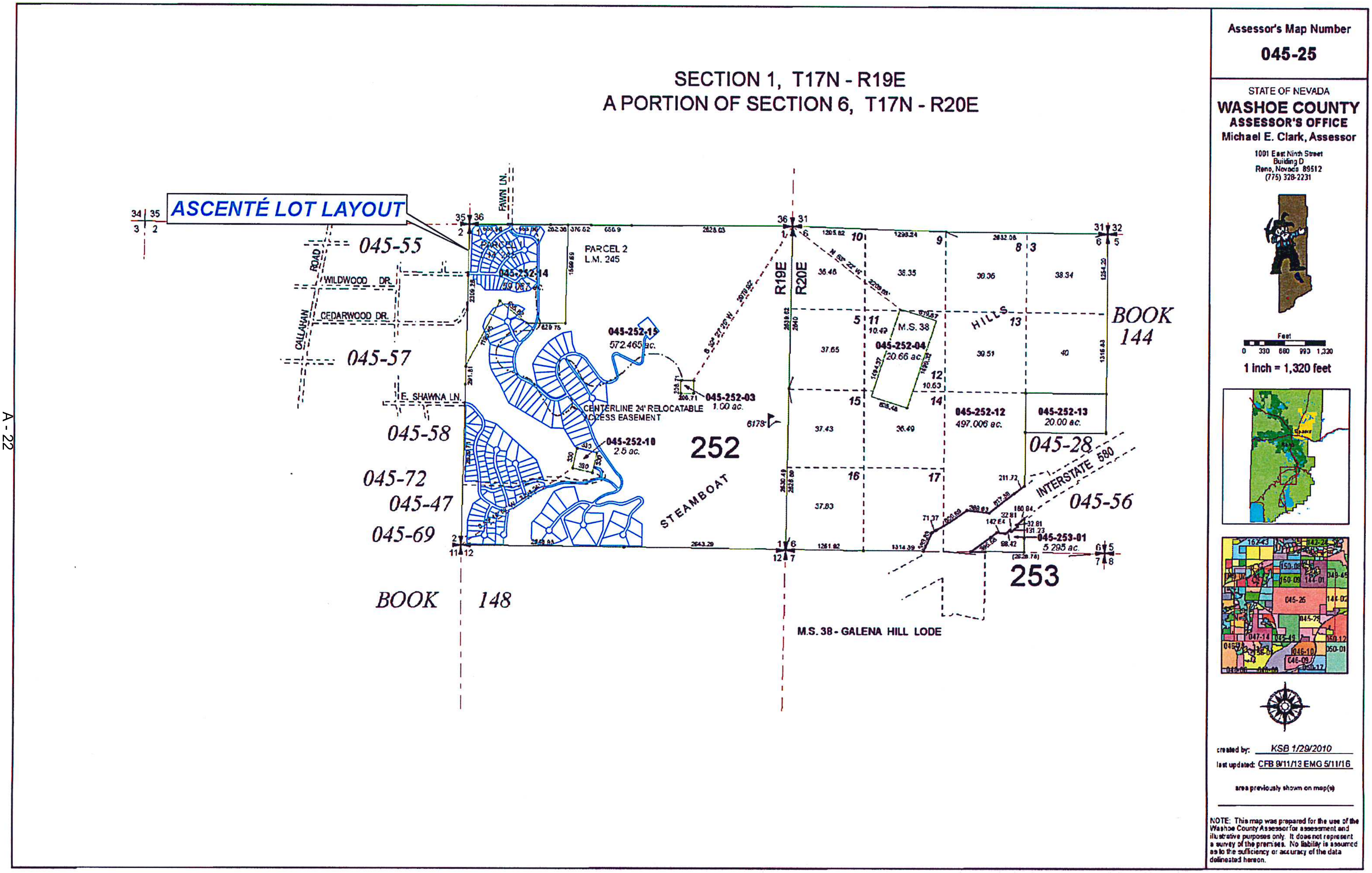
Overnight Address:
1001 E. Ninth St., Ste D140
Reno, NV 89512-2845

Payment Information

Special Assessment District

Installment Date Information

Assessment Information



SECTION 1, T17N - R19E
A PORTION OF SECTION 6, T17N - R20E
ASCENTÉ LOT LAYOUT
045-55
045-57
045-58
045-72
045-47
045-69
BOOK 148
BOOK 144
045-28
045-56
INTERSTATE 580
252
253
STEAMBOAT
HILLS
PARCEL 2
L.M. 245
045-252-14
045-252-15
572.465 ac.
045-252-03
1.00 ac.
045-252-10
2.5 ac.
045-252-04
20.66 ac.
M.S. 38
045-252-12
497.006 ac.
045-252-13
20.00 ac.
045-253-01
5.295 ac.
CENTERLINE 24' RELOCATABLE ACCESS EASEMENT
R19E
R20E
FAWN LN.
WILDWOOD DR.
CEDARWOOD DR.
CALLAHAN ROAD
E. SHAWNA LN.
M.S. 38 - GALENA HILL LODE
Assessor's Map Number
045-25
STATE OF NEVADA
WASHOE COUNTY
ASSESSOR'S OFFICE
Michael E. Clark, Assessor
1001 East Ninth Street
Building D
Reno, Nevada 89512
(775) 328-2231
Feet
0 330 660 990 1,320
1 inch = 1,320 feet
created by: KSB 1/29/2010
last updated: CFB 9/11/13 EMG 5/11/16
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.

South Truckee Meadows/Washoe Valley Citizen Advisory Board

Meeting Agenda

June 9, 2016 at 6:00 P.M.

South Valleys Library, 15650A Wedge Parkway, Reno, Nevada

Accessibility. The meeting location is accessible to the disabled. If you require special arrangements for the meeting, call the Office of the County Manager, (775) 328-2000, two working days prior to the meeting.
Following the agenda. All number or lettered items on this agenda are hereby designated for possible action as if the words for possible action were written next to each, except for items marked with an asterisk (*). Items on this agenda may be taken out of order, combined with other items, discussed or voted on as a block, removed from the agenda, moved to another agenda of another later meeting as discretion by the Chairman.
Public comment and time limits. Public comments are welcomed during the Public Comment period for all matters, whether listed on the agenda or not, and are limited to three minutes per person or as designated by the Citizen Advisory Board Chair at the beginning of the meeting. Additionally, public comment will be heard during individually numbered items on the agenda. Persons are invited to submit comments in writing on the agenda items and/or attend and make comment on that item at the Citizen Advisory Board meeting. Persons may not allocate unused time to other speakers.
Forum restrictions and orderly conduct of business. The Citizen Advisory Board is an advisory body providing community comments and recommendations to Washoe County governing boards. The presiding officer may order the removal of any person whose statement to other conduct disrupts the orderly, efficient or safe conduct of the meeting. Warning against disruptive conduct may or may not be given prior to removal. The viewpoint of a speaker will not be restricted, but reasonable restrictions may be imposed upon the time, place and manner of speech. Irrelevant and unduly repetitious statements and personal attacks which antagonize or incite others are examples of speech that may be reasonably limited.
Responses to public comments. The Citizen Advisory Board can deliberate or take action only if a matter has been listed on an agenda properly posted prior to the meeting. During the public comment period, speakers may address matters listed or not listed on the published agenda. The Open Meeting Law does not expressly prohibit responses to public comments by the Commission. However, responses from Citizen Advisory Board members to unlisted public comment topics could become deliberation on a matter without notice to the public. On the advice of legal counsel and to ensure the public has notice of all matters the Citizen Advisory Board will consider, Citizen Advisory Board members may choose not to respond to public comments, except to correct factual inaccuracies, ask for County staff clarification, or ask that a matter be addressed on a future meeting or district forum. CAB members may do this either during the public comment item or during the following item: "CHAIRMAN/BOARD MEMBER ITEMS/NEXT AGENDA ITEMS"
Posting locations. Pursuant to NRS 241.020, this notice has been posted at the Washoe County Administration Building (1001 E. Ninth Street, Bldg. A); Washoe County Courthouse (75 Court Street), Downtown Reno Library (301 S. Center St.), Sparks Justice Court (1675 East Prater Way), South Valleys Library (15650A Wedge Parkway), and online at www.notice.nv.gov and www.washoecounty.us/cab.
Support documentation. Support documentation for the items on the agenda, provided to the CAB is available to members of the public at the County Manager's Office (1001 E. 9th Street, Bldg. A, 2nd Floor, Reno, Nevada), Sarah Tone, Office of the County Manager, 775-328-2721.

Chair, Jim Rummings, 775-885-2383; Office of County Manager (775) 328-2000; Recording Secretary, Misty Moga, mistybray33@yahoo.com

AGENDA

1. *CALL TO ORDER/ DETERMINATION OF QUORUM

2. *PLEDGE OF ALLEGIANCE

3. *PUBLIC COMMENT – Limited to no more than three (3) minutes. Anyone may speak pertaining to any matter either on or off the agenda. Additionally, during action items [those not marked by an asterisk (*)], public comment will be heard on that particular item before action is taken. The public are requested to submit a Request to Speak form to the Board Chairman. Comments are to be addressed to the Board as a whole.

4. APPROVAL OF AGENDA FOR THE MEETING OF JUNE 9, 2016

5. APPROVAL OF THE MINUTES FOR THE MEETING OF MAY 12, 2016

6.*DEVELOPMENT PROJECT UPDATES

A.*Ascente Residential Development Workshop – Angela Fuss, A.I.C.P., Principle, Director of Planning of CFA, invites CAB members and the public to attend the workshops to learn about and provide input on the Ascente residential development project (APN: 045-252-11)**.** Fuss may be contacted via phone (775) 856-1150 or email, afuss@cfareno.com. *(This item is for information only and no action will be taken by the CAB).*

B.*Carmella Ranch (Planned Unit Development – Approved – 2008) – Presentation from Perry Di Loreto, Di Loreto Homes, regarding Caramella Ranch project located within the City of Reno jurisdiction on the north and south sides of Western Skies Drive north of Reading Street. Citizen Advisory Board members and the public will have the opportunity to ask questions regarding the project. *(This item is for information only and no action will be taken by the CAB)*

- **APN**: *143-120-08, 143-120-07, 143-120-06, 143-120-01*
- **Reviewing Body**: *This project is within the jurisdiction of the City of Reno with a previously approved PUD.*
- **Planned Unit Development (PUD) handbook**: www.reno.gov/home/showdocument?id=25142

C.*Palisades – Brief update and status on approved Palicades project located within the City of Reno East of Rio Wrangler Parkway, East and Northwest of Damonte Ranch High School. Presented by Melissa Lindell of Wood Rogers. For additional information please review the approved tentative map and special use permits online at: www.reno.gov/home/showdocument?id=46295

9. DEVELOPMENT PROJECTS – The project description is provided below with links to the application or you may visit the Planning and Development Division website and select the Application Submittals page: www.washoecounty.us/comdev/da/da_index.htm.

A(1). Master Plan Amendment Case Number MPA16-003 (Southeast Truckee Meadows Area Plan / Toll Road Character Management Area) – Request for community feedback, discussion and possible approval of an amendment to the Southeast Truckee Meadows Area Plan / Toll Road Character Management Area, to increase the allowable residential density from two dwelling units per acre to two-and-a-half dwelling units per acre.

AND

A(2). Development Code Amendment Case Number DCA16-003 (Southeast Truckee Meadows Area Plan / Toll Road Character Management Area) – Request for community feedback, discussion and possible approval to amend the Southeast Truckee Meadows Area Plan Modifiers to increase the allowable residential density from two dwelling units per acre to two-and-a-half dwelling units per acre within the Toll Road Character Management Area, and to provide development standards regarding required lot area and adjacency with existing lots.

- **Applicant:** Silver Crest Homes, Attn.: Rich Balestreri, 16500 Wedge Parkway, Bldg. A, Suite 200, Reno, NV 89511
- **Property Owner:** Charles B. Maddox, PO Box 70577, Reno, NV 89570
- **Location:** Toll Road Character Management Area – between Geiger Grade and Toll Road
- **APN:** various
- **Staff:** Roger D. Pelham, 775-328-3622, rpelham@washoecounty.us
- **Reviewing Body:** This case is tentatively scheduled to be heard by the Planning Commission on August 2, 2016

10.*COUNTY UPDATE – A representative from the Office of the County Manager will provide an update on County services and is available to answer questions and concerns. Please feel free to contact the Office of the County Manager at (775) 328- 2000. To sign up to receive email updates from the County visit www.washoecounty.us/cmail. *(This item is for information only and no action will be taken by the CAB).*

11. *CHAIRMAN/BOARD MEMBER ITEMS/NEXT AGENDA ITEMS - This item is limited to announcements by CAB members and topics/issues posed for future workshops/agendas. *(This item is for information only and no action will be taken by the CAB).*

12. *PUBLIC COMMENT – Limited to no more than three (3) minutes. Anyone may speak pertaining to any matter either on or off the agenda. The public are requested to submit a Request to Speak form to the Board Chairman. Comments are to be addressed to the Board as a whole.

ADJOURNMENT

Chair, Jim Rummings, 775-885-2383; Office of County Manager (775) 328-2000; Recording Secretary, Misty Moga, mistybray33@yahoo.com

Ascenté Community Meetings

Invitation to the Public

We invite you to attend a series of community meetings to discuss Ascente', a proposed residential development located south of Mt. Rose Highway and east of Callahan Ranch Road. The property encompasses 635 unimproved acres and is zoned for 632 single-family residential homes. Ascente' will be developed in two phases, with the first phase being the acreage west of the property's approximate ridge line.

We are seeking neighborhood input for the development prior to submitting an application to Washoe County. If you are not able to attend the meetings, but would like an opportunity to provide feedback, please refer to our website: *AscenteNevada.com*. For questions on the community meetings, please contact Angela Fuss, Director of Planning, CFA at 856-1150 or afuss@cfareno.com.

Community Meeting #1
Date: Saturday, June 25, 2016
Time: 10:00 am – 11:30 am
Meeting Location: South Valleys Library, 15650 Wedge Parkway, Reno, Nevada

Meeting #1 will provide an overview of the approved zoning and development standards that are required and outlined in the Washoe County Forest Area Plan. The project is in the preliminary design stages and preparations are underway for engineering studies and for the tentative map process. The purpose of this meeting is to provide an overview of the property and to gather neighborhood input on the development plans. Please note, this first meeting will only address development concepts and will not get into the detailed work product that is still in process such as specific lot layouts, designs, housing types, or other final construction criteria. Ascenté developers invite community input after the presentation.

Community Meeting #2
Date: Tuesday, July 12, 2016
Time: 6:00 pm – 7:30 pm
Meeting Location: Redfield Campus UNR, Building A, Room #227, 18600 Wedge Parkway, Reno, Nevada

Meeting #2 will provide project updates from the first workshop and present development plans for the Phase 1 design and tentative map draft submittal. Engineering studies including lot layouts will be nearly complete and this meeting will provide information on those findings. Ascenté developers invite community input after the presentation.

Please note the different locations for meeting #1 and meeting #2. We invite you to attend both if you are able.

Dear Property Owner,

On June 9th we sent out our first introduction for our **Ascenté** development and invite for our first Community Meeting. The meeting was held on June 25th. Here are a few new updates including an invitation to Community Meeting #2:

Community Meeting #2 Date, Time, Location Change - Due to the overwhelming response from the community, the **Ascenté** Development Team has moved the time, date, & location for Community Meeting #2.

Ascenté Community Meeting #2
PLEASE NOTE DATE, TIME, & LOCATION CHANGE

Date: **Thursday, August 4th, 2016**
Time: **Anytime between 5:30 p.m. – 7:00 p.m.**
Location: **South Valleys Library, 15650 Wedge Parkway, Reno, Nevada**
Format: **OPEN HOUSE format with discussion stations (same as Meeting #1)**

The meeting will utilize an open house format, just like Community Meeting #1, enabling attendees to interact directly with the **Ascenté** Development Team members and invited guests. This second meeting will provide new updates and responses to questions we received since Community Meeting #1, which was held on June 25th. If you are not able to attend Meeting #2, but would like an opportunity to provide feedback, please visit our website: https://ascentenevada.com/optin, email us at: info@AscenteNevada.com, or write to us at: ATTENTION ASCENTE, 1150 Corporate Blvd, Reno, NV 89502

F.A.Q.'s Updated - Our **Ascenté** Frequently Asked Questions document has been updated with new questions and answers - to view or download go to our website at https://ascentenevada.com/optin or call Angela at (775) 856-1150 to have a copy mailed to you. Please also continue to check our website as we continually post new information as we progress through our design and submittal stages.

Thank You - Finally, we would like to thank all of those who have provided their questions, comments, concerns, and feedback to date. We pride ourselves on open, informative, and honest communication between our team, our neighbors, and the public agencies, all participating in the development process. Even though we too are long-time Reno residents, it is impossible for us to know your specific concerns unless we ask and make it easy for you to offer feedback. Most importantly, we do so in the hope that we can incorporate and make refinements that respond to your suggestions and offer solutions to your concerns.

Once again, thank you and we look forward to working together on **Ascenté**.

Sincerely,

The Ascenté Development Team

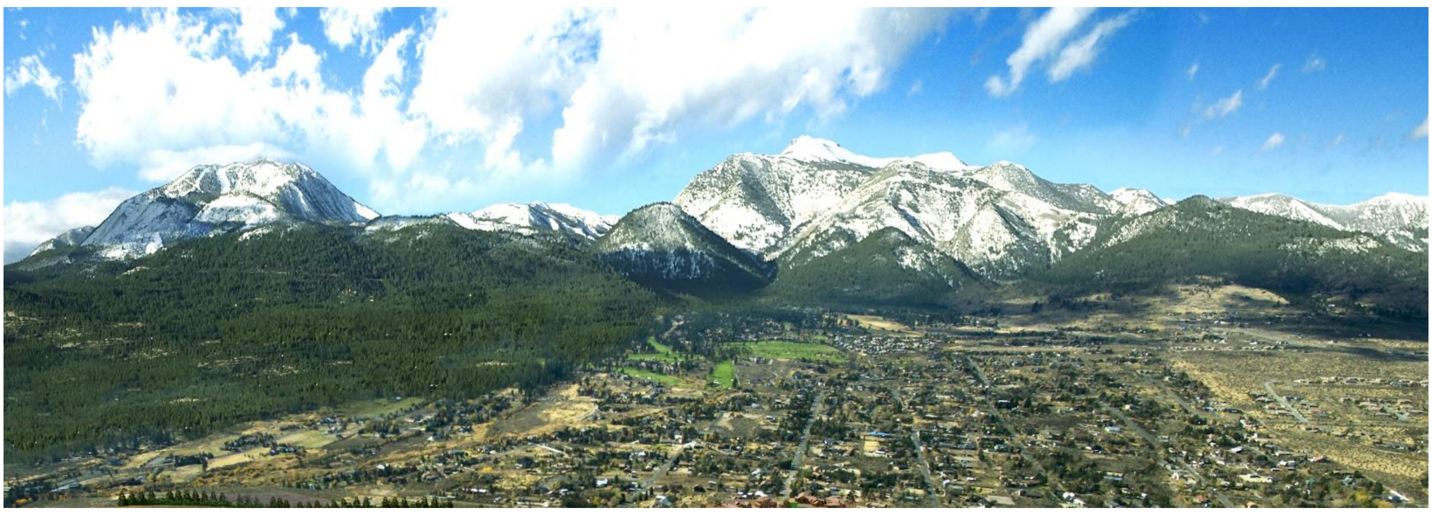
Our mailing address is: ATTENTION: Ascenté, 1150 Corporate Blvd, Reno, NV 89502
Ascenté is a residential development located south of Mt. Rose Highway and east of Callahan Road in southwest Reno, Nevada. It is anticipated that Phase 1 of Ascenté, comprised of the acreage to the west of the property's ridgeline, will be developed with approximately 300 luxury single family homes that are projected to start construction in 2018. Ascenté is being developed by Symbio Development, LLC, a local Northern Nevada developer.
For more information go to AscenteNevada.com.

NOTICE: CONTENTS HEREIN ARE PRELIMINARY, SUBJECT TO WASHOE COUNTY APPROVAL, AND SUBJECT TO CHANGE.

ASCENTÉ

RENO • NEVADA

DESIGN GUIDELINES



PREPARED FOR WASHOE COUNTY
APRIL 2017

SYMBIO DEVELOPMENT

SYMBIO DEVELOPMENT, LLC

CONTENTS

PROJECT CONSULTANTS

INTRODUCTION

Ascenté is a residential development with approved zoning located in the Steamboat Hills south of Mt. Rose Highway and east of Callahan Road in southwest Reno, Nevada. Ascenté proposes a total of 225 residential clustered home sites on 225-acres for an overall average density of one home per acre. Four distinct villages are designed with each offering varying homesite lot sizes to accommodate different new home product types.

Ascenté is named for its panoramic views of the Carson Range as they climb or "ascend" the Sierra Nevada Mountains. The villages and streets are named after Sierra Nevada mountain peaks and passes. The Sierra Village, Tioga Village, Donner Village and Whitney Village home sites average more than one-half acre in size in addition to 80-acres dedicated as common open space and right-of-way's. The Ascenté site design features landscaped common areas, entry monumentation, a pedestrian and equestrian trail system, and native rockery retaining walls. Symbio Development, LLC is the master developer for the Ascenté project.

PURPOSE AND VISION

The intent of these design guidelines is to create a cohesive theme designed to promote community image and identity, and to provide direction for implementation. A uniform common themed graphic will be designed for all signage related to major entries and identification of the neighborhoods. The design should reflect the authentic character promoted by these guidelines that defines a set of guidelines that are visionary, aesthetically distinct and complimentary of the project and its surroundings.

In planning, design and imagery – Ascenté responds to the natural setting of the Sierra sagebrush foothills and takes advantage of the sweeping westward views of Mount Rose and the Carson Range. These standards and design guidelines will ensure that the character of the landscape is protected and enhanced for the enjoyment of all homeowners of Ascenté, both now and in the future. The primary design goals include;

- Design standards and guidelines that links the villages with master plan features
- Design that responds to the natural settings and topography
- Preservation of views to Mount Rose and the Carson Range of the Sierras
- Minimizing visual impacts of development by incorporating visually diverse design elements
- Providing connectivity to common open space and existing neighborhoods

HOW TO USE THESE GUIDELINES

STANDARD

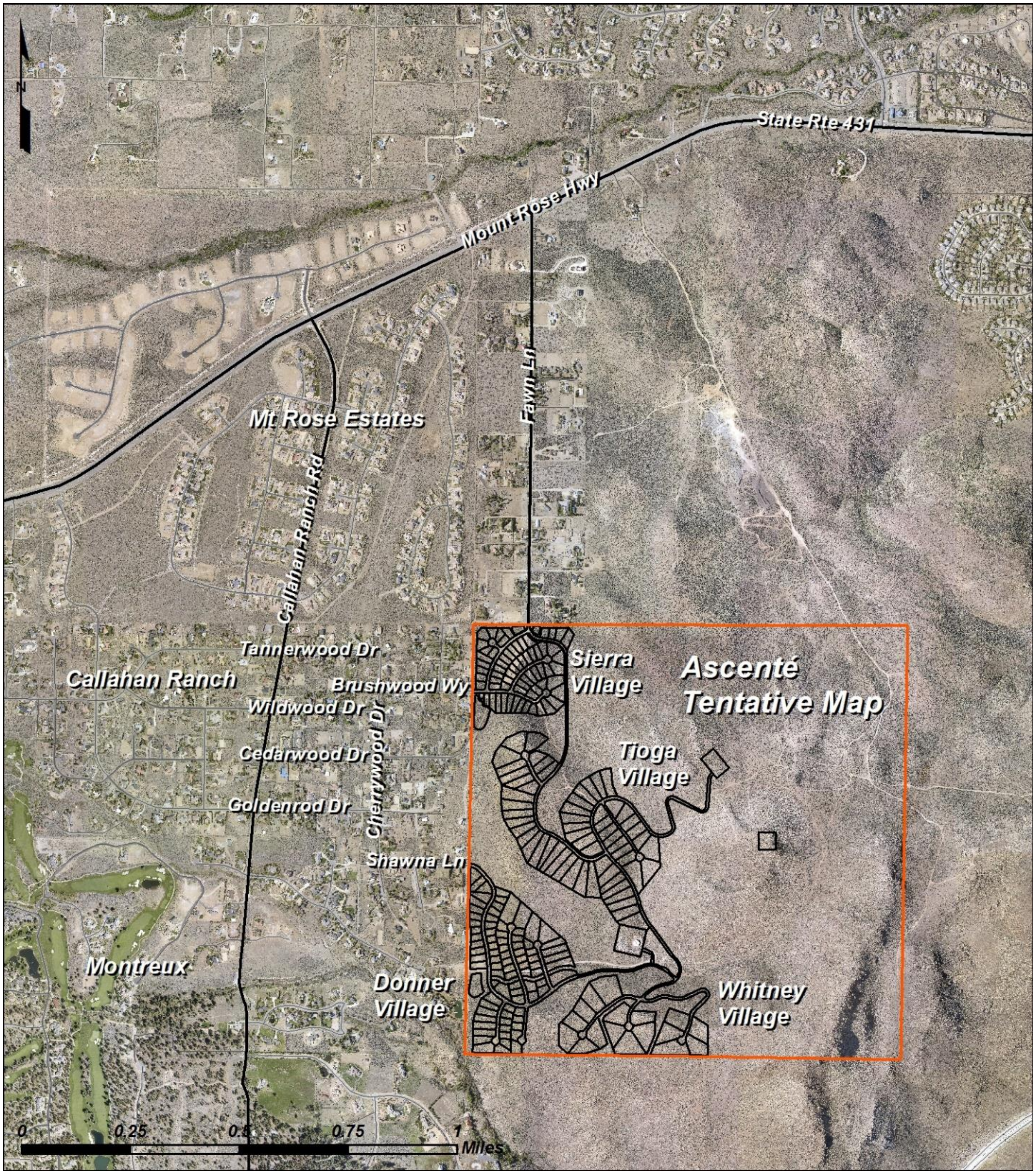
A standard describes features and qualities which are mandated and measurable. Standards use the term "shall" and "must" to indicate compliance. The implementation and enforcement of these standards are described in the Implementation Section as to definition, implementation, and enforcement via the final maps, recorded instruments, and covenants, conditions and restrictions (CC&R's). Variances may be permitted by a process, which is defined in the Implementation Section. Standards not outlined in the Design Guidelines will defer to Washoe County Code and/or the Manager, as defined in the Implementation Section.

GUIDELINES

Guidelines are recommendations that align the goals of the community to respond to the natural setting and minimize disturbances. Guidelines are not required for approval and therefore use terms such as "may" and "encourage" and provide guidelines for architectural control interpretation of design and other non-measurable criteria.

APPROVAL PROCESS

Refer to the Implementation Section in the back of these Design Guidelines.



SITE DESIGN AND COMMUNITY CHARACTER

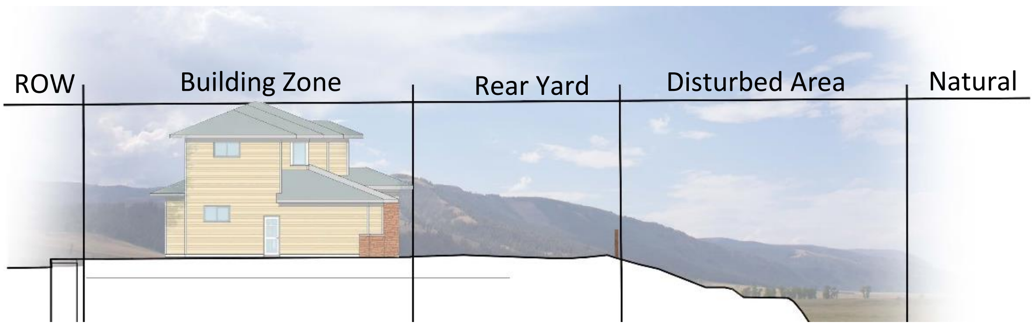
SITE PLANNING

Site planning for individual home site relies heavily on the individual character of the natural site. The location and design of proposed structures must relate to the terrain, locations of trees and boulders, solar orientation and views. Privacy from adjacent neighbors, near-by right-of-way and shared commons spaces should be considered.

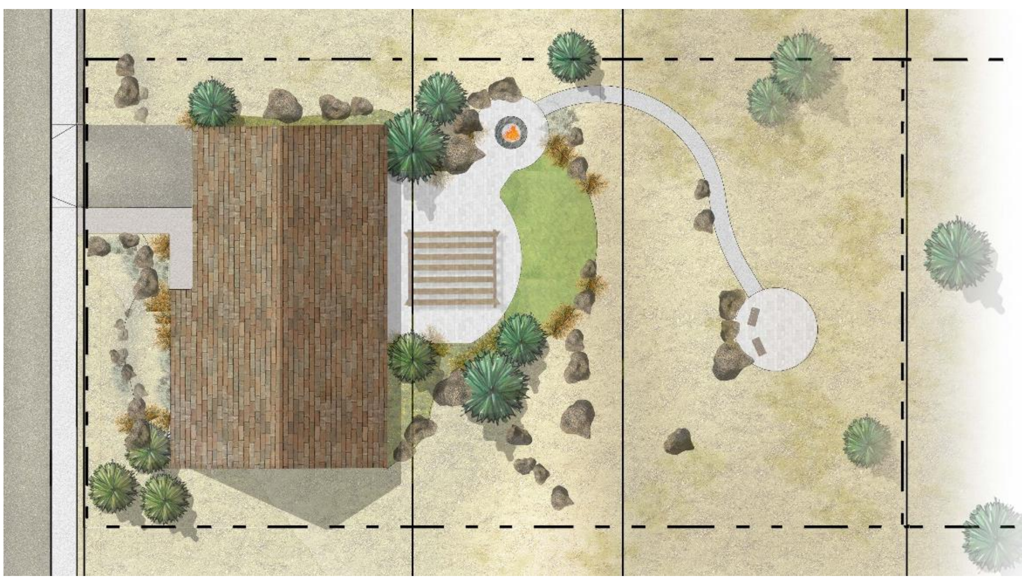
A height restriction that only effects the Ascenté Sierra and Donner Village perimeter lots with common property lines adjacent to and immediately bordering existing home sites shall be limited to single story homes.

Drainageways and detention facilities shall be designed to meet Washoe County's 100-year flood plain management requirements and shall be maintained by the home owner's association (HOA). The HOA shall grant emergency access to all drainage ways to Washoe County.

Drainage and landscape corridors may be combined so that drainageways may meander. All utilities, except for the existing, will be designed with landscaping to screen from the view of the roadway within the limitations of access and maintenance.



Cross Section of Typical Lot That Backs Common Open Space



Plan View of Typical Lot That Backs Common Open Space

BEST USES	Landscaped Front Yard Building Envelope Irrigation Privacy Fencing	Patios Gas Fire Pit Gathering Space Irrigation Landscaping	Seating Area Gas Fire Pit Native Revegetation Open Fencing Temporary Irrigation	No Improvements No Irrigation Property Line – Open Fencing
NOT ALLOWED	Non-Approved Landscaping Material (per CC&R)	Structures Higher Than Residence	Any Structure (incl. Pergolas or Shade) Privacy Fencing Irrigation	No Use Allowed

FENCING

Fencing provides privacy and defines property boundaries, but is often too dominant, visually undesirable, and obstructs areas that transition to surrounding open space. The following describes the type of fencing and the areas and locations fencing is allowed in all four villages of Ascenté. These areas within each

residential lot include the front, side, and rear yard, transition area, undisturbed/natural area, and property line fencing. Fencing with sharp protrusions or "spikes" that may affect mule deer and wildlife habitat are prohibited.

"Privacy fencing" is defined as solid fencing, not to exceed a maximum height of six (6) feet along any common property line. A common property line is any property line shared by two or more properties.

"Open Fencing" is defined as three rail split fencing, not to exceed a height of four (4) feet.

- Open fencing shall include a similar themed design throughout all the Ascenté villages
- Open fencing on village perimeters may be specified by the Manager to insure consistency

"Facilities Fencing" is defined as enclosure fencing used to secure facilities such as water storage tanks, sewer lift stations and booster pumps. The type and location of fencing is per Washoe County standards, yet where chain link fencing is used, privacy slats and vegetation is required for screening.

"Transition Area" is defined as the designated area between the rear yard and any adjacent common open space (See illustration) or right-of-way. Transition Areas may be sloped or include drainage areas. Transition Areas will be designated on the final map, corresponding recorded easements, CC&R's, and/or other instruments as implemented by the Manager (See Implementation Section).

"Transitional Fencing" is defined as any fencing that transitions from a Privacy Fencing to Open Fencing. This type of fencing shall be:

- Open Fencing
- Open Fencing may follow parallel with the slope.
- Horizontal stair stepping is not required.

STANDARDS

Fencing requirements vary based on the location of the property. The following standards shall apply:

1) Privacy fencing is permitted in rear and side yards when not adjacent to common open space.
2) The type of fencing used along perimeter lots with common property lines adjacent to and immediately bordering existing properties (outside the Ascenté parcel boundaries) may vary and will be finalized at final map with input from each existing property owner and Washoe County Community Services at the time of construction.
   a) This provision is not intended to convey any third-party rights.
3) Side yard fencing should be held back a minimum of eight feet from the face of any structure so that the fence does not align with the front corner of the house.
4) Side yard fencing should step down to four feet height at or before the rear most wall or vertical structural element of the residence.
5) Fencing will be natural in color. No painting is permitted. Clear coat stain only is permitted.
6) Fencing along trail corridors or common open space shall be limited to Open Fencing.
   a) No solid fencing is permitted adjacent to trail corridors.
   b) Only open fencing will be used adjacent to trail corridors.
   c) Wire mesh is permitted on fences and will be made of black vinyl clad wire mesh or painted equivalent.
   d) No chain link fencing is allowed unless associated with outdoor sport courts or Facility Fencing.
      i) Privacy slats are required for Facility Fencing and shall be earth tone in color.
      ii) Privacy slats are not allowed for outdoor sports courts.
      iii) Sports court chain link must be a dark colored vinyl clad, painted, or equivalent.
   e) Gates are permitted in residential lot fencing to access open space.
   f) Fencing plans shall be reviewed and pre-approved by the Manager, as defined in the Implementation Section.

EXTERIOR LIGHTING

All exterior lighting shall follow "Dark Sky" principles and be carefully designed to light only the areas needed for reasonable levels of safety and security, eliminating as much outdoor lighting as possible. Street lights are prohibited.

Exterior light guidelines:

- Focus all light downward for lighting on identification signs and entries.
- Located and installed to prevent spillover lighting onto adjoining properties.
- Provide proper shielding of the light source
- Use of timing mechanisms or daylight mechanism in appropriate situations to shut off lights when they are not needed.
- No motion lighting is permitted.
- No up-lighting is permitted.
- Low voltage lighting for yards are allowed but must be approved by the Manager.

EXTEROR DOWN LIGHT EXAMPLES

DEFENSIBLE SPACE DESIGN CRITERIA

Refer to Washoe County Code 60 and NAC 477

Many of the Ascenté home sites are directly adjacent to common open space with a potential threat of wildfires. To minimize potential wildfires and increase the home's survivability, the final map plans shall meet the 2012 International Wildland Urban Interface Code (2012 IWUIC), as amended and adopted by Washoe County Code 60 (WCC 60) and NAC477 with the following conditions:

STANDARDS

- Defensible space provisions shall be provided in the Design Criteria and adhered to within the Ascenté development.
- Fire hydrants shall be provided with the layout and placement of hydrants approved by Truckee Meadows Fire Protection District (TMFPD) prior to installation. Hydrants shall be equipped with Storz connections. Water for fire suppression shall be a minimum of 1,000 gpm for 1 hour at 20 psi with verification of flow provided by the water purveyor prior to final map approval.
- Secondary access shall be provided and shall meet the minimum standards of WCC 60.
- No speed bumps are allowed within the development. Traffic calming devices shall be submitted to TMFPD for review and comment prior to installation, and be in accordance with WCC 60.
- Cul-de-sacs shall maintain a minimum of 50-ft radius, 100-ft diameter.
- Access to common areas for vegetation maintenance and management shall be provide at final map.
- A defensible space and wildland interface program for both the common open space and individual lots will be approved by the Manager, as a part of the CC&R's and enforced by the HOA.
- A digital copy of the HOA/CC&R agreement shall be submitted to the Truckee Meadows Fire Protection District (TMFPD) for review, comment and approval at the time of each final map.

The following standards shall be included in the CC&R's, implemented by the individual homeowners, and enforced by the HOA:

RESIDENTIAL AREAS

Within 30 feet of the home:

1. Remove any dead vegetation.
2. Create a separation between layers of plants to eliminate fuel "ladders" to the home itself.
3. Do not plant ornamental grasses below windows that could shatter with heat.

Beyond the 30 feet to the lot edges adjacent to common open space areas:

1. Homeowners shall use recommended plant lists approved by Washoe County.
2. Rock mulches shall be used in planter areas. No wood mulches are allowed.
3. As regular maintenance, remove all dead or flammable vegetation and

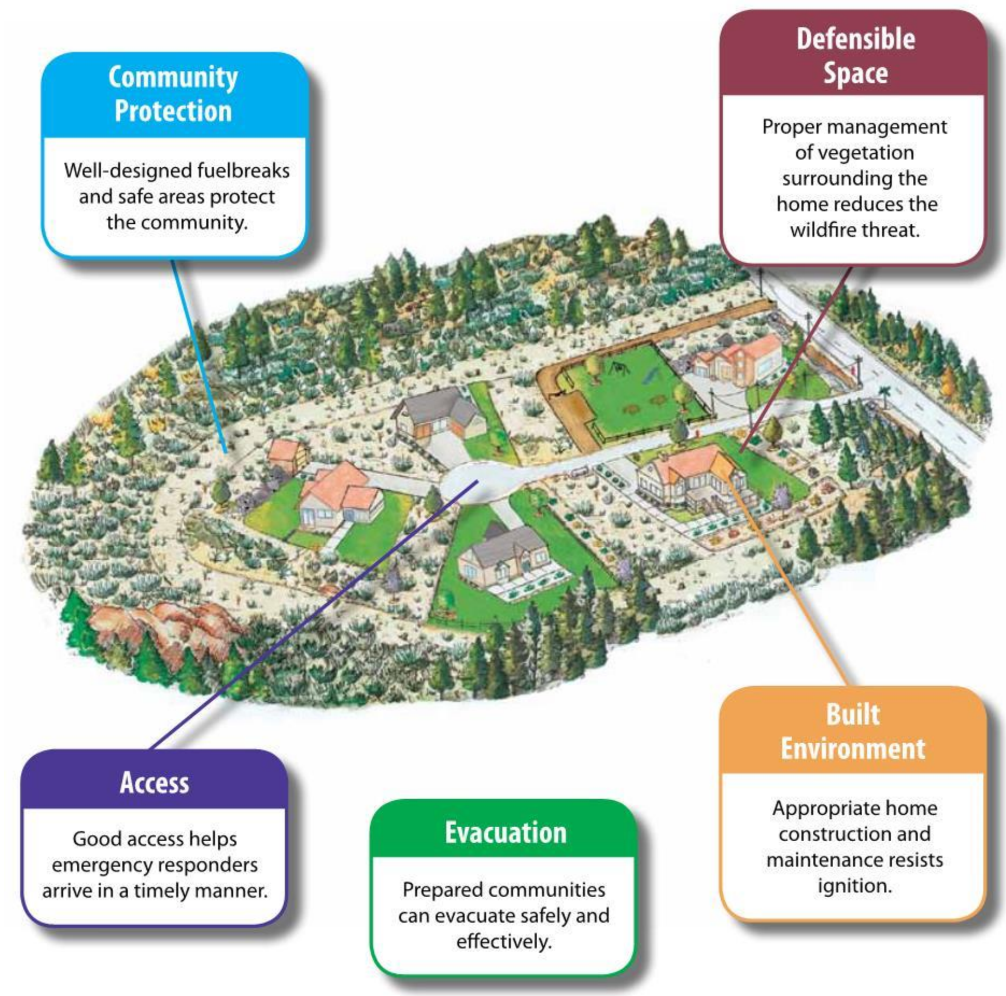
weeds. Eliminate fallen leaves and prune dried ornamental grasses.

4. Emphasize the use of deciduous shrubs and trees rather than evergreen types.
5. Remove the lower branches of trees up to 8 feet above the ground as the trees matures.
6. Keep vegetation clear of raised decks.

COMMON OPEN SPACE AREAS

1. Areas outside of lots shall be the responsibility of the HOA. Fuel breaks will be created and maintained by the HOA.
2. Within fuel breaks, all dead plants shall be removed, along with any dead branches. Highly flammable vegetation will be removed, including annual weeds. Native vegetation will be thinned. In areas with bare soil from grading operations, fire resistant crested wheat grasses will be seeded.
3. Remove lower branch trees up to a height of 10 feet above the ground.

Elements of a Fire Adapted Community



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LANDSCAPE STANDARDS

Landscape standards shall conform to Washoe County Development Code Article 412 Landscaping.

Revegetation and landscaping of drainageways, detention basins, common open space, roadway right-of-way and buffers shall be installed with each respective Village improvements and maintained by the HOA or similar mechanism, and will not be part of individual lots. Plans for landscaping shall be submitted with each respective final map for approval.

WALLS

Cut or fill slopes greater than 8 feet in height shall have stepped or terraced retaining walls. Where retaining walls are proposed, native on-site rocks where will be reused when possible. Rock walls with a 10-foot maximum height are allowed when located outside of public right-of-way, within common open space, that do not structurally support the roadway. Rock walls with a maximum height of 6-feet are allowed within residential lots.

REVEGETATION OF DISTURBED AREAS

A revegetation plan shall be prepared to include topsoil/vegetation stripping, stockpiling, screening and re-application. Disturbed areas are to be protected using temporary Best Management Practices (BMP) to minimize soil erosion. The plan shall include a native seed mix, drought tolerant vegetation and low impact design principles. All revegetated slopes and disturbed areas shall be temporarily irrigated until vegetation is established. All irrigation will include automatic valves and controllers.

COMMON OPEN SPACE LANDSCAPING

Landscaping shall be required at entrance gateways, around storm water detention facilities, roadway right-of-way's, buffers, trailheads and the common open space adjacent to proposed lots. Landscaping will use drought tolerant native vegetation or non-native ornamental plant species designed to address aesthetics, as deemed appropriate by the Manager.

ROCK WALL MATERIALS

COMMON OPEN SPACE PERIMETER BUFFERS

Perimeter lots in the Sierra and Donner Villages adjacent to existing residential homes require a perimeter buffer as follows:

- Incorporate a 40-foot wide perimeter buffer immediately adjacent to existing homes that start at the back yard common property line and run along the entire length of the property line of each individual lot unless adjacent to Patti Lane.
- Incorporate a 20-foot wide perimeter buffer immediately adjacent to Patti Lane's 60-foot roadway right-of-way easement.

The perimeter buffer will consist of drainage improvements, maintenance access, trails and landscaping. The landscaping requires a mix of native shrubs, trees and ground material with height and massing to provide screening between adjacent existing lots. The spacing and massing of trees will minimize disturbance of view sheds of hillside or mountain views. Perimeter buffer areas will be finalized at final map.

INDIVIDUAL LOTS

Individual lot front yard landscaping shall:

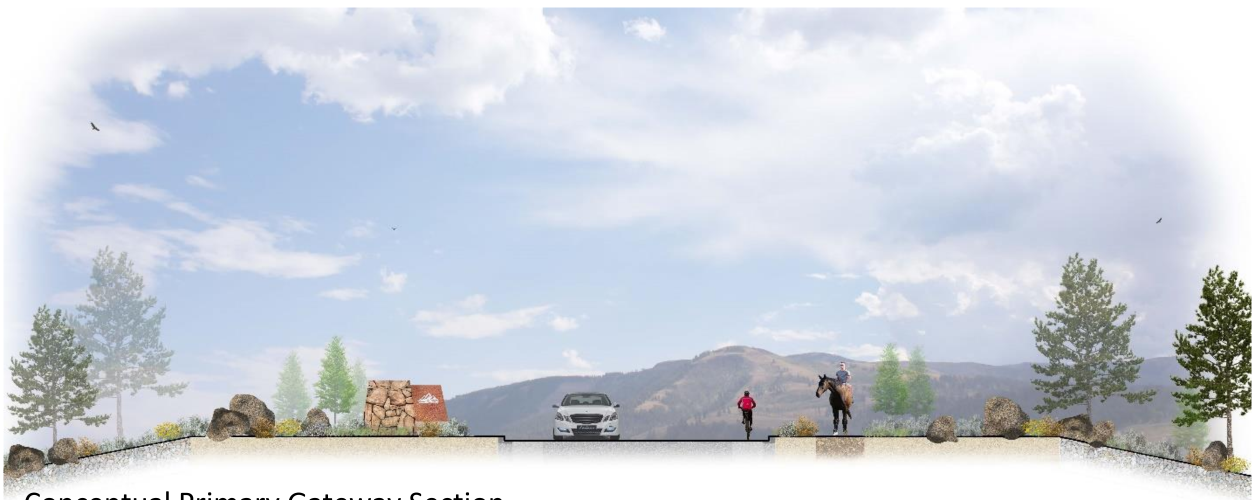
- Minimize turf areas
- Minimize the use of irrigation
    - Temporary irrigation of disturbed transitional areas is permitted until vegetation has been established.
    - Irrigation of undisturbed/natural areas are prohibited and enforced per conditions within the Ascenté Design Guidelines Implementation section provisions.
- Consist of native and regionally appropriate plant material and blend into the natural landscape.
- Limit the use of ornamentals to entryways and immediately adjacent to the structure.
- Reflect patterns from the surrounding natural landscaping avoiding formal, regimented landscaping.
- Use native colored mulches and rock for ground treatments.
- Meet the approval of the Manager.

ROADWAYS AND CONNECTIVITY

Refer to Washoe County Development Code Article 436 Street Design Standards.

STREETS

- Five-foot wide concrete sidewalks will be constructed on one side only of thoroughfare streets, and only as required to connect to trails providing walkable interconnectivity between all villages and common open space. Sidewalks are not required on streets with cul-de-sacs.
- Street sections may be narrowed where street parking is prohibited or limited to one side of the street.
- Exceptions to standards within Washoe County Development Code Article 436, as amended, by the approval of the Washoe County Engineer.



Conceptual Primary Gateway Section

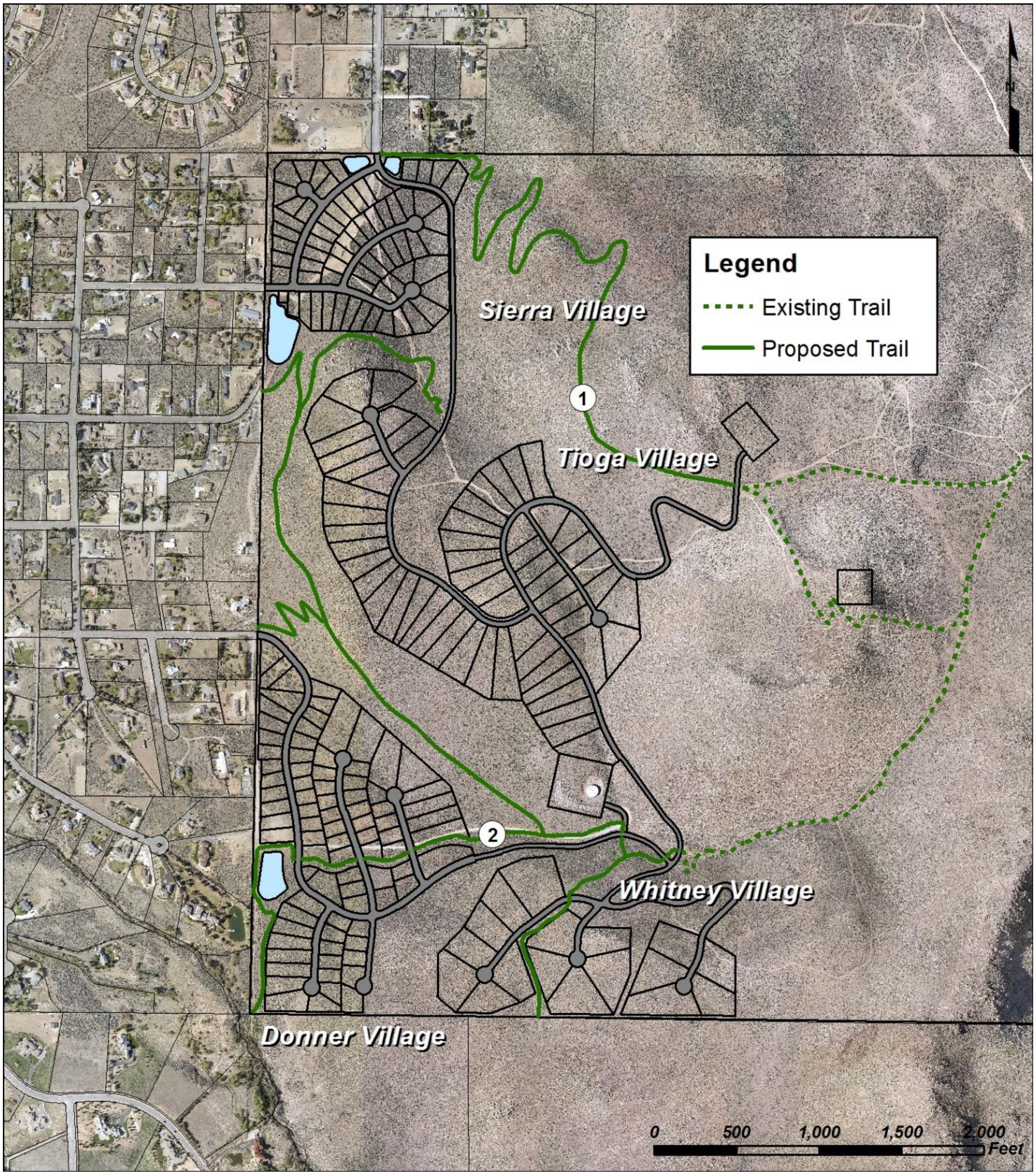
COMMON OPEN SPACE & TRAILS

The common open space includes common open space areas, trails, detention basins, drainage areas, trailheads, points of access, some easements, and undeveloped areas that preserve natural features such as rock outcropping and native vegetation. The proposed trail network provides the opportunity for equestrian, mountain biking, and pedestrian access to common open space areas within Ascenté, as well as connectivity to public properties outside the boundaries of Ascenté.

Typical Trail Section

The trail connections are intended to provide recreation and scenic value throughout the site and connection to adjacent existing neighborhoods. The common open space and trail improvements will be constructed in phases with each village, providing construction and maintenance and continuity within the development. The trails and common open space shall be maintained by the HOA.

Only non-motorized uses will be allowed, except for pedal assisted bicycles supplemented by batteries. The proposed trails should minimize potential erosion and shall be constructed three (3) feet in width using native soil. Trailheads shall incorporate signage and monumentation to easily identify the trail.



COMMUNITY AND NEIGHBORHOOD GATEWAYS

Community and neighborhood gateways will provide the marketing identity for each of the villages. The materials used for the monumentation will consist primarily of Corten steel, ornamental metal, wood, and on-site rock, or faux-rock that is similar in color to on-site rock.

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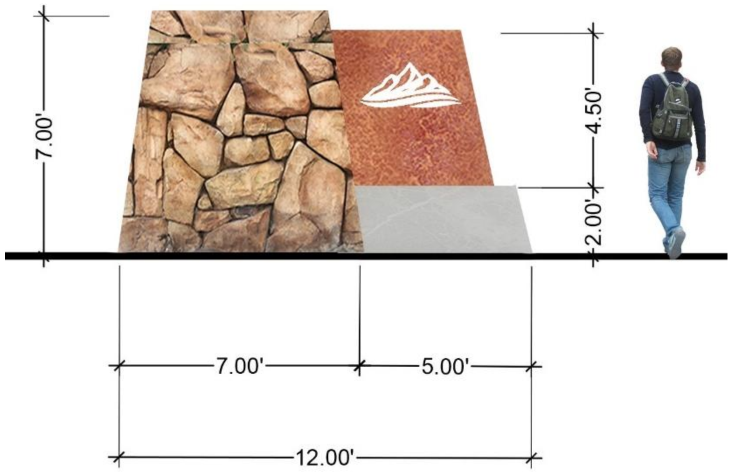
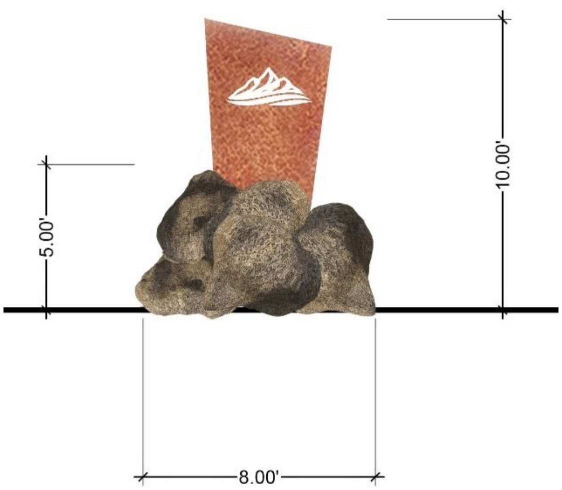
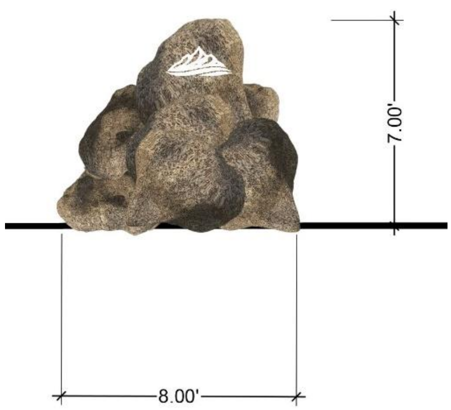
ASCENTÉ

The following are conceptual designs of community gateways. Final design of each community and neighborhood gateway requires the Manager's approval.







Gateway Monumentation Signage

signs are conceptual and subject to final design

RECOMMENDED SIGNAGE MATERIALS

Corten Steel

Board Formed Concrete

On-Site Stone

Glulam Wooden Beams

IMPLEMENTATION

OBJECTIVES

The objective of this Implementation chapter is to establish the following:

1. To create a clearly defined path of implementation and enforcement for Ascenté Design Guidelines, so that they can be adopted as part of the Washoe County tentative map conditions of approval. The implementation requires the Manager to implement and enforce the Design Guidelines as required for the mutual benefit of all the collective villages with respect to their shared common open space areas.
2. Require the identification of all easements (landscape, access, utility, conservation or others) and notes that will be:
   a. Separately recorded easements with legal descriptions and map showing the easements consistent with each contemplated Ascenté final map.
   b. Consistent with these Design Guidelines to be incorporated into each Ascenté final map.
3. Require the creation of CC&R's for each Ascenté homeowner's association consistent with the above and containing provisions for an Architectural Control Committee ("ACC") for the maintenance and adoption of rules and regulations governing architectural review, approval, and enforcement.

MANAGER

These Design Guidelines apply to Ascenté (the "Project") and shall be initially managed by Symbio Development, LLC, the developer who maintains legal control over the Project's approved tentative map properties ("Master Developer"). The Master Developer shall review and approve final map plans, materials and applications within the Project. The Master Developer intends to sell parcels and assign legal control over to merchant home developer(s) ("Builder Developer(s)") for each respective final map(s) within the Project. When the rights of the Master Developer are designated or assigned to another entity or individual, the Master Developer shall notify Washoe County in writing and provide documentation of the change in ownership for said parcels.

The Master Developer and Builder Developer(s) shall collectively or by individual action, be referred to as the "Manager" and shall continue throughout the development as the Manager until one or more Home Owners Association (HOA) or other entity is authorized to serve the role of Manager. The Manager shall have the authority to reasonably interpret and apply these Design Guidelines as contained herein consistent with the Washoe County Development Code. Figures and graphic representations contained herein are intended as general visual aids in understanding the intent of the various requirements and do not represent any actual lot or building plan, nor are they intended to serve as exhaustive examples of every possible situation.

DUTIES

The Manager shall have the following duties, responsibilities, and authority:

1. Establish an HOA to maintain all common space area improvements as follows:
   a. Open channel storm drainageways and detention basins
   b. Landscaping, irrigation, trails, community gateways
   c. Enforce irrigation restrictions
2. To implement all agreements, easements (landscape, drainage, access, utility, conservation or others) and corresponding notes consistent with these Design Guidelines to be incorporated into each final map within the Project, and separately recorded easements with legal descriptions and maps showing the easements consistent with each final map within the Project. Said easements shall be simultaneously recorded with each corresponding final map recordation.
3. To establish Covenants, Conditions and Restrictions (CC&R's) and the creation of an Architectural Control Committee ("ACC") to incorporate and/or adopt these Design Guidelines, all final map notes and easements, and all recorded easements into rules and regulations covering architectural review, approval, and enforcement for the benefit of the individual final map parcel owners and their respective common areas.

CC&R's

Covenants, Conditions and Restrictions shall be legally binding provisions that apply to all property owners in all Ascenté final map subdivisions. The CC&R's constitute covenants that run with the land and bind successors-in-title.

The subdivision's CC&R's provides for the creation of the specific HOA to manage the CC&R provisions. The bylaws of the HOA shall provide for the creation of a Board of Directors that is charged with managing the association's business. Among the responsibilities of the Board is the enforcement of standards of construction in and appearance of the subdivision, maintaining common areas, drainageways, detention basins, enforcing irrigation restrictions, and setting and collecting an annual assessment. Interpretation of the provisions of the CC&R is also part of the Boards responsibility.

RULES FOR ADOPTION

1. Purpose Statement for HOA's - Said corporation is organized to promote the health, safety and welfare of the residents within the boundaries of Ascenté to own, acquire, build, operate and maintain common areas, trails, and personal properties incident thereto, hereinafter referred to as the "Common Areas", to supplement Washoe County street services; to incur indebtedness; to fix assessments (or charges) to be levied against the property; to enforce any and all covenants, conditions and restrictions, and agreements applicable to the property; to pay taxes, if any, on the Common Areas; and insofar as permitted by law, to implement and enforce any other requirements that, in the opinion of the Board of Directors, shall promote the common benefit and enjoyment of the residents of the properties. It is intended that this corporation be organized and operated to carry out exempt functions as set forth in Section 528 of The Internal Revenue Code. (Emphasis added)

ASCENTE RESIDENTIAL CONSTRUCTION TAX

The homes in Ascenté will yield approximately $225,000 (225 units X $1,000 per unit) in Residential Construction Tax (RCT) or park funds. Each respective final map applicant shall be responsible for constructing the amenities and trails within its respective borders of Ascenté. Each final map applicant may receive a refund of the RCT fees up to 100% of the collected fees based upon qualified costs. Washoe County will collect the RCT fees in accordance with its usual practices, procedures and applicable law. Disbursement shall be made by Washoe County to each respective final map applicant from the collected RCT funds. Reimbursement shall occur after completion of the various program elements with inspection and final approval by Washoe County Parks and Recreation. Each respective final map applicant shall submit a request for reimbursement upon completion and including copies of invoices paid in sufficient detail to identify the purpose of the expenditures. The County shall promptly review the invoices and issue reimbursements with 60 days from the date of the invoice and supporting materials received.

- To qualify for RCT reimbursement, facilities and features must be available to all Washoe County residents.
- At the time of each final map submittal, a breakdown of estimated costs for applicable trails, trailheads, and amenities shall be provided.

MISCELLANEOUS

1. Construction of roadways and other improvements shall be completed in accordance with applicable final map.
2. Whitney Village custom homes may be subject to separate special use permits for exceeding grading thresholds, as required in the Washoe County Development Code. Individual homes must be consistent with these Design Guidelines.
3. All construction sites shall be kept in clean, workmanlike order. Adjacent lots, streets, and common areas shall be kept free of construction materials, waste, and debris.
4. Construction hours of operation shall meet Washoe County Building Department code.
5. Additional signage and traffic control shall be required during construction per Washoe County requirements.
6. Erosion control measures shall be installed and maintained to Washoe County and Nevada State codes prior to commencing any construction. In performing any grading, site improvements, or construction upon the premises, adequate provision shall be made for handling the run-off of surface waters in a manner which will not damage streets or adjoining properties, and at all times, construction shall be conducted in such a manner as to preserve lateral support for adjoining properties and prevent significant adverse impact to adjacent lots.
7. At its sole discretion, the Manager may grant reasonable adjustments and interpretations from the provisions of these design guidelines and requirements to accommodate special requests, innovative designs, or where such change is consistent with the overall character and design. Manager must take into account the potential impacts on the adjacent property owners. All adjustments and interpretations must be in conformance with Washoe County Development Codes, as amended.

8. There shall be no third-party beneficiaries to these Design Guidelines and requirements. Only a Manager or its authorized designee may request an administrative modification to these Design Guidelines in writing to the Director of Community Development. Each final map application submitted to the County shall provide a checklist demonstrating the adherence to each of the above components in the proposed final map.

APPENDIX

2012 INTERNATIONAL WILDLAND URBAN INTERFACE CODE

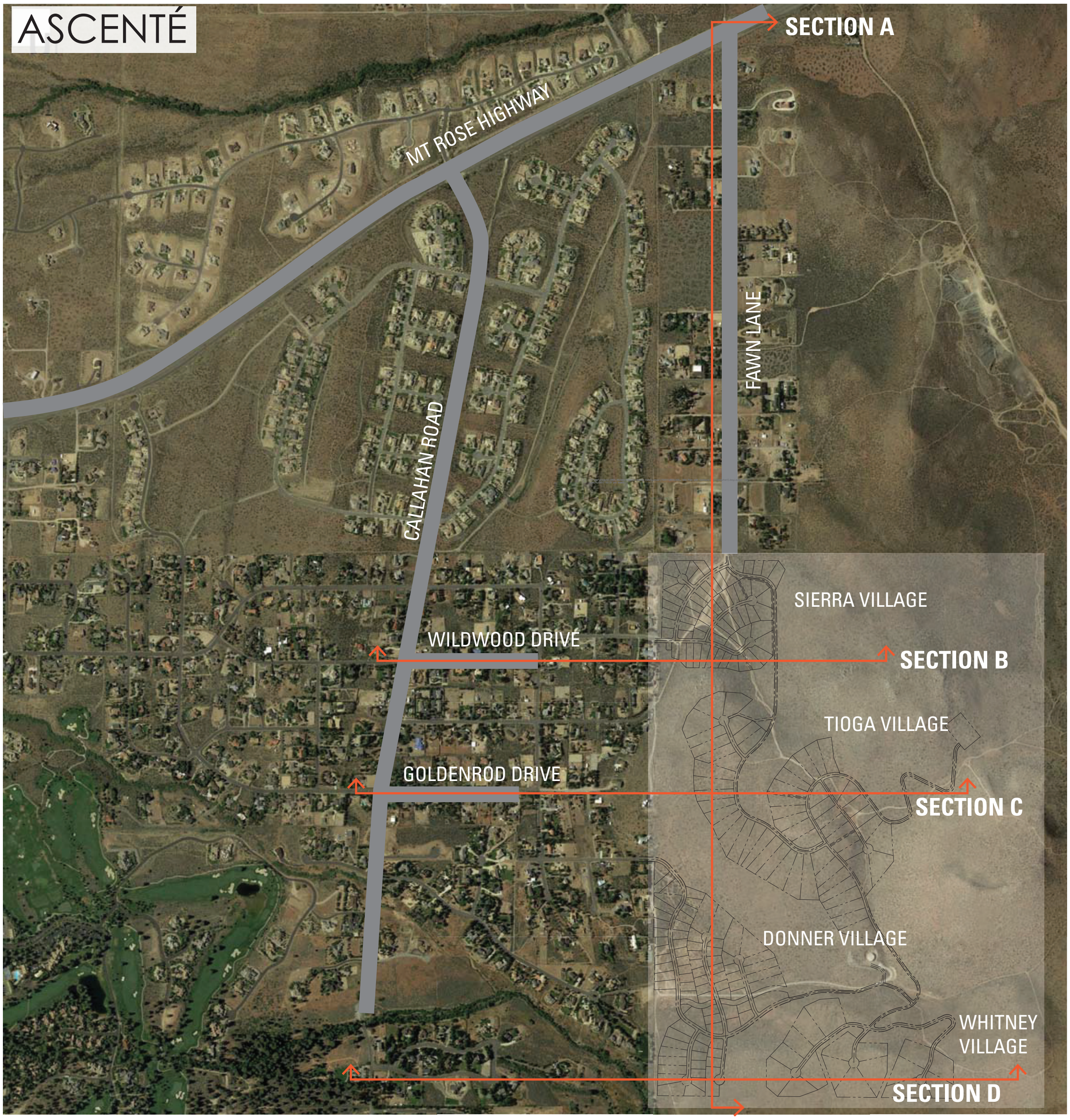
2012 WUI CODE GUIDE (REVISED 11-25-13)

2012 FIRE CODE AMENDMENTS

FIRE ADAPTED COMMUNITIES – WASHOE COUNTY

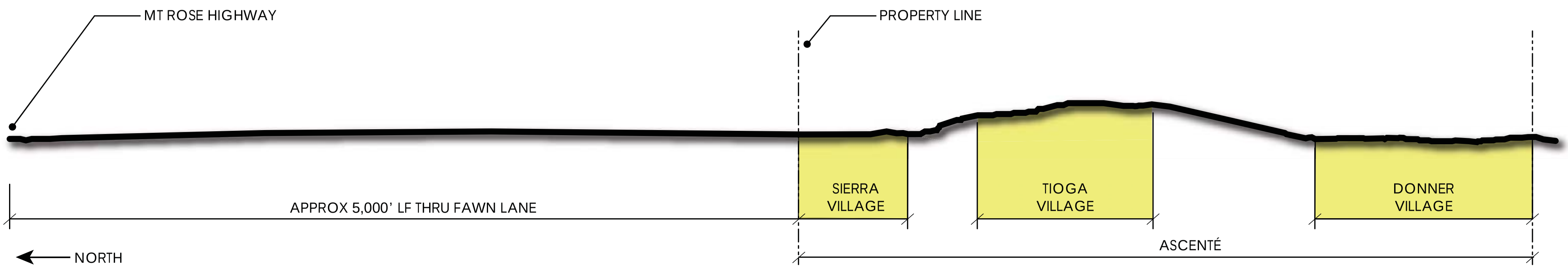
ASCENTÉ REFERENCE MAP

This map provides reference to the locations of the section lines through the proposed villages, along with lot lines, street names and surrounding areas.



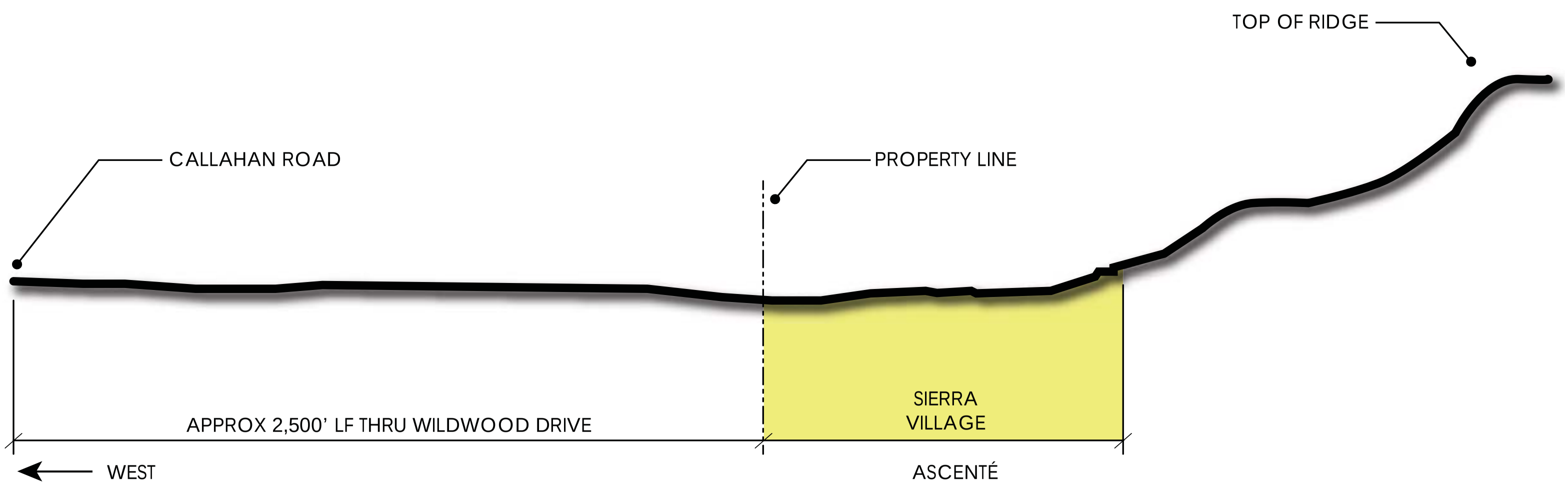
SECTION A - MT ROSE

Section from Mt Rose Highway through Fawn Lane, continuing through the proposed villages on site.



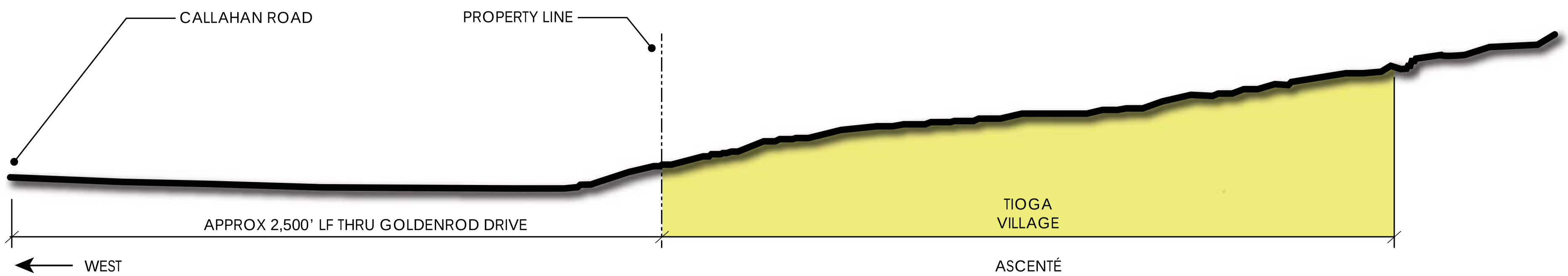
SECTION B - SIERRA VILLAGE

Section from Callahan Drive through Wildwood Drive, continuing through Sierra Village and to the top of ridge.



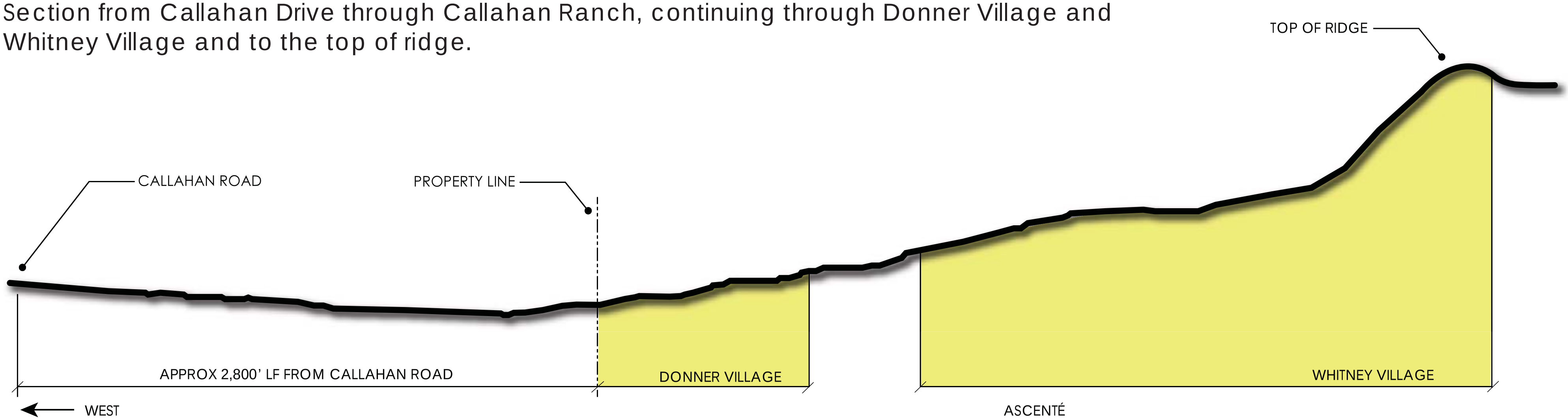
SECTION C - TIOGA VILLAGE

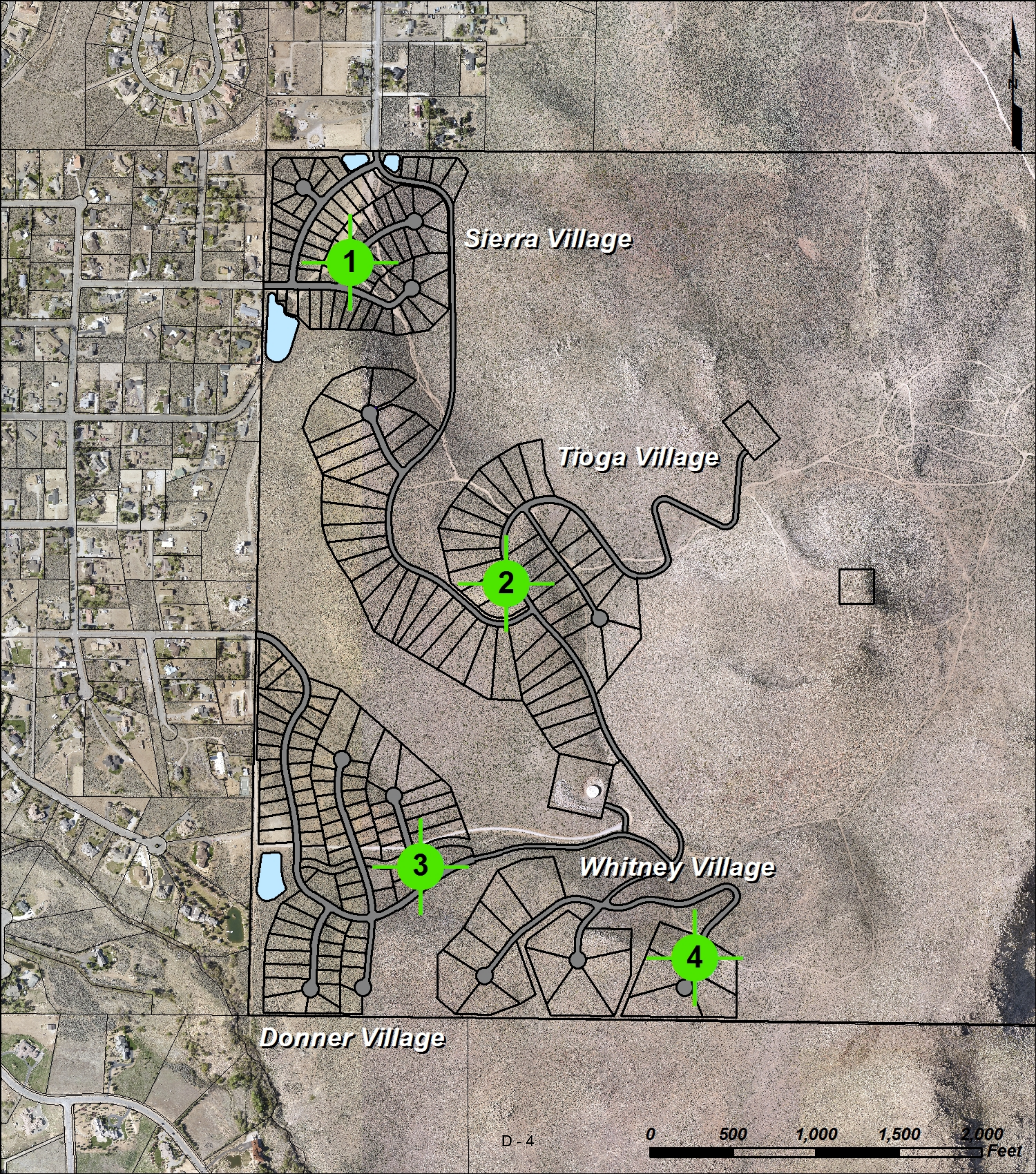
Section from Callahan Drive through Goldenrod Drive, continuing through Tioga Village.



SECTION D - DONNER VILLAGE AND WHITNEY VILLAGE

Section from Callahan Drive through Callahan Ranch, continuing through Donner Village and Whitney Village and to the top of ridge.




N
Sierra Village
Tioga Village
Whitney Village
Donner Village
1
2
3
4
0 500 1,000 1,500 2,000
Feet

1 REFERENCE IMAGES FROM SIERRA VILLAGE

NORTH VIEW

SOUTH VIEW

EAST VIEW

WEST VIEW

2 REFERENCE IMAGES FROM TIOGA VILLAGE

NORTH VIEW

SOUTH VIEW

EAST VIEW

WEST VIEW

3 REFERENCE IMAGES FROM DONNER VILLAGE

NORTH VIEW

SOUTH VIEW

EAST VIEW

WEST VIEW

4 REFERENCE IMAGES FROM WHITNEY VILLAGE

NORTH VIEW

SOUTH VIEW

EAST VIEW

WEST VIEW

CONCEPTUAL DRAINAGE REPORT
for

ASCENTÉ
RENO • NEVADA

Prepared For:
NNV1 Partners, LLC
6151 Lakeside Drive, Suite 1000
Reno, NV 89511

Prepared By:

LUMOS & ASSOCIATES

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9222 Prototype Drive
Reno, NV 89521
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PROFESSIONAL ENGINEER - STATE OF NEVADA
THOMAS W. YOUNG
4/13/2017
CIVIL
No. 13797
Exp 6/30/18

JN 9019.000
April 2017

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Table of Appendices

APPENDIX A

I. INTRODUCTION

A. Site Location

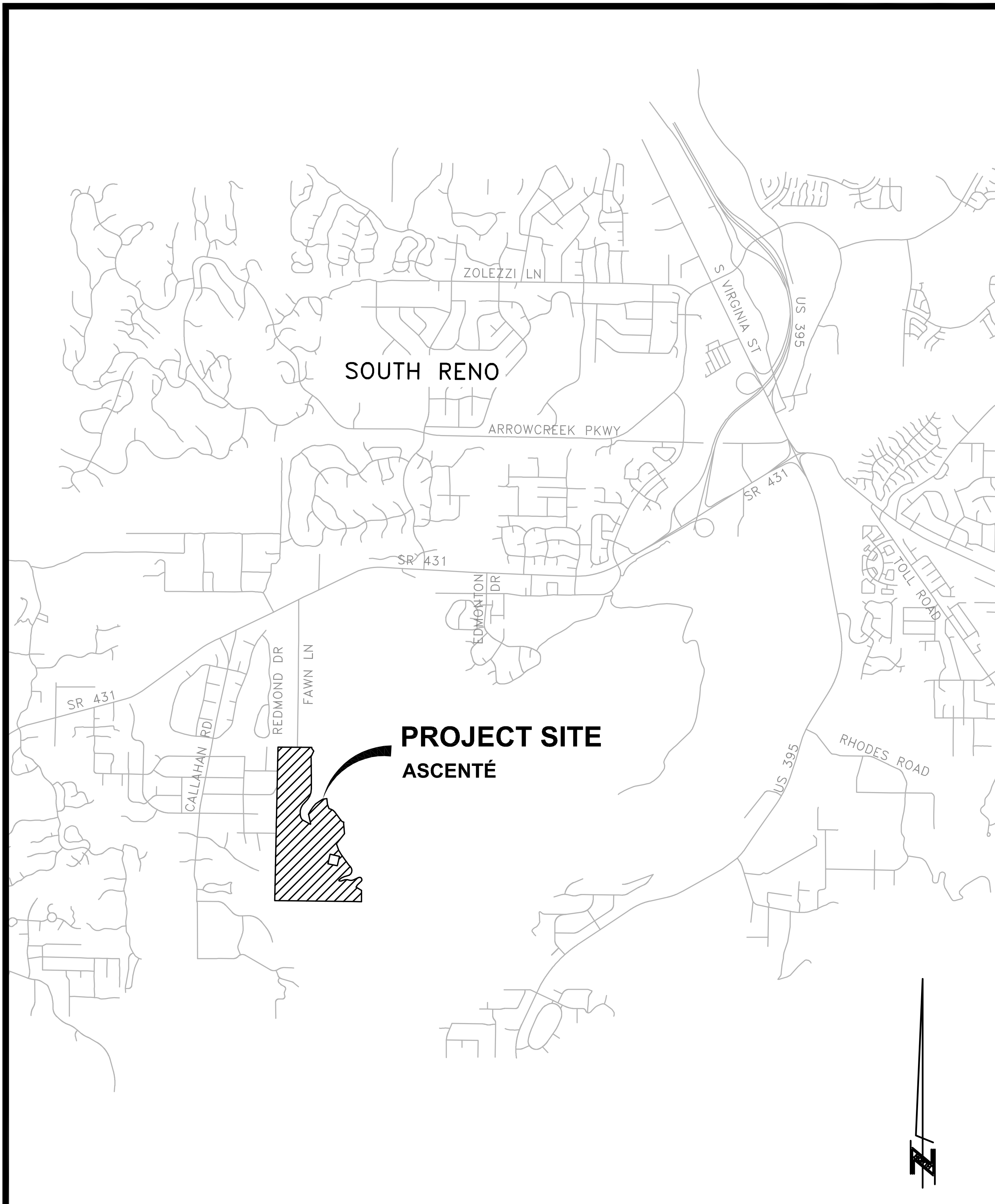
Ascenté residential community is located two miles west of the US395/Mt Rose Highway interchange. The developed site shall be located in the western half of the Washoe County Assessor's Parcel Number parcel 045-252-11 (pending 045-252-14 and 045-252-15). The total area of land within the parcel is comprised of 635 acres and is controlled by NNV1 Partners, LLC.

The site resides within Section 1, T17N, R19E, in Washoe County, Nevada. The site is currently undeveloped with a number of unpaved access roads. The main access road leads to an existing 2.5 acre utility parcel 045-252-10 owned by Truckee Meadows Water Authority (TMWA). TMWA's parcel contains a public water tank. A secondary utility parcel, 045-252-03, consists of one acre and is owned by AT&T Communications of Nevada. A majority of the property is vegetated with sagebrush, with the mountainous peaks slightly more barren. Land bordering the western portion of the site is comprised of privately held, single-family parcels. A portion of existing flows near the southwest corner currently enter a 0.46 acre pond privately owned by parcel 045-471-53. Adjacent to the northwest corner of the parcel resides Mt. Rose Estates community. Land to the north, east, and south of the parcel includes undeveloped and unincorporated Washoe County properties. The natural slope of the southern portion of the site drains towards Galena Creek, adjacent to the southwest corner of the site. For further detail, reference Figure 1 – Location Map.

B. Existing Site Description

The site's mountainous terrain contributes to typically steep slopes of 10-30 percent. The site contains two relatively flat areas (less than five percent) in the northwestern and southwestern regions. The western lower areas are bisected by a rise with a flattened area near the top. Currently, two utility parcels are contained within the site, as depicted in the Existing Drainage Exhibit, located in Appendix A-1.0.

The site is currently undeveloped, attributing to a majority of the surface containing 'Desert Shrub' in 'Good Condition'. Exceptions to the shrub vegetation include north facing slopes, which contain 'Sagebrush with Grass Underlay' in 'Good Condition'. As depicted in Appendix A-1.0, flows are conveyed through the site by a network of natural channels and surface sheet flow. Outlet 1 and Outlet 5 contain a majority of the flows exiting the site. Flows from Outlets 1-5 currently enter the residential community to the west and are directed through an existing network of drainage channels, natural areas and pipes towards Galena Creek. Flows from Outlet 6 and 7 directly enter Galena Creek at the southwest corner of the lot.



LUMOS & ASSOCIATES
9222 PROTOTYPE DRIVE
RENO, NEVADA 89521
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NNV1 Partners, LLC

ASCENTÉ
VICINITY MAP

WASHOE COUNTY | NEVADA

Date:	4/10/2017
Scale:	NTS
Job No:	9019.000
FIGURE	1

C. Proposed Project Description

The proposed Ascenté community, depicted in Appendix A-2.0, will consist of 225 single-family and on approximately 225 acres within the Steamboat Hills region of Reno, Nevada. The community will feature three villages, including a northern site, upper site and southern site. Lots range between 0.32 acres to 1.29 acres. Attributes of the proposed design are depicted in the Ascenté Tentative Map documents.

D. Previous Studies

Existing FEMA FIRM Panel 32031C3331G, dated March 16, 2009, was utilized in the study. The project site is located within the unshaded "Zone X," representing an area outside of the 0.2% annual chance floodplain. Land bordering the southwest corner of the development (Galena Creek) is within the shaded "Zone AO," signifying a relative floodplain depth of 1-3 ft. The complete FEMA FIRM panel is included in Appendix A-3.0.

The Hydrology Report for the Estates at Mt. Rose Phase 2 was obtained from Summit Engineering as part of the backup material for offsite analysis. In addition, the Flood Control Master Plan and Addendum for Mt. Rose Estates was obtained from Nimbus Engineers. The studies were the basis of determining offsite contributions from the northwest corner. Based on the previous studies, a retention pond located at the northwest corner of Ascenté prevents offsite flow from entering the project site. The retention pond has been reported by Washoe County Engineers to have overflowed in the past. The County has since constructed infiltration improvements. Heavy rainfall in 2017 resulted in the retention basin not overflowing with the County improvements.

II. HISTORIC DRAINAGE SYSTEM

A. Major Basins and Offsite Contributions

Lumos & Associates created an existing condition model with the U.S. Army Corps of Engineers (USACE) Hydrologic Engineering Center's Hydrologic Modeling System (HEC-HMS), version 4.2 (Appendix A-4.0). The HEC-HMS model delineated 14 existing sub-basins within the limits of the proposed development, based on Washoe County two-foot topography. The model incorporated flows from off-site regions to the north, as depicted by Area 1, 2 and 3 in the Appendix A-1.0. Based on hydrologic analysis, performed by Nimbus Engineers (2003), a retention pond at the southeast corner of Mount Rose Estates was determined to contain a storm volume of 3 ac-ft for the 100 year event, and provide a maximum storage capacity of 5.88 ac-ft. The retention pond prevents flows from entering the northwest corner of the site.

Runoff coefficients were based on Truckee Meadows Drainage Manual's (TMRDM) Runoff Curve Numbers for Arid and Semiarid Rangelands. The hydrologic soil groups consisted of mainly D soils with C soils intermixed. Initial values selected for southwest-facing mountains were 'Sagebrush with Grass Understory' in Fair Condition. Northeast mountain faces appeared to include were classified as 'Desert Shrub' in 'Good Condition'. The composite curve numbers for the existing are tabulated in Appendix A-7.0.

The Time of Concentration and Lag Time were computed based on the TMRDM, with corresponding methodology highlighted in Section 3A of the report. Values for the existing condition can be found in Appendix A-6.0.

Seven outlet points were determined based on the analysis. Outlet 1 was projected to exit the site to the west onto Cedarwood Drive, and enter a network of existing channels, natural areas and pipes within the westerly adjacent community. Outlets 2 and 3 deliver minimal sheet flow onto the existing residences to the west, and eventually enter the drainage facilities previously described. Outlet 4 projects flow onto E. Shawna Lane before entering the existing facilities to the south. All existing drainage facilities within the adjacent community to the west convey flows to Galena Creek in the south. Flows from Area's 9-13 enter the 0.46 acre private pond in parcel 045-471-53, as indicated on the Existing Condition Map (Appendix A-1.0). Outlets 6 and 7 at the low points of the site direct flows southerly into the Galena Creek.

B. Sub-basin and Site Drainage

Storm flows for the 5-year and 100-year storm events were based upon the existing groundcover, rainfall intensity and time of concentration (Appendix A-5.0, A-6.0 and A-7.1). The HEC-HMS model was used to determine existing peak flows entering the community to the west. Drainage patterns for the existing conditions depicted all flows eventually terminating in Galena Creek.

C. Calibration Analysis

A calibration analysis was performed to verify accurate stormwater flows throughout the site. Data from a January 8th 2017 storm event was obtained from Western Regional Climate Center for a rain gauge located at the intersection of Callahan Road and Napoleon Drive. The peak 24-hour rainfall spanned from 3:00am January 8th to 2:00am January 9th and resulted in a maximum rainfall of 4.03 inches, as depicted in Table 1. As a point of comparison, the NOAA data set for a 100-yr, 24-hr event yielded 4.07 in.

Table 1: Galena Nevada Station Intensity Data (January 8, 2017)

Time	Depth [in]
5min	0.002
15min	0.005
1hr	0.020
2hr	0.100
3hr	0.150
6hr	0.560
12hr	2.150
24hr	4.030

Following the rainfall event, a high water mark was observed within a reach along the northwest portion of the site (Appendix A-9.0). The reach was selected as the gauge channel, and measured as a rectangular 5.15 ft. x 1 ft. section. The gauge slope was determined at 2.6%. The SCS method was selected for estimating the Manning's n value, based on the channel material, surface irregularities, channel cross-section, obstructions, vegetation, flow conditions and meandering (Chow 1959). Equation 1 resulted in a value of 0.045.

Eqn. 1:

$$= (n_0 + n_1 + n_3 + n_4)m$$

$$n = (.02 + 0 + 0 + .025 + 0)1 = 0.045$$

where
n_0= basic value for a straight, uniform, smooth channel
n_1= correction for surface irregularities
n_2= variation in channel shape and cross-section
n_3= accounts for channel obstructions
n_4= vegetation and flow conditions
m= channel meandering

Flow through the gauge reach was computed from Manning's Equation (Appendix A-9.1). The gauge flow resulted in 23.8 cfs.

Existing basins contributing to the reach included A1, A2 and A4. The original CN values resulted in a total flow of 39.1 cfs. Based on Truckee Meadows Drainage Manual's Runoff Curve Numbers for Arid and Semiarid Rangelands, 'Sagebrush with Grass Understory' in 'Good Condition' matched closely with the CN reduction for soils of C and D classifications. Calibrated curve numbers were computed based on the new cover selection. The calibrated flows equated to 26.0 cfs through the reach. The calibrated flow was accepted as a conservative approximation. Data from the calibration analysis is depicted in Appendix A-9.2.

Table 2: Calibrated Flows

$Q_{\text{guage reach}}$	=	23.8 cfs
$Q_{\text{observed, ex. CN}}$	=	39.1 cfs
$Q_{\text{calibrated}}$	=	26.0 cfs

Note: Flow information based on observed Galena Station data from January 8, 2017.

III. PROPOSED DRAINAGE SYSTEM

A. Criteria

According to the drainage guidelines for the Truckee Meadows Regional Drainage Manual (TMRDM), the following regulations apply specifically to Ascenté Community Development:

- The Soil Conservation Service, U.S. Department of Agriculture (SCS) Unit Hydrograph method was selected with use of HEC-HMS Flood Hydrograph Package (Section 701).
- Design storm intensities for the 5-year and 100-year storm events were chosen based on the time of concentration, T_c. The T_c was evaluated for all watersheds using methodology for total area less than one square mile.
- For the Washoe County area, "the minimum T_c for urbanized paved areas shall be 5 minutes and 10 minutes for vegetated landscaped areas" (Section 702.1).
- For the Washoe County area, the SCS Curve Number method is recommended (Section 703.1).
- The rainfall time-intensity-frequency curves used are assumed identical throughout the zone and based on the point rainfall at the centroid of the entire project site. Reference Appendix A-5.0 for selected longitude and latitude.

The proposed drainage condition, depicted in Appendix A-2.0, contains subbasin areas, 5- and 100-year peak flow data at critical locations, and offsite 5- and 100-year peak flows at points which enter the proposed development (from A1, A2 and A3).

TMRDM's ground cover and land use type coefficients were used to evaluate peak flows generated from subbasins and reaches. The proposed subbasins used composite CN values based on the land use type, as organized in Appendix A-7.1. Proposed subbasins which maintained the predevelopment surface characteristics used the same CN values from the existing analysis. Manning's Roughness Coefficients were applied to the proposed representative channels based on desired coverage. The representative channel dimensions and land coefficients are displayed in Appendix A-4.2.

Rainfall intensity was obtained from National Oceanic and Atmospheric Administration (NOAA) Atlas 14. The rainfall intensity used in the Hydrology Model was determined by obtaining the point rainfall at the centroid of the entire project model for the case of a 5-year, 24-hour and 100-year, 24-hour storm event. The latitude and longitude of the point was used as the input value to NOAA's data set for the intensity or total rainfall at that point. The selected NOAA data for the study is found in Appendix A-5.0.

Time of concentration (T_c) computations, summarized in Appendix A-6.1, were used as a basis of evaluating subbasins in the proposed condition. Reach routing was performed utilizing the

Muskingum-Cunge methodology. The proposed reach data is tabulated in Appendix A-6.2. Calculations for the time of concentration, T_c, and initial abstraction are tabulated in Appendix A-6.1. All HEC-HMS input values for the proposed condition are reflected in Appendix A-4.4.

The HEC-HMS model was run with a 1-minute unit duration. Section 705.4 of the TMRDM states "For the Washoe County area the typical unit storm duration should be 5 minutes unless conditions warrant otherwise." All of the subbasins were determined to have less than a 17 minute lag time that was required for using a 5 minute unit time.

Topographic information used for the existing condition was based on 2-ft contour mapping obtained from Washoe County. The proposed concept was based upon a concept grading by Lumos and Associates, dated April, 2017.

B. Runoff and Other Contributions

Historic storm flows from the eastern mountains move through a combination of natural reaches and natural areas to the adjacent community to the west. Flows are then conveyed through existing drainage facilities towards Galena Creek, in the south. Appendix A-1.0 displays the time of concentration paths, reach paths and major and minor storm flows calculated within the HEC-HMS model (Appendix A-4.0).

The Ascenté residential community includes three off-site watersheds and 20 on-site watersheds. Reach routing of existing and developed flows occurs through a network of swales, streets and pipes. The HEC-HMS model evaluated drainage channels based on the equivalent cross sections, tabulated in Appendix A-6.2 and illustrated in Appendix A-4.2. Flows are directed towards one of two main basins. The North Basin 3 outlets to Cedarwood Drive while the South Basin exits directly into Galena Creek. In comparison to the 100-year existing condition, the peak flow in the north decreases by 65.8 cfs as a result of on-site detention. Flows directed to the south enter the South Basin. The South Basin reduces outlet flows by 49.7 cfs. Swales, storm piping and storm structures are depicted in the Ascenté Tentative Map's Preliminary Grading Plan and Preliminary Site Plan. The final design shall feature piping structures for the community properly sized to convey 5-year and 100-year storm flows in accordance with the TMRDM.

C. Detention System

To accommodate developed peak flow caused by the Ascenté community, the design features four detention basins to maintain the pre-development condition. Elevation-storage-area functions were used to define all detention basins within the proposed HEC-HMS model. Data for the input values is depicted in Appendix A-8.0 and outlet structures are indicated in Appendix A-8.1. Based on the hydrologic calculations, characteristics of the proposed basins are detailed below:

North Basin 1 and North Basin 2 detain flows within the proposed community and discharge overflow into North Basin 3. North Basin 1 provides 0.93 acre-ft of storage while North Basin 2 provides 3.96 acre-ft (Appendix A-8.0). Outlet structures for minor and major events are detailed in Appendix A-8.1. Allowable and observed inflow and outflow data for the basins are summarized in Appendix A-8.1.

North Basin 3 features 8.91 acre-feet of maximum storage and outlets directly into Cedarwood Drive. Flows conveyed to the basin result from areas 1-11. The basin features an outlet structure with orifices for minor flow events and a combination orifice-weir outlet for major storm events, as depicted in Appendix A-8.2. The outlet structures from North Basin 3 discharge 3.9 cfs and 58.9 cfs of peak flow in the minor and major storm events, respectively, to Cedarwood Drive. The existing peak flow rate is 4.9 and 124.6 cfs for minor and major events, respectively, at the location. In the major storm event, the basin maintains 1.5 ft. of freeboard. As a result, the basin minimizes major event flows onto Cedarwood Drive by 65.8 cfs. This reduction in runoff from the existing condition is important due to the limited drainage improvements and poorly placed structures downstream from the Ascenté community, along Cedarwood Drive, Cherrywood Drive, Shawna Lane and Cross Creek Lane. The drainage route covers private property and is unavailable for improvement without the individual property owner's approval. In many instances, the existing homes/improvements are constructed within the natural drainage area with minimal or non-existent improvements to divert runoff around the homes/improvements.

South Basin has a capacity of 6.51 acre-ft of storage. Outlet flows from the South Basin combine with Area 19 and discharge into Galena Creek via a rip-rap ditch. Inflow to the basin results from area's 11 through 20, with the exception of Area 19. The outlet structure is similar to that of North Basin 3, providing orifice outlets for low flow events, and a combined orifice and weir outlet for major events. The South Basin maintains 1 ft. of freeboard. The South Basin discharges 112.8 cfs peak flow to Galena Creek. The existing condition results in a discharge of 162.5 cfs into Galena Creek and the private pond to the west (displayed in Appendix A-2.0). A 40 ft. easement for the property owner shall be in place for the rip-rap ditches leading towards Galena Creek, as depicted in the Ascenté Tentative Map documents. As a result, the basin minimizes major event flows onto Galena Creek by 49.7 cfs and prevents drainage from entering the adjacent community.

As a result of the detention basins, overall developed peak flow is reduced by 115.5 cfs. The basins shall allow storage for the community without changing the existing peak flow for the major and minor storm events.

D. Compliance with FEMA

Historical flooding conditions were analyzed based on FEMA FIRM Panel 32031C3331G, dated March 16, 2009 (Appendix A-3.0). The existing condition map depicted no flooding occurring on the project site. Flooding in the near vicinity occurs in the property adjacent to the southwest corner. At this location, a depth of 1 to 3 ft results from Galena Creek (see Appendix A-1.0 and A2.0 for the location). The defined flood plain exists outside of the project boundary and will not impact the design. Drainage improvements will maintain the existing peak flow entering the Galena Creek.

V. CONCLUSIONS

A. Benefits

The Ascenté community development as proposed will allow for the construction of a community of residential homes, pedestrian facilities, trails, roadways and open space. Drainage improvements to the site shall convey anticipated flows throughout the community via a network of drainage swales, drop structures, culverts and detention basins. The plan will provide drainage and storage system for the 5-year and 100-year storm events exceeding the minimum required by County Code to ensure the safety and well-being of current and future surrounding residents.

B. Adverse Effects with Solutions

The design and hydrologic studies of the proposed Ascenté community have been conducted in compliance with the drainage guidelines for the TMRDM. Adverse effects to the drainage system due to increased storm runoff with the construction of this proposed development have been addressed by the implementation of over-sized detention basins. The design significantly reduces peak flows entering the adjacent community and ultimately reduces the peak flow entering Galena Creek.

C. Low Impact Development (LID)

Groundwater recharge areas shall be incorporated into the site planning and enhanced whenever possible. Low Impact Development (LID) standards shall be incorporated to enhance groundwater recharge and manage stormwater runoff. For the purpose of this report, LID design has not been applied to calculations, providing a conservative design.

VI. REFERENCES

- Federal Emergency Management Agency (FEMA), FIRM panel 32031C3331G, March, 2009.
- Nimbus Engineers, Addendum to the Flood Control Master Plan Mt. Rose Estates Phase 2, Nevada, July, 2004.
- Nimbus Engineers, Flood Control Master Plan Mt. Rose Estates, Nevada, October, 2003.
- Summit Engineering Corporation, Hydrology Report for the Estates at Mt. Rose Phase 2, Nevada, May, 2005.
- U.S. Department of Commerce, National Oceanic and Atmospheric Administration NOAA Atlas 14 Precipitation-Frequency Atlas of the Western United States: Semiarid Southwest, Volume 1, Version 5.0, Silver Spring, Maryland, 2011.
- U.S. Department of the Army, Corps of Engineers, Hydrologic Engineering Center, HEC-HMS, Hydrologic Modeling System, Version 4.2.
- Washoe County, Truckee Meadows Regional Drainage Manual, April 30, 2009.

APPENDIX A
DRAINAGE REPORT SUPPORTING DATA

APPENDIX A-1.0

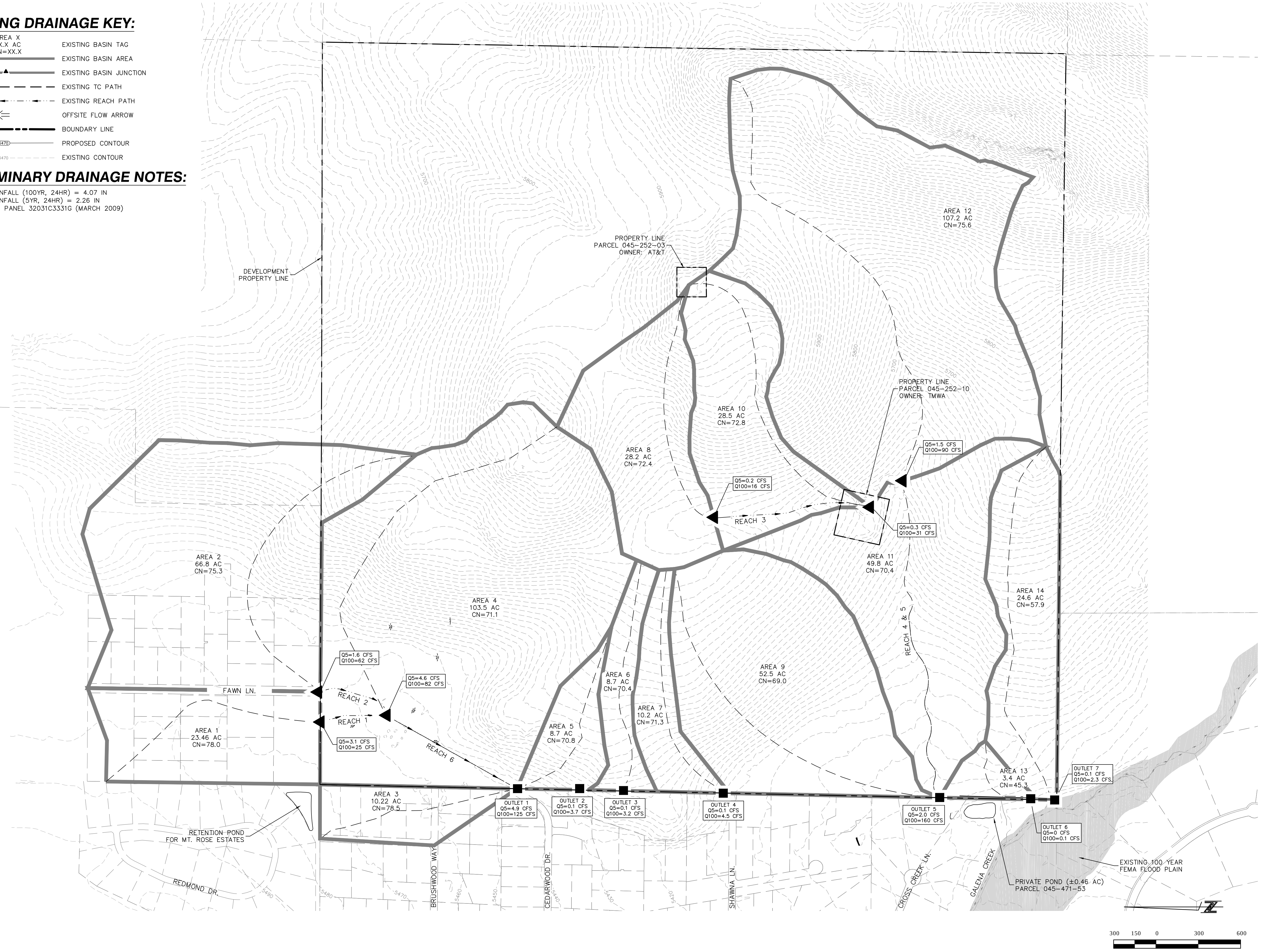
EXISTING DRAINAGE EXHIBIT

EXISTING DRAINAGE KEY:

AREA X XX.X AC CN=XX.X	EXISTING BASIN TAG
	EXISTING BASIN AREA
	EXISTING BASIN JUNCTION
	EXISTING TC PATH
	EXISTING REACH PATH
	OFFSITE FLOW ARROW
	BOUNDARY LINE
5470	PROPOSED CONTOUR
5470	EXISTING CONTOUR

PRELIMINARY DRAINAGE NOTES:

1. TOTAL RAINFALL (100YR, 24HR) = 4.07 IN
2. TOTAL RAINFALL (5YR, 24HR) = 2.26 IN
3. FEMA FIRM PANEL 32031C3331G (MARCH 2009)



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NNV1 PARTNERS, LLC

ASCENTÉ
OVERALL EXISTING SITE CONCEPTUAL DRAINAGE PLAN

RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

HYD-1

DATE:	4/10/2017
DRAWN BY:	KMK
DESIGNED BY:	KMK
CHECKED BY:	TY
JOB NO.:	9019.000

APPENDIX A-2.0

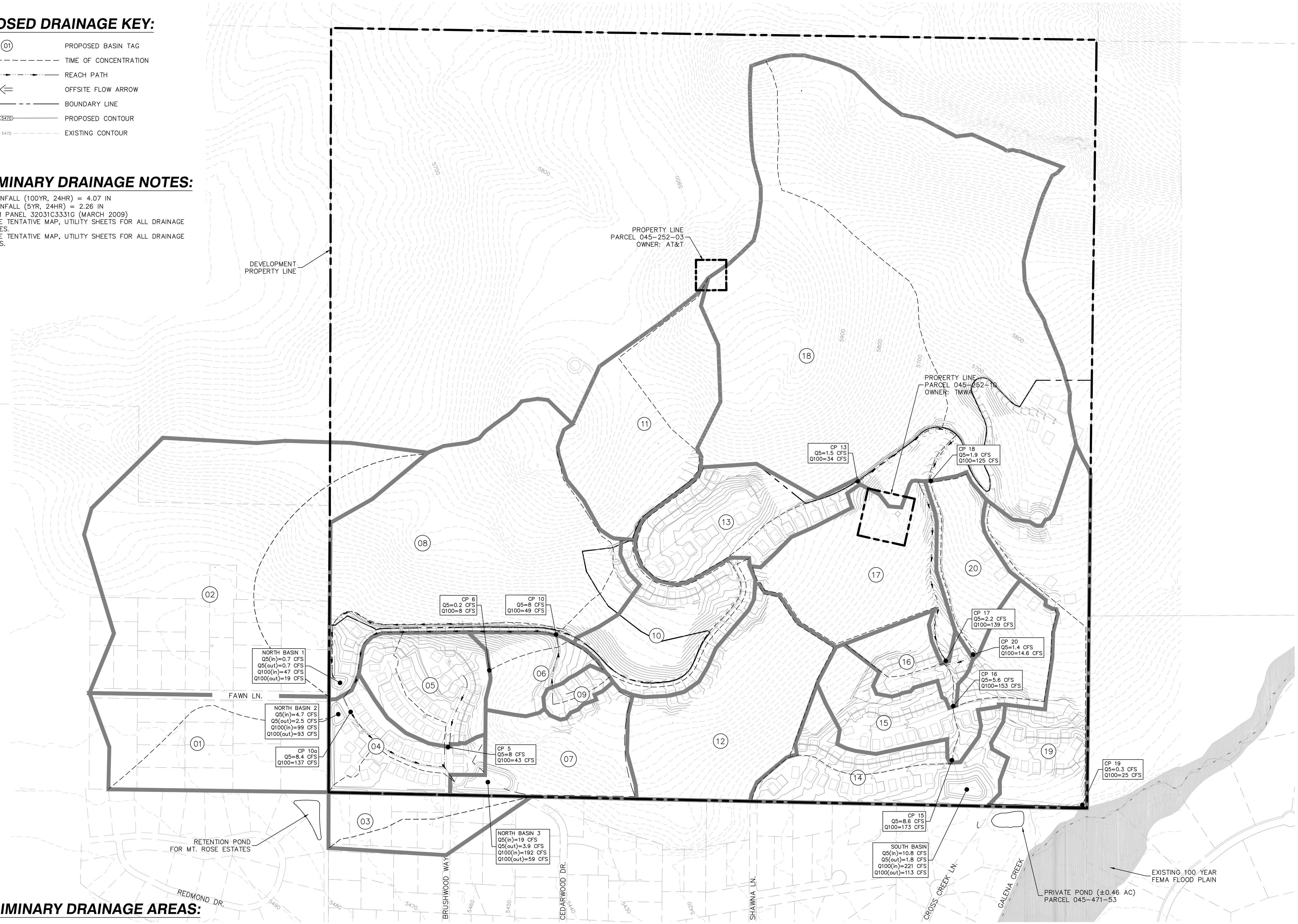
PROPOSED DRAINAGE EXHIBIT

PROPOSED DRAINAGE KEY:

(01)	PROPOSED BASIN TAG
- - - - -	TIME OF CONCENTRATION
—·—·—·—	REACH PATH
⇐	OFFSITE FLOW ARROW
—— - — - —	BOUNDARY LINE
5470	PROPOSED CONTOUR
5470	EXISTING CONTOUR

PRELIMINARY DRAINAGE NOTES:

1. TOTAL RAINFALL (100YR, 24HR) = 4.07 IN
2. TOTAL RAINFALL (5YR, 24HR) = 2.26 IN
3. FEMA FIRM PANEL 32031C3331G (MARCH 2009)
4. REFERENCE TENTATIVE MAP, UTILITY SHEETS FOR ALL DRAINAGE STRUCTURES.
5. REFERENCE TENTATIVE MAP, UTILITY SHEETS FOR ALL DRAINAGE EASEMENTS.



PRELIMINARY DRAINAGE AREAS:

01	23.5 ACRES, CN=78.0	06	7.2 ACRES, CN=66.5	11	26.2 ACRES, CN=59.8	16	6.6 ACRES, CN=84.3		
02	66.8 ACRES, CN=75.3	07	15.1 ACRES, CN=68.4	12	27.9 ACRES, CN=68.3	17	22.6 ACRES, CN=64.1		
03	10.2 ACRES, CN=78.5	08	55.8 ACRES, CN=64.1	13	27.9 ACRES, CN=68.3	18	134.9 ACRES, CN=63.1		
04	11.5 ACRES, CN=81.0	09	2.2 ACRES, CN=82.6	14	16.5 ACRES, CN=70.9	19	23.6 ACRES, CN=64.5		
05	13.0 ACRES, CN=82.9	10	16.2 ACRES, CN=82.7	15	19.8 ACRES, CN=73.0	20	9.8 ACRES, CN=72.0		

300 150 0 300 600

SCALE: 1" = 300'

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NNV1 PARTNERS, LLC

ASCENTÉ
OVERALL PROPOSED SITE
CONCEPTUAL DRAINAGE PLAN

RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

HYD-2

DATE:	4/10/2017
DRAWN BY:	KMK
DESIGNED BY:	KMK
CHECKED BY:	TY/MB
JOB NO.:	9019.000

APPENDIX A-3.0

FEMA FIRM PANEL

NOTES TO USERS

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

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

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

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

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

The **projection** used in the preparation of this map was State Plane Nevada West FIPS Zone 2703. The **horizontal datum** was NAD 83, GRS80. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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

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

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

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

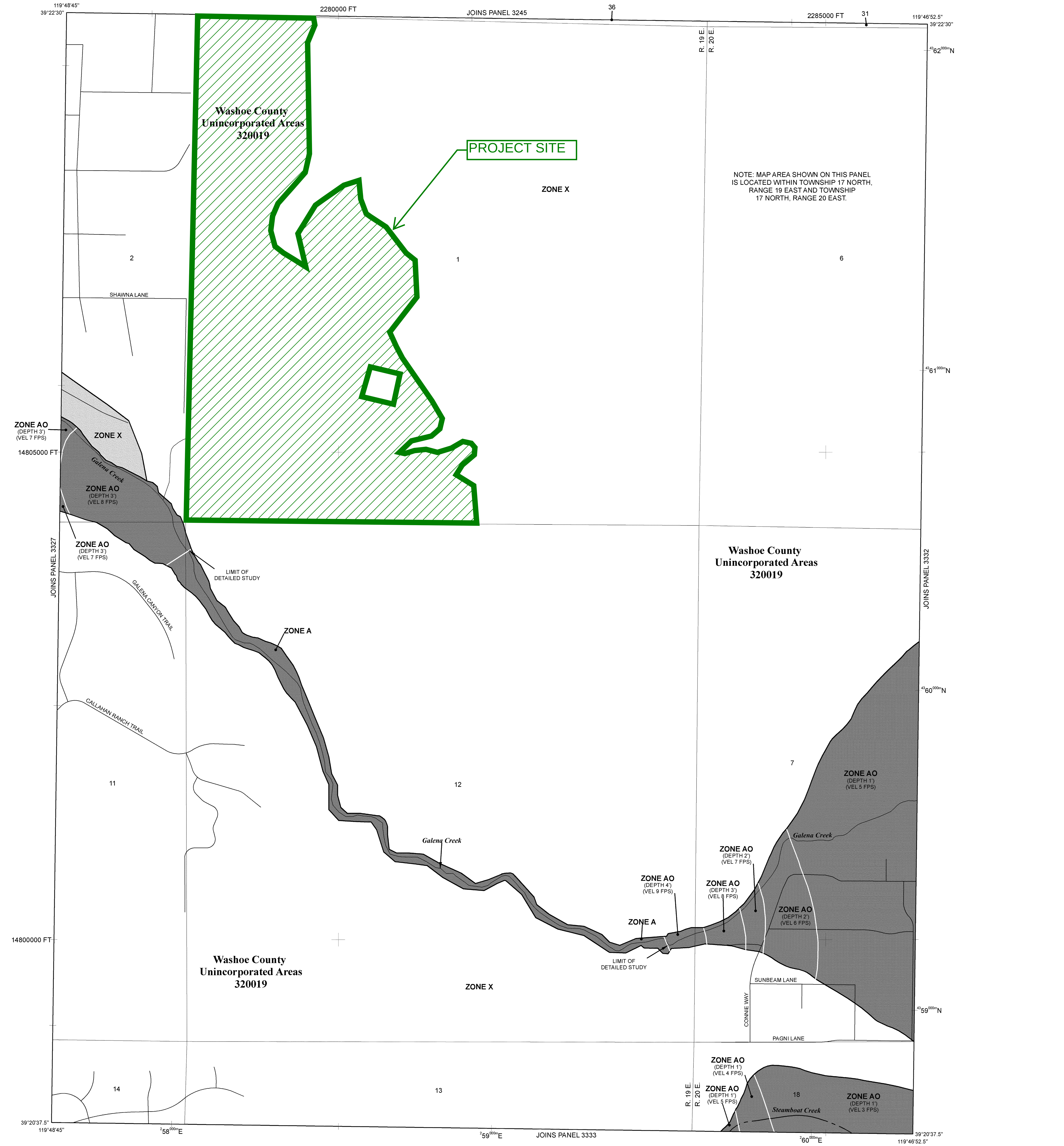
This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to confirm to these new stream channel configurations. As a result,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

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

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

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

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



LEGEND

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

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

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

FLOODWAY AREAS IN ZONE AE

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

OTHER FLOOD AREAS

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

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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

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

* Referenced to the North American Vertical Datum of 1988

A — A	Cross section Line
23 - - - 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
$^{24}76^{000m}$N	1000-meter Universal Transverse Mercator grid values, zone 11
600000 FT	5000-foot grid ticks: Nevada State Plane coordinate system, West zone (FIPSZONE 2703), Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
●M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

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

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
June 6, 2001 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to add roads and road names, and to incorporate previously issued Letters of Map Revision.
March 16, 2009 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

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

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

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 3331G

FIRM
FLOOD INSURANCE RATE MAP

WASHOE COUNTY, NEVADA AND INCORPORATED AREAS

PANEL 3331 OF 3475

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
WASHOE COUNTY	320019	3331	G

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

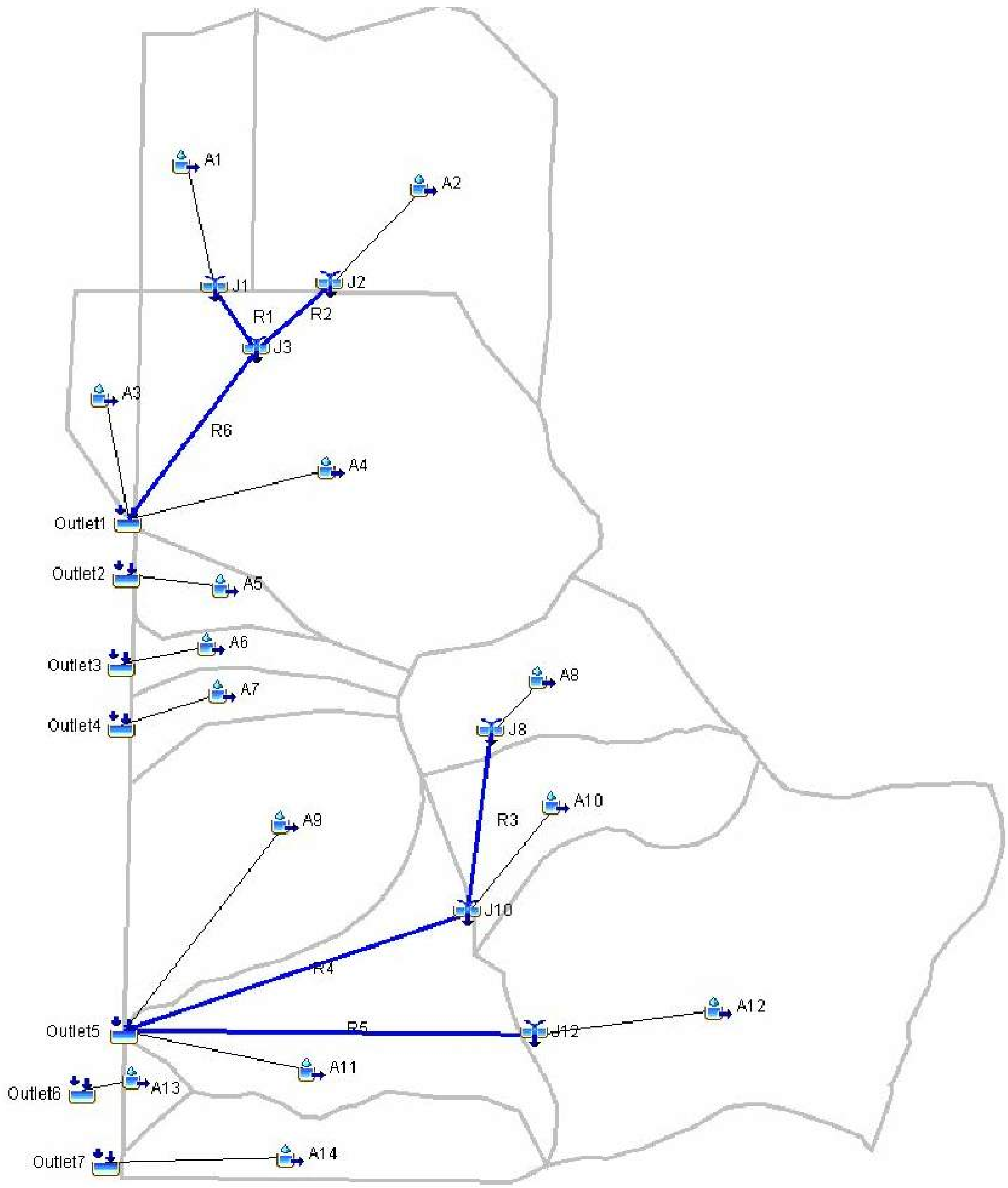
MAP NUMBER 32031C3331G

MAP REVISED MARCH 16, 2009

Federal Emergency Management Agency

APPENDIX A-4.0

HEC-HMS EXISTING MODEL



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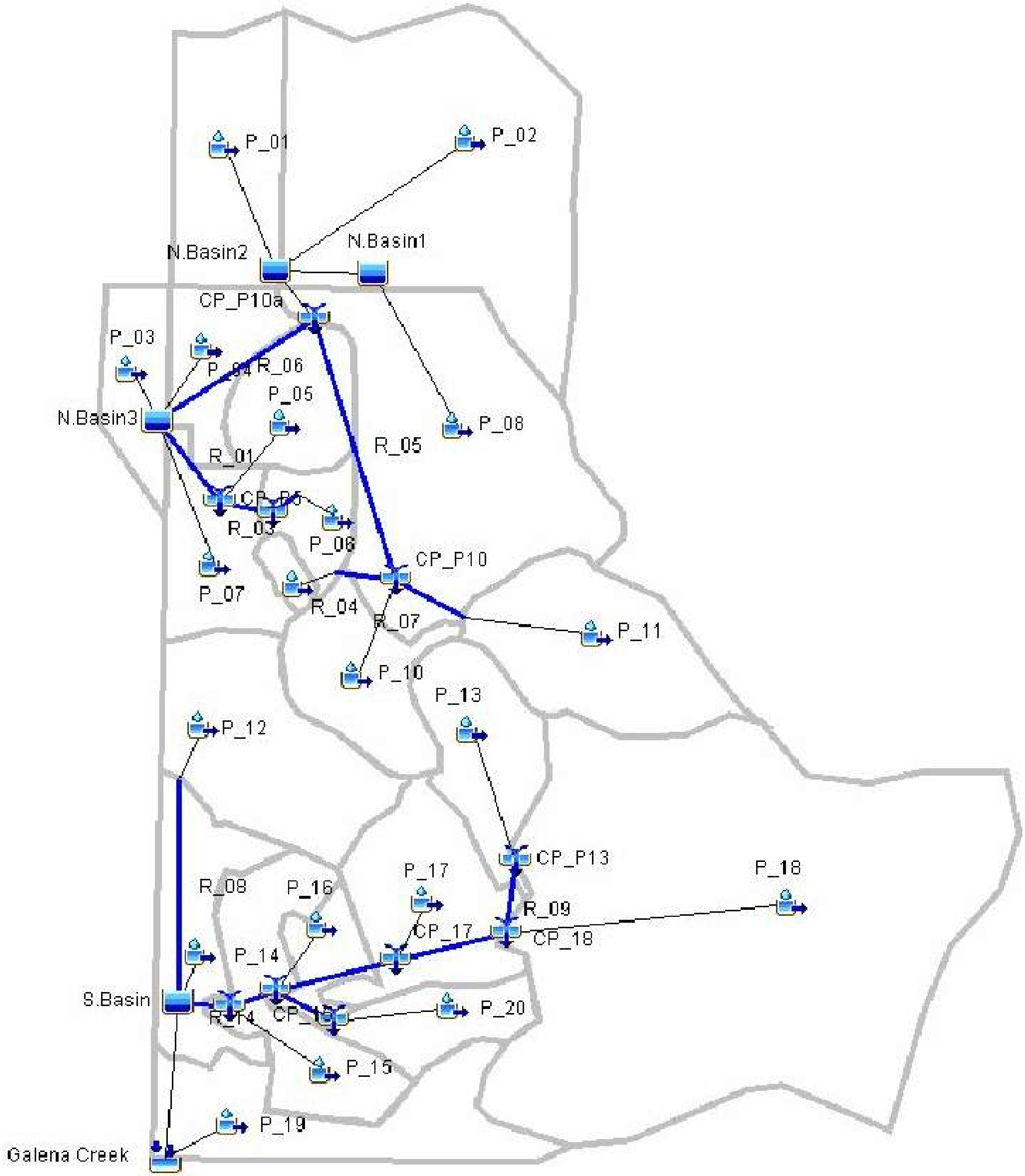
ASCENTÉ
HEC-HMS EXISTING MODEL

WASHOE COUNTY NEVADA

Date:	4/10/2017
Scale:	NTS
Job No:	9019.000
	A-4.0

APPENDIX A-4.1

HEC-HMS PROPOSED MODEL



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ASCENTÉ

HEC-HMS PROPOSED MODEL

WASHOE COUNTY NEVADA

Date: 4/10/2017

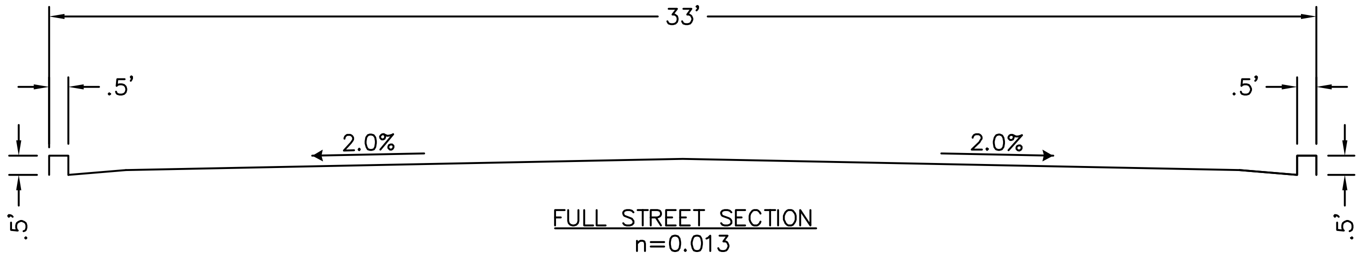
Scale: NTS

Job No: 9019.000

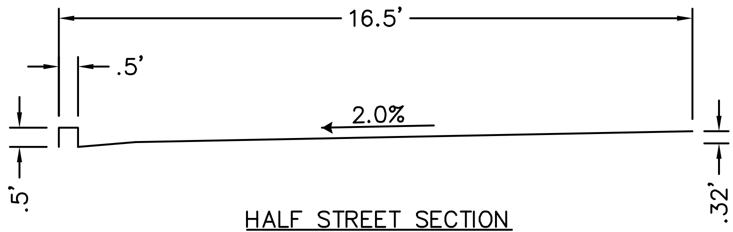
A-4.1

APPENDIX A-4.2

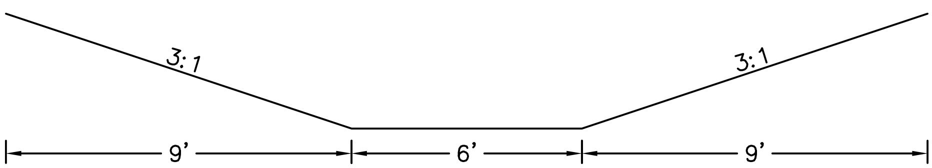
HEC-HMS REPRESENTATIVE REACH SECTIONS



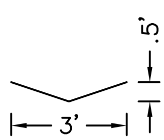
FULL STREET SECTION
n=0.013
SCALE 1"=5'



HALF STREET SECTION
n=0.013
SCALE 1"=5'



MAIN CHANNEL SECTION
n=0.05
SCALE 1"=5'



CONCRETE SWALE SECTION
n=0.013
SCALE 1"=5'

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ASCENTÉ
HEC-HMS REPRESENTATIVE SECTIONS

WASHOE COUNTY NEVADA

Date:	4/10/2017
Scale:	NTS
Job No:	9019.000
	A-4.2

APPENDIX A-4.3

EXISTING HEC-HMS INPUT DATA

```
Basin: Existing
     Last Modified Date: 8 August 2016
     Last Modified Time: 16:57:54
     Version: 4.2
     Filepath Separator: \
     Unit System: English
     Missing Flow To Zero: No
     Enable Flow Ratio: No
     Compute Local Flow At Junctions: No

     Enable Sediment Routing: No

     Enable Quality Routing: No
End:

Subbasin: A8
     Last Modified Date: 29 March 2017
     Last Modified Time: 22:09:46
     Canvas X: 2281319.0099740494
     Canvas Y: 1.4810146419774028E7
     Area: 0.044
     Downstream: J8

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 59.4
     Initial Abstraction: 1.37

     Transform: SCS
     Lag: 8.3
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Junction: J8
     Last Modified Date: 12 April 2017
     Last Modified Time: 19:14:55
     Canvas X: 2281067.717794887
     Canvas Y: 1.4809877374403391E7
     Downstream: R3
End:

Reach: R3
```

```
     Last Modified Date: 12 April 2017
     Last Modified Time: 19:14:55
     Canvas X: 2280920.222674139
     Canvas Y: 1.4808613766756589E7
     From Canvas X: 2281067.717794887
     From Canvas Y: 1.4809877374403391E7
     Downstream: J10

     Route: Muskingum Cunge
     Channel: Trapezoid
     Length: 1134
     Energy Slope: 0.11
     Mannings n: 0.05
     Bottom Width: 25
     Side Slope: 5
     Use Variable Time Step: No
     Channel Loss: None
End:

Subbasin: A10
     Last Modified Date: 29 March 2017
     Last Modified Time: 22:10:15
     Canvas X: 2281291.6211112603
     Canvas Y: 1.4809469108611777E7
     Area: 0.045
     Downstream: J10

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 60.1
     Initial Abstraction: 1.33

     Transform: SCS
     Lag: 8.9
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Junction: J10
     Last Modified Date: 25 January 2017
     Last Modified Time: 17:15:28
     Canvas X: 2280920.222674139
     Canvas Y: 1.4808613766756589E7
```

```
     Downstream: R4
End:

Reach: R4
     Last Modified Date: 25 January 2017
     Last Modified Time: 17:15:28
     Canvas X: 2278915.238871656
     Canvas Y: 1.48081906635516E7
     From Canvas X: 2280920.222674139
     From Canvas Y: 1.4808613766756589E7
     Downstream: Outlet5

     Route: Muskingum Cunge
     Channel: Trapezoid
     Length: 2322
     Energy Slope: 0.09
     Mannings n: 0.05
     Bottom Width: 2
     Side Slope: 5
     Use Variable Time Step: No
     Channel Loss: None
End:

Subbasin: A12
     Last Modified Date: 29 March 2017
     Last Modified Time: 22:10:31
     Canvas X: 2282362.2493058434
     Canvas Y: 1.4808204311615614E7
     Area: 0.168
     Downstream: J12

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 65.2
     Initial Abstraction: 1.07

     Transform: SCS
     Lag: 10.1
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Junction: J12
```

```
     Last Modified Date: 29 August 2016
     Last Modified Time: 18:37:18
     Canvas X: 2281271.756248606
     Canvas Y: 1.480805544242317E7
     Downstream: R5
End:

Reach: R5
     Last Modified Date: 9 November 2016
     Last Modified Time: 16:58:20
     Canvas X: 2278915.238871656
     Canvas Y: 1.48081906635516E7
     From Canvas X: 2281271.756248606
     From Canvas Y: 1.480805544242317E7
     Downstream: Outlet5

     Route: Muskingum Cunge
     Channel: Trapezoid
     Length: 2360
     Energy Slope: 0.08
     Mannings n: 0.05
     Bottom Width: 2
     Side Slope: 5
     Use Variable Time Step: No
     Channel Loss: None
End:

Subbasin: A9
     Last Modified Date: 29 March 2017
     Last Modified Time: 22:10:00
     Canvas X: 2279806.89075987
     Canvas Y: 1.4809295852716051E7
     Area: 0.082
     Downstream: Outlet5

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 55.1
     Initial Abstraction: 1.63

     Transform: SCS
     Lag: 11.4
     Unitgraph Type: STANDARD
```

```
     Baseflow: None
End:

Subbasin: A11
     Last Modified Date: 29 March 2017
     Last Modified Time: 22:10:24
     Canvas X: 2279960.4653675603
     Canvas Y: 1.4807842800658675E7
     Area: 0.078
     Downstream: Outlet5

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 60.7
     Initial Abstraction: 1.29

     Transform: SCS
     Lag: 12.4
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Sink: Outlet5
     Last Modified Date: 9 November 2016
     Last Modified Time: 16:58:20
     Canvas X: 2278915.238871656
     Canvas Y: 1.48081906635516E7
     Label X: -69.0
     Label Y: -3.0
End:

Subbasin: A4
     Last Modified Date: 29 March 2017
     Last Modified Time: 22:08:43
     Canvas X: 2279964.3719205195
     Canvas Y: 1.4811456891362488E7
     Area: 0.162
     Downstream: Outlet1

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None
```

```
     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 59.4
     Initial Abstraction: 1.37

     Transform: SCS
     Lag: 13.1
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Subbasin: A2
     Last Modified Date: 29 March 2017
     Last Modified Time: 22:08:25
     Canvas X: 2280622.0175237637
     Canvas Y: 1.4813040710457416E7
     Area: 0.104
     Downstream: J2

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 66.7
     Initial Abstraction: 1

     Transform: SCS
     Lag: 10
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Junction: J2
     Last Modified Date: 29 August 2016
     Last Modified Time: 18:37:18
     Canvas X: 2280367.404079818
     Canvas Y: 1.4812535827500599E7
     Downstream: R2
End:

Reach: R2
     Last Modified Date: 12 April 2017
```

```
     Last Modified Time: 19:07:53
     Canvas X: 2279668.760889659
     Canvas Y: 1.4812134333458295E7
     From Canvas X: 2280367.404079818
     From Canvas Y: 1.4812535827500599E7
     Downstream: J3

     Route: Muskingum Cunge
     Channel: Trapezoid
     Length: 550
     Energy Slope: 0.01
     Mannings n: 0.05
     Bottom Width: 150
     Side Slope: 50
     Use Variable Time Step: No
     Channel Loss: None
End:

Subbasin: A1
     Last Modified Date: 29 March 2017
     Last Modified Time: 22:08:17
     Canvas X: 2279217.3892355207
     Canvas Y: 1.4813228729485344E7
     Label X: 0.0
     Label Y: -1.0
     Area: 0.037
     Downstream: J1

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 74.3
     Initial Abstraction: 0.69

     Transform: SCS
     Lag: 17.6
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Junction: J1
     Last Modified Date: 29 August 2016
     Last Modified Time: 18:37:18
     Canvas X: 2279393.420662243
```

```
     Canvas Y: 1.4812438225458017E7
     Downstream: R1
End:

Reach: R1
     Last Modified Date: 12 April 2017
     Last Modified Time: 19:07:53
     Canvas X: 2279668.760889659
     Canvas Y: 1.4812134333458295E7
     From Canvas X: 2279393.420662243
     From Canvas Y: 1.4812438225458017E7
     Downstream: J3

     Route: Muskingum Cunge
     Channel: Trapezoid
     Length: 472
     Energy Slope: 0.02
     Mannings n: 0.05
     Bottom Width: 200
     Side Slope: 100
     Use Variable Time Step: No
     Channel Loss: None
End:

Junction: J3
     Last Modified Date: 12 April 2017
     Last Modified Time: 19:07:53
     Canvas X: 2279668.760889659
     Canvas Y: 1.4812134333458295E7
     Downstream: R6
End:

Reach: R6
     Last Modified Date: 12 April 2017
     Last Modified Time: 19:07:53
     Canvas X: 2278957.606460628
     Canvas Y: 1.4810961968270924E7
     From Canvas X: 2279668.760889659
     From Canvas Y: 1.4812134333458295E7
     Downstream: Outlet1

     Route: Muskingum Cunge
     Channel: Trapezoid
     Length: 1065
     Energy Slope: 0.01
     Mannings n: 0.05
     Bottom Width: 175
     Side Slope: 25
     Use Variable Time Step: No
     Channel Loss: None
```

```
End:

Subbasin: A3
     Last Modified Date: 29 March 2017
     Last Modified Time: 22:08:33
     Canvas X: 2278745.4173755283
     Canvas Y: 1.4811811496321032E7
     Area: 0.016
     Downstream: Outlet1

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 74.7
     Initial Abstraction: 0.68

     Transform: SCS
     Lag: 14.5
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Sink: Outlet1
     Last Modified Date: 29 March 2017
     Last Modified Time: 22:12:40
     Canvas X: 2278957.606460628
     Canvas Y: 1.4810961968270924E7
     Label X: -66.0
     Label Y: -6.0
End:

Subbasin: A14
     Last Modified Date: 29 March 2017
     Last Modified Time: 22:10:47
     Canvas X: 2279868.3829354444
     Canvas Y: 1.4807278720948245E7
     Label X: -1.0
     Label Y: 0.0
     Area: 0.038
     Downstream: Outlet7

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None
```

```
     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 50.2
     Initial Abstraction: 1.99

     Transform: SCS
     Lag: 11.3
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Sink: Outlet7
     Last Modified Date: 12 April 2017
     Last Modified Time: 19:14:09
     Canvas X: 2278714.8820389253
     Canvas Y: 1.480725800647195E7
     Label X: -67.0
     Label Y: -3.0
End:

Subbasin: A7
     Last Modified Date: 12 April 2017
     Last Modified Time: 19:10:56
     Canvas X: 2279440.674387686
     Canvas Y: 1.4810063725754501E7
     Area: 0.016
     Downstream: Outlet4

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 57.6
     Initial Abstraction: 1.47

     Transform: SCS
     Lag: 8.6
     Unitgraph Type: STANDARD

     Baseflow: None
End:
```

```
Sink: Outlet4
     Last Modified Date: 12 April 2017
     Last Modified Time: 19:10:56
     Canvas X: 2278897.0302592027
     Canvas Y: 1.4809686051656364E7
     Label X: -66.0
     Label Y: -3.0
End:

Subbasin: A6
     Last Modified Date: 29 March 2017
     Last Modified Time: 22:09:17
     Canvas X: 2279369.7937995214
     Canvas Y: 1.481034724810716E7
     Area: 0.014
     Downstream: Outlet3

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 56.5
     Initial Abstraction: 1.54

     Transform: SCS
     Lag: 9.6
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Sink: Outlet3
     Last Modified Date: 12 April 2017
     Last Modified Time: 19:10:56
     Canvas X: 2278844.5787461097
     Canvas Y: 1.4810197688637093E7
     Label X: -66.0
     Label Y: -4.0
End:

Subbasin: A5
     Last Modified Date: 12 April 2017
     Last Modified Time: 19:09:19
     Canvas X: 2279452.4878190467
     Canvas Y: 1.4810689837616622E7
     Area: 0.014
```

```
     Downstream: Outlet2

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 57
     Initial Abstraction: 1.51

     Transform: SCS
     Lag: 8.6
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Sink: Outlet2
     Last Modified Date: 12 April 2017
     Last Modified Time: 19:09:19
     Canvas X: 2278889.7267597956
     Canvas Y: 1.4810667657684907E7
     Label X: -67.0
     Label Y: -2.0
End:

Subbasin: A13
     Last Modified Date: 12 April 2017
     Last Modified Time: 19:13:38
     Canvas X: 2279082.4586781105
     Canvas Y: 1.4807750781646509E7
     Label X: -2.0
     Label Y: -9.0
     Area: 0.005
     Downstream: Outlet6

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 40.3
     Initial Abstraction: 2.96
```

```
     Transform: SCS
     Lag: 10.2
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Sink: Outlet6
     Last Modified Date: 12 April 2017
     Last Modified Time: 19:13:38
     Canvas X: 2278830.412887938
     Canvas Y: 1.480770036165694E7
     Label X: -67.0
     Label Y: -5.0
End:

Basin Schematic Properties:
     Last View N: 1.4814113710616987E7
     Last View S: 1.4807185086654643E7
     Last View W: 2278519.9899999998
     Last View E: 2284029.0300000007
     Maximum View N: 1.4814113710616987E7
     Maximum View S: 1.4807185086654643E7
     Maximum View W: 2278519.9899999998
     Maximum View E: 2284029.0300000007
     Extent Method: Elements Maps
     Buffer: 0
     Draw Icons: Yes
     Draw Icon Labels: Name
     Draw Map Objects: No
     Draw Gridlines: No
     Draw Flow Direction: No
     Fix Element Locations: No
     Fix Hydrologic Order: No
     Map: hec.map.aishape.AiShapeMap
     Map File Name: maps\Existing Basin Map.shp
     Minimum Scale: -2147483648
     Maximum Scale: 2147483647
     Map Shown: Yes
End:
```

APPENDIX A-4.4

PROPOSED HEC-HMS INPUT DATA

```
Basin: Proposed
     Last Modified Date: 30 March 2017
     Last Modified Time: 21:32:39
     Version: 4.2
     Filepath Separator: \
     Unit System: English
     Missing Flow To Zero: No
     Enable Flow Ratio: No
     Compute Local Flow At Junctions: No

     Enable Sediment Routing: No

     Enable Quality Routing: No
End:

Subbasin: P_18
     Last Modified Date: 7 April 2017
     Last Modified Time: 19:15:53
     Canvas X: 2282223.3495379006
     Canvas Y: 1.4805807426262625E7
     From Canvas X: 1347.6690747500397
     From Canvas Y: -370.27555819414556
     Label X: -36.0
     Label Y: 20.0
     Area: 0.211
     Downstream: CP_18

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 63.1
     Initial Abstraction: 1.17

     Transform: SCS
     Lag: 10.6
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Subbasin: P_13
     Last Modified Date: 30 March 2017
     Last Modified Time: 19:26:50
     Canvas X: 2280301.5011391183
     Canvas Y: 1.4806846046634926E7
```

```
     Label X: -36.0
     Label Y: 20.0
     Area: 0.044
     Downstream: CP_P13

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 68.3
     Initial Abstraction: 0.93

     Transform: SCS
     Lag: 7
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Junction: CP_P13
     Last Modified Date: 30 March 2017
     Last Modified Time: 19:39:51
     Canvas X: 2280568.1302744425
     Canvas Y: 1.4806062823549911E7
     Downstream: R_09
End:

Reach: R_09
     Last Modified Date: 30 March 2017
     Last Modified Time: 21:18:18
     Canvas X: 2280509.2601586296
     Canvas Y: 1.4805624154027523E7
     From Canvas X: 2280568.1302744425
     From Canvas Y: 1.4806062823549911E7
     Label X: -5.0
     Label Y: -10.0
     Downstream: CP_18

     Route: Muskingum Cunge
     Channel: 8-point
     Length: 5555
     Energy Slope: 0.075
     Mannings n: 0.013
     Left Mannings n: 0.013
     Right Mannings n: 0.013
     Cross Section Name: Street Section - Typ
```

```
     Use Variable Time Step: No
     Channel Loss: None
End:

Junction: CP_18
     Last Modified Date: 30 March 2017
     Last Modified Time: 21:18:18
     Canvas X: 2280509.2601586296
     Canvas Y: 1.4805624154027523E7
     Label X: 4.0
     Label Y: -6.0
     Downstream: R_13
End:

Reach: R_13
     Last Modified Date: 30 March 2017
     Last Modified Time: 21:18:18
     Canvas X: 2279845.737180921
     Canvas Y: 1.4805464043544784E7
     From Canvas X: 2280509.2601586296
     From Canvas Y: 1.4805624154027523E7
     Downstream: CP_17

     Route: Muskingum Cunge
     Channel: Trapezoid
     Length: 1275
     Energy Slope: 0.107
     Mannings n: 0.035
     Bottom Width: 6
     Side Slope: 3
     Use Variable Time Step: No
     Channel Loss: None
End:

Subbasin: P_17
     Last Modified Date: 30 March 2017
     Last Modified Time: 19:38:46
     Canvas X: 2280041.037706815
     Canvas Y: 1.4805827035804E7
     From Canvas X: 411.17024328093976
     From Canvas Y: 493.4042919371277
     Label X: -28.0
     Label Y: 16.0
     Area: 0.035
     Downstream: CP_17

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None
```

```
     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 64.1
     Initial Abstraction: 1.12

     Transform: SCS
     Lag: 7.3
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Junction: CP_17
     Last Modified Date: 30 March 2017
     Last Modified Time: 20:22:21
     Canvas X: 2279845.737180921
     Canvas Y: 1.4805464043544784E7
     Label X: -2.0
     Label Y: 16.0
     Downstream: R_11
End:

Reach: R_11
     Last Modified Date: 10 April 2017
     Last Modified Time: 21:25:18
     Canvas X: 2279187.660993265
     Canvas Y: 1.4805303477585565E7
     From Canvas X: 2279845.737180921
     From Canvas Y: 1.4805464043544784E7
     Downstream: CP_16

     Route: Muskingum Cunge
     Channel: Trapezoid
     Length: 305
     Energy Slope: 0.082
     Mannings n: 0.035
     Bottom Width: 6
     Side Slope: 3
     Use Variable Time Step: No
     Channel Loss: None
End:

Subbasin: P_20
     Last Modified Date: 30 March 2017
     Last Modified Time: 19:49:04
     Canvas X: 2280189.501767024
     Canvas Y: 1.4805185890183376E7
     From Canvas X: 2791.578829055652
```

```
     From Canvas Y: -451.05372626520693
     Label X: 4.0
     Label Y: -3.0
     Area: 0.015
     Downstream: CP_20

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 72
     Initial Abstraction: 0.78

     Transform: SCS
     Lag: 6.8
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Junction: CP_20
     Last Modified Date: 30 March 2017
     Last Modified Time: 22:06:41
     Canvas X: 2279470.3863221346
     Canvas Y: 1.4805097861527536E7
     Downstream: R_12
End:

Reach: R_12
     Last Modified Date: 10 April 2017
     Last Modified Time: 21:25:18
     Canvas X: 2279187.660993265
     Canvas Y: 1.4805303477585565E7
     From Canvas X: 2279470.3863221346
     From Canvas Y: 1.4805097861527536E7
     Downstream: CP_16

     Route: Muskingum Cunge
     Channel: Circular
     Length: 215
     Energy Slope: 0.06
     Mannings n: 0.013
     Diameter: 1
     Use Variable Time Step: No
     Channel Loss: None
End:
```

```
Subbasin: P_16
     Last Modified Date: 30 March 2017
     Last Modified Time: 19:36:59
     Canvas X: 2279401.439550601
     Canvas Y: 1.4805671704823205E7
     Label X: -35.0
     Label Y: 21.0
     Area: 0.01
     Downstream: CP_16

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 84.3
     Initial Abstraction: 0.37

     Transform: SCS
     Lag: 3.9
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Junction: CP_16
     Last Modified Date: 10 April 2017
     Last Modified Time: 21:25:18
     Canvas X: 2279187.660993265
     Canvas Y: 1.48053034775855565E7
     Label X: 7.0
     Label Y: -6.0
     Downstream: R_10
End:

Reach: R_10
     Last Modified Date: 10 April 2017
     Last Modified Time: 21:25:18
     Canvas X: 2278855.6484787175
     Canvas Y: 1.4805186079277018E7
     From Canvas X: 2279187.660993265
     From Canvas Y: 1.48053034775855565E7
     Downstream: CP_15

     Route: Muskingum Cunge
     Channel: Trapezoid
```

```
     Length: 378
     Energy Slope: 0.058
     Mannings n: 0.035
     Bottom Width: 6
     Side Slope: 3
     Use Variable Time Step: No
     Channel Loss: None
End:

Subbasin: P_15
     Last Modified Date: 30 March 2017
     Last Modified Time: 22:08:35
     Canvas X: 2279420.4709431715
     Canvas Y: 1.4804806688483585E7
     Area: 0.031
     Downstream: CP_15

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 73
     Initial Abstraction: 0.74

     Transform: SCS
     Lag: 7.1
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Junction: CP_15
     Last Modified Date: 31 March 2017
     Last Modified Time: 22:01:25
     Canvas X: 2278855.6484787175
     Canvas Y: 1.4805186079277018E7
     Label X: 14.0
     Label Y: -7.0
     Downstream: R_14
End:

Reach: R_14
     Last Modified Date: 10 April 2017
     Last Modified Time: 21:27:33
     Canvas X: 2278541.684181401
     Canvas Y: 1.4805221653856063E7
```

```
      From Canvas X: 2278855.6484787175
      From Canvas Y: 1.4805186079277018E7
      Label X: -10.0
      Label Y: -11.0
      Downstream: S.Basin

      Route: Muskingum Cunge
      Channel: Rectangular
      Length: 130
      Energy Slope: 0.115
      Mannings n: 0.013
      Width: 4
      Use Variable Time Step: No
      Channel Loss: None
End:

Subbasin: P_12
      Last Modified Date: 30 March 2017
      Last Modified Time: 19:21:09
      Canvas X: 2278701.726327173
      Canvas Y: 1.4806871043116363E7
      Label X: -2.0
      Label Y: -4.0
      Area: 0.044
      Downstream: R_08

      Canopy: None
      Allow Simultaneous Precip Et: No
      Plant Uptake Method: None

      Surface: None

      LossRate: SCS
      Percent Impervious Area: 0.0
      Curve Number: 68.3
      Initial Abstraction: 0.93

      Transform: SCS
      Lag: 6
      Unitgraph Type: STANDARD

      Baseflow: None
End:

Reach: R_08
      Last Modified Date: 10 April 2017
      Last Modified Time: 21:27:33
      Canvas X: 2278541.684181401
      Canvas Y: 1.4805221653856063E7
      From Canvas X: 2278543.4152780743
```

```
     From Canvas Y: 1.4806546088857686E7
     Downstream: S.Basin

     Route: Muskingum Cunge
     Channel: 8-point
     Length: 5410
     Energy Slope: 0.023
     Mannings n: 0.013
     Left Mannings n: 0.013
     Right Mannings n: 0.013
     Cross Section Name: Street Section - Half
     Use Variable Time Step: No
     Channel Loss: None
End:

Subbasin: P_14
     Last Modified Date: 30 March 2017
     Last Modified Time: 19:29:04
     Canvas X: 2278676.0669055902
     Canvas Y: 1.4805511915402979E7
     Label X: 8.0
     Label Y: -4.0
     Area: 0.026
     Downstream: S.Basin

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 70.9
     Initial Abstraction: 0.82

     Transform: SCS
     Lag: 4.2
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Reservoir: S.Basin
     Last Modified Date: 10 April 2017
     Last Modified Time: 21:27:33
     Canvas X: 2278541.684181401
     Canvas Y: 1.4805221653856063E7
     Label X: -73.0
     Label Y: -1.0
```

```
      Downstream: Galena Creek

      Route: Controlled Outflow
      Routing Curve: Elevation-Area
      Initial Outflow Equals Inflow: Yes
      Elevation-Area Table: S.Basin1
      Adaptive Control: On
      Main Tailwater Condition: None
      Auxiliary Tailwater Condition: None

      Conduit: Orifice
      Conduit Outlet: Main
      Orifice Coefficient: 0.62
      Orifice Area: 0.087
      Centerline Elevation: 5350.67
      Number Barrels: 2
      End Conduit:

      Conduit: Orifice
      Conduit Outlet: Main
      Orifice Coefficient: 0.62
      Orifice Area: 3.142
      Centerline Elevation: 5356
      Number Barrels: 4
      End Conduit:

      Spillway: Broad-Crested Spillway
      Spillway Outlet: Main
      Spillway Crest Length: 25.13
      Spillway Crest Elevation: 5358.8
      Spillway Coefficient: 2.8
      End Spillway:

      Evaporation Method: Zero Evaporation
      End Evaporation:
End:

Subbasin: P_19
      Last Modified Date: 30 March 2017
      Last Modified Time: 19:41:27
      Canvas X: 2278868.4392287815
      Canvas Y: 1.4804497389471177E7
      From Canvas X: 1236.5990936495364
      From Canvas Y: -804.4582115858793
      Label X: 4.0
      Label Y: -4.0
      Area: 0.037
      Downstream: Galena Creek

      Canopy: None
```

```
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 64.5
     Initial Abstraction: 1.1

     Transform: SCS
     Lag: 5.2
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Sink: Galena Creek
     Last Modified Date: 30 March 2017
     Last Modified Time: 20:07:12
     Canvas X: 2278473.023460467
     Canvas Y: 1.480429221475903E7
     Label X: -112.0
     Label Y: -1.0
End:

Subbasin: P_02
     Last Modified Date: 12 April 2017
     Last Modified Time: 18:52:52
     Canvas X: 2280293.4434053847
     Canvas Y: 1.4810386319316087E7
     Area: 0.104
     Downstream: N.Basin2

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 66.7
     Initial Abstraction: 1

     Transform: SCS
     Lag: 10.5
     Unitgraph Type: STANDARD

     Baseflow: None
```

```
End:

Subbasin: P_08
     Last Modified Date: 3 April 2017
     Last Modified Time: 21:04:31
     Canvas X: 2280216.711939884
     Canvas Y: 1.4808665342161288E7
     Area: 0.087
     Downstream: N.Basin1

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 64.1
     Initial Abstraction: 1.12

     Transform: SCS
     Lag: 8.4
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Reservoir: N.Basin1
     Last Modified Date: 30 March 2017
     Last Modified Time: 19:10:50
     Canvas X: 2279713.173678392
     Canvas Y: 1.4809577636127345E7
     Label X: -29.0
     Label Y: 18.0
     Downstream: N.Basin2

     Route: Controlled Outflow
     Routing Curve: Elevation-Area
     Initial Outflow Equals Inflow: Yes
     Elevation-Area Table: N.Basin1
     Adaptive Control: Off
     Main Tailwater Condition: None
     Auxiliary Tailwater Condition: None

     Conduit: Culvert
     Conduit Outlet: Main
     Culvert Shape: Circular
     Chart Number: 1
     Scale Number: 2
```

```
     Solution Control: Automatic
     Diameter: 1.5
     Number Barrels: 1
     Culvert Length: 140
     Entrance Loss Coefficient: 0.2
     Exit Loss Coefficient: 1
     Top Manning's n: 0.013
     Inlet Invert Elevation: 5452.5
     Outlet Invert Elevation: 5450.5
     End Conduit:

     Evaporation Method: Zero Evaporation
     End Evaporation:
End:

Subbasin: P_01
     Last Modified Date: 12 April 2017
     Last Modified Time: 18:52:25
     Canvas X: 2278824.583922944
     Canvas Y: 1.4810342472764373E7
     Area: 0.037
     Downstream: N.Basin2

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 74.3
     Initial Abstraction: 0.69

     Transform: SCS
     Lag: 18.1
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Reservoir: N.Basin2
     Last Modified Date: 10 April 2017
     Last Modified Time: 21:30:51
     Canvas X: 2279142.089490289
     Canvas Y: 1.4809593448206725E7
     Label X: -81.0
     Label Y: 9.0
     Downstream: CP_P10a
```

```
     Route: Controlled Outflow
     Routing Curve: Elevation-Area
     Initial Outflow Equals Inflow: Yes
     Elevation-Area Table: N.Basin2
     Adaptive Control: On
     Main Tailwater Condition: None
     Auxiliary Tailwater Condition: None

     Conduit: Culvert
     Conduit Outlet: Main
     Culvert Shape: Circular
     Chart Number: 1
     Scale Number: 1
     Solution Control: Automatic
     Diameter: 3.5
     Number Barrels: 2
     Culvert Length: 80
     Entrance Loss Coefficient: 0.2
     Exit Loss Coefficient: 1
     Top Manning's n: 0.013
     Inlet Invert Elevation: 5455
     Outlet Invert Elevation: 5450
     End Conduit:

     Conduit: Culvert
     Conduit Outlet: Main
     Culvert Shape: Circular
     Chart Number: 1
     Scale Number: 1
     Solution Control: Automatic
     Diameter: 0.83
     Number Barrels: 1
     Culvert Length: 80
     Entrance Loss Coefficient: 0.2
     Exit Loss Coefficient: 1
     Top Manning's n: 0.013
     Inlet Invert Elevation: 5450.5
     Outlet Invert Elevation: 5450
     End Conduit:

     Evaporation Method: Zero Evaporation
     End Evaporation:
End:

Subbasin: P_11
     Last Modified Date: 30 March 2017
     Last Modified Time: 19:08:40
     Canvas X: 2281053.905227013
     Canvas Y: 1.4807413861955896E7
     Area: 0.041
```

```
     Downstream: R_07

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 59.8
     Initial Abstraction: 1.34

     Transform: SCS
     Lag: 10.2
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Reach: R_07
     Last Modified Date: 10 April 2017
     Last Modified Time: 21:15:08
     Canvas X: 2279647.2416412295
     Canvas Y: 1.4807867774249278E7
     From Canvas X: 2280256.4858685234
     From Canvas Y: 1.4807518014096739E7
     Label X: -48.0
     Label Y: -17.0
     Downstream: CP_P10

     Route: Muskingum Cunge
     Channel: Circular
     Length: 2675
     Energy Slope: 0.052
     Mannings n: 0.013
     Diameter: 2
     Use Variable Time Step: No
     Channel Loss: None
End:

Subbasin: P_10
     Last Modified Date: 30 March 2017
     Last Modified Time: 19:08:54
     Canvas X: 2279615.888929023
     Canvas Y: 1.4807168745541466E7
     Area: 0.025
     Downstream: CP_P10

     Canopy: None
```

```
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 82.7
     Initial Abstraction: 0.42

     Transform: SCS
     Lag: 10.1
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Subbasin: P_09
     Last Modified Date: 31 March 2017
     Last Modified Time: 20:52:58
     Canvas X: 2279264.985900062
     Canvas Y: 1.4807709231458377E7
     Label X: -19.0
     Label Y: -24.0
     Area: 0.003
     Downstream: R_04

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 82.6
     Initial Abstraction: 0.42

     Transform: SCS
     Lag: 8.1
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Reach: R_04
     Last Modified Date: 10 April 2017
     Last Modified Time: 21:15:08
     Canvas X: 2279647.2416412295
     Canvas Y: 1.4807867774249278E7
```

```
     From Canvas X: 2279485.6611804673
     From Canvas Y: 1.4807786517468942E7
     Label X: -47.0
     Label Y: -22.0
     Downstream: CP_P10

     Route: Muskingum Cunge
     Channel: Circular
     Length: 465
     Energy Slope: 0.013
     Mannings n: 0.013
     Diameter: 2
     Use Variable Time Step: No
     Channel Loss: None
End:

Junction: CP_P10
     Last Modified Date: 10 April 2017
     Last Modified Time: 21:15:08
     Canvas X: 2279647.2416412295
     Canvas Y: 1.4807867774249278E7
     Label X: -1.0
     Label Y: 11.0
     Downstream: R_05
End:

Reach: R_05
     Last Modified Date: 10 April 2017
     Last Modified Time: 21:15:08
     Canvas X: 2279354.215901333
     Canvas Y: 1.4809301514760377E7
     From Canvas X: 2279647.2416412295
     From Canvas Y: 1.4807867774249278E7
     Downstream: CP_P10a

     Route: Muskingum Cunge
     Channel: Circular
     Length: 1085
     Energy Slope: 0.05
     Mannings n: 0.013
     Diameter: 2.5
     Use Variable Time Step: No
     Channel Loss: None
End:

Junction: CP_P10a
     Last Modified Date: 30 March 2017
     Last Modified Time: 19:10:41
     Canvas X: 2279354.215901333
     Canvas Y: 1.4809301514760377E7
```

```
     Label X: -85.0
     Label Y: 10.0
     Downstream: R_06
End:

Reach: R_06
     Last Modified Date: 12 April 2017
     Last Modified Time: 19:23:48
     Canvas X: 2278327.8644992565
     Canvas Y: 1.480847179102962E7
     From Canvas X: 2279354.215901333
     From Canvas Y: 1.4809301514760377E7
     Downstream: N.Basin3

     Route: Muskingum Cunge
     Channel: Circular
     Length: 1000
     Energy Slope: 0.005
     Mannings n: 0.013
     Diameter: 6
     Use Variable Time Step: No
     Channel Loss: None
End:

Subbasin: P_05
     Last Modified Date: 30 March 2017
     Last Modified Time: 19:10:46
     Canvas X: 2279188.543081152
     Canvas Y: 1.4808684843707481E7
     Label X: -24.0
     Label Y: 16.0
     Area: 0.02
     Downstream: CP_P5

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 82.9
     Initial Abstraction: 0.41

     Transform: SCS
     Lag: 4.2
     Unitgraph Type: STANDARD

     Baseflow: None
```

```
End:

Subbasin: P_06
     Last Modified Date: 30 March 2017
     Last Modified Time: 19:09:25
     Canvas X: 2279504.205474521
     Canvas Y: 1.4808117260264855E7
     Label X: -31.0
     Label Y: -19.0
     Area: 0.011
     Downstream: R_02

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 66.5
     Initial Abstraction: 1.01

     Transform: SCS
     Lag: 7
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Reach: R_02
     Last Modified Date: 10 April 2017
     Last Modified Time: 21:14:05
     Canvas X: 2279109.50890363
     Canvas Y: 1.4808163916916361E7
     From Canvas X: 2279260.100736685
     From Canvas Y: 1.4808256137395957E7
     Label X: -3.0
     Label Y: 5.0
     Downstream: CP_P6

     Route: Muskingum Cunge
     Channel: Triangular
     Length: 190
     Energy Slope: 0.053
     Mannings n: 0.013
     Side Slope: 3
     Use Variable Time Step: No
     Channel Loss: None
End:
```

```
Junction: CP_P6
     Last Modified Date: 10 April 2017
     Last Modified Time: 21:14:05
     Canvas X: 2279109.50890363
     Canvas Y: 1.4808163916916361E7
     Label X: -8.0
     Label Y: 20.0
     Downstream: R_03
End:

Reach: R_03
     Last Modified Date: 10 April 2017
     Last Modified Time: 21:14:05
     Canvas X: 2278801.6763944244
     Canvas Y: 1.4808249642425254E7
     From Canvas X: 2279109.50890363
     From Canvas Y: 1.4808163916916361E7
     Label X: -24.0
     Label Y: -16.0
     Downstream: CP_P5

     Route: Muskingum Cunge
     Channel: 8-point
     Length: 515
     Energy Slope: 0.041
     Mannings n: 0.013
     Left Mannings n: 0.013
     Right Mannings n: 0.013
     Cross Section Name: Street Section - Half
     Use Variable Time Step: No
     Channel Loss: None
End:

Junction: CP_P5
     Last Modified Date: 10 April 2017
     Last Modified Time: 21:12:49
     Canvas X: 2278801.6763944244
     Canvas Y: 1.4808249642425254E7
     Downstream: R_01
End:

Reach: R_01
     Description: Reach from CP_P5 to N.Basin3
     Last Modified Date: 12 April 2017
     Last Modified Time: 19:23:48
     Canvas X: 2278327.8644992565
     Canvas Y: 1.480847179102962E7
     From Canvas X: 2278801.6763944244
     From Canvas Y: 1.4808249642425254E7
```

```
     Downstream: N.Basin3

     Route: Muskingum Cunge
     Channel: 8-point
     Length: 260
     Energy Slope: 0.015
     Mannings n: 0.013
     Left Mannings n: 0.013
     Right Mannings n: 0.013
     Cross Section Name: Street Section - Half
     Use Variable Time Step: No
     Channel Loss: None
End:

Subbasin: P_07
     Last Modified Date: 30 March 2017
     Last Modified Time: 19:08:32
     Canvas X: 2278766.152025665
     Canvas Y: 1.4807838730407575E7
     Label X: -23.0
     Label Y: -21.0
     Area: 0.024
     Downstream: N.Basin3

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 68.4
     Initial Abstraction: 0.92

     Transform: SCS
     Lag: 7.1
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Subbasin: P_04
     Last Modified Date: 12 April 2017
     Last Modified Time: 19:00:53
     Canvas X: 2278732.112946663
     Canvas Y: 1.4809179225812582E7
     Label X: -13.0
     Label Y: -17.0
     Area: 0.018
```

```
     Downstream: N.Basin3

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 81
     Initial Abstraction: 0.47

     Transform: SCS
     Lag: 6
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Subbasin: P_03
     Last Modified Date: 12 April 2017
     Last Modified Time: 18:53:19
     Canvas X: 2278271.020522444
     Canvas Y: 1.4809006351866225E7
     Label X: -27.0
     Label Y: 18.0
     Area: 0.016
     Downstream: N.Basin3

     Canopy: None
     Allow Simultaneous Precip Et: No
     Plant Uptake Method: None

     Surface: None

     LossRate: SCS
     Percent Impervious Area: 0.0
     Curve Number: 74.7
     Initial Abstraction: 0.68

     Transform: SCS
     Lag: 13.4
     Unitgraph Type: STANDARD

     Baseflow: None
End:

Reservoir: N.Basin3
     Last Modified Date: 12 April 2017
```

```
     Last Modified Time: 19:39:21
     Canvas X: 2278327.8644992565
     Canvas Y: 1.480847179102962E7
     Label X: -76.0
     Label Y: -1.0

     Route: Controlled Outflow
     Routing Curve: Elevation-Area
     Initial Outflow Equals Inflow: Yes
     Elevation-Area Table: N.Basin3
     Adaptive Control: On
     Main Tailwater Condition: None
     Auxiliary Tailwater Condition: None

     Conduit: Orifice
     Conduit Outlet: Main
     Orifice Coefficient: 0.62
     Orifice Area: 0.136
     Centerline Elevation: 5444.71
     Number Barrels: 4
     End Conduit:

     Conduit: Orifice
     Conduit Outlet: Main
     Orifice Coefficient: 0.62
     Orifice Area: 1.767
     Centerline Elevation: 5448.75
     Number Barrels: 3
     End Conduit:

     Spillway: Broad-Crested Spillway
     Spillway Outlet: Main
     Spillway Crest Length: 18.85
     Spillway Crest Elevation: 5452.5
     Spillway Coefficient: 2.8
     End Spillway:

     Evaporation Method: Zero Evaporation
     End Evaporation:
End:

Basin Schematic Properties:
     Last View N: 1.4806537442621194E7
     Last View S: 1.4803063175128404E7
     Last View W: 2276544.6551453182
     Last View E: 2284221.0011076466
     Maximum View N: 1.4811182093120188E7
     Maximum View S: 1.4804254744725995E7
     Maximum View W: 2278069.0822681123
     Maximum View E: 2283575.4400699846
```

```
     Extent Method: Elements Maps
     Buffer: 0
     Draw Icons: Yes
     Draw Icon Labels: Name
     Draw Map Objects: No
     Draw Gridlines: No
     Draw Flow Direction: No
     Fix Element Locations: No
     Fix Hydrologic Order: No
     Map: hec.map.aishape.AiShapeMap

Map\Civil\9019.001 Hydrology\Shapefiles\0-PROPOSED BASINS\PROPOSED_BASINS.shp
     Minimum Scale: -2147483648
     Maximum Scale: 2147483647
     Map Shown: Yes
     Map: hec.map.aishape.AiShapeMap
     Map File Name: maps\Proposed Basins 2016-0831.shp
     Minimum Scale: -2147483648
     Maximum Scale: 2147483647
     Map Shown: No
End:
```

APPENDIX A-4.5

EXISTING HEC-HMS OUTPUT DATA – 5 AND 100-YEAR STORM EVENTS

Ascenté
CONCEPTUAL HYDROLOGY & HYDRAULICS
EXISTING HEC-HMS MODEL SUMMARIES

RENO *WASHOE* *NEVADA*

5-YEAR EVENT				100-YEAR EVENT			
NAME	AREA	PEAK	VOLUME	NAME	AREA	PEAK	VOLUME
	MI^2	CFS	AC-FT		MI^2	CFS	AC-FT
A1	0.037	3.104	0.35	A1	0.037	25.26	3.2
A2	0.104	1.635	0.16	A2	0.104	62.34	6.3
A3	0.016	1.57	0.36	A3	0.016	12.41	1.4
A4	0.162	0.586	0.05	A4	0.162	45.56	6.3
A5	0.014	0.037	0.03	A5	0.014	3.65	0.5
A6	0.014	0.034	0.02	A6	0.014	3.23	0.4
A7	0.016	0.046	0.03	A7	0.016	4.54	0.6
A8	0.044	0.159	0.05	A8	0.044	15.56	1.7
A9	0.082	0.152	0.01	A9	0.082	14.07	2.3
A10	0.045	0.181	0.06	A10	0.045	16.6	1.8
A11	0.078	0.35	0.07	A11	0.078	26.06	3.3
A12	0.168	1.475	0.13	A12	0.168	90.08	9.3
A13	0.005	0	0	A13	0.005	0.04	0
A14	0.038	0	0	A14	0.038	2.29	0.7
J1	0.037	3.104	0.35	J1	0.037	25.26	3.2
J2	0.104	1.635	0.16	J2	0.104	62.34	6.3
J3	0.141	4.613	0.2	J3	0.141	81.67	9.4
J8	0.044	0.159	0.05	J8	0.044	15.56	1.7
J10	0.089	0.336	0.05	J10	0.089	31.28	3.6
J12	0.168	1.475	0.13	J12	0.168	90.08	9.3
Outlet1	0.319	4.93	0.13	Outlet1	0.319	124.56	17
Outlet2	0.014	0.037	0.03	Outlet2	0.014	3.65	0.5
Outlet3	0.014	0.034	0.02	Outlet3	0.014	3.23	0.4
Outlet4	0.016	0.046	0.03	Outlet4	0.016	4.54	0.6
Outlet5	0.417	2.032	0.08	Outlet5	0.417	160.15	18.5
Outlet6	0.005	0	0	Outlet6	0.005	0.04	0
Outlet7	0.038	0	0	Outlet7	0.038	2.29	0.7
R1	0.037	3.099	0.34	R1	0.037	25.23	3.2
R2	0.104	1.627	0.16	R2	0.104	61.92	6.2
R3	0.044	0.159	0.05	R3	0.044	15.53	1.7
R4	0.089	0.336	0.05	R4	0.089	31.25	3.5
R5	0.168	1.475	0.13	R5	0.168	90.05	9.3
R6	0.141	4.532	0.2	R6	0.141	81.08	9.3

APPENDIX A-4.6

PROPOSED HEC-HMS OUTPUT DATA – 5-YEAR STORM EVENT

Ascenté
CONCEPTUAL HYDROLOGY & HYDRAULICS
PROPOSED HEC-HMS MODEL 5-YEAR SUMMARIES

RENO *WASHOE* *NEVADA*

5-YEAR EVENT				5-YEAR EVENT			
NAME	AREA [MI2]	Q [CFS]	VOLUME [AC-FT]	NAME	AREA [MI2]	Q [CFS]	VOLUME [AC-FT]
P_01	0.037	3.05	0.7	R_06	0.297	8.35	3.1
P_02	0.104	1.61	0.9	R_07	0.041	0.16	0.1
P_03	0.016	1.64	0.3	R_08	0.044	1.54	0.4
P_04	0.018	5.44	0.6	R_09	0.044	1.46	0.4
P_05	0.02	8.05	0.7	R_10	0.315	5.54	2.4
P_06	0.011	0.17	0.1	R_11	0.29	2.17	1.7
P_07	0.024	0.86	0.3	R_12	0.015	1.35	0.2
P_08	0.087	0.66	0.5	R_13	0.255	1.91	1.5
P_09	0.003	0.92	0.1	R_14	0.346	8.6	2.9
P_10	0.025	6.99	0.9	CP_P10	0.069	7.9	1.1
P_11	0.041	0.16	0.1	CP_P10a	0.297	8.37	3.1
P_12	0.044	1.55	0.5	CP_P13	0.044	1.47	0.5
P_13	0.044	1.47	0.5	CP_P5	0.031	8.06	0.8
P_14	0.026	2.26	0.4	CP_P6	0.011	0.17	0.1
P_15	0.031	3.34	0.5	CP_15	0.346	8.61	2.9
P_16	0.01	4.63	0.4	CP_16	0.315	5.55	2.4
P_17	0.035	0.26	0.2	CP_17	0.29	2.17	1.7
P_18	0.211	1.35	1.1	CP_18	0.255	1.91	1.5
P_19	0.037	0.3	0.2	CP_20	0.015	1.36	0.2
P_20	0.015	1.36	0.2	N.Basin1	0.087	0.65	0.5
R_01	0.031	8.05	0.8	N.Basin2	0.228	2.46	2
R_02	0.011	0.17	0.1	N.Basin3	0.386	3.92	3.7
R_03	0.011	0.17	0.1	S.Basin	0.416	1.77	1.4
R_04	0.003	0.92	0.1	Galena Creek	0.453	1.99	1.6
R_05	0.069	7.88	1.1				

APPENDIX A-4.7

PROPOSED HEC-HMS OUTPUT DATA – 100-YEAR STORM EVENT

Ascenté

CONCEPTUAL HYDROLOGY & HYDRAULICS

PROPOSED HEC-HMS MODEL 100-YEAR SUMMARIES

RENO *WASHOE* *NEVADA*

100-YEAR EVENT			
NAME	AREA [MI2]	Q [CFS]	VOLUME [AC-FT]
P_01	0.037	24.84	3.2
P_02	0.104	60.87	6.2
P_03	0.016	12.95	1.4
P_04	0.018	27.78	2
P_05	0.02	37.37	2.4
P_06	0.011	7.66	0.7
P_07	0.024	18.85	1.6
P_08	0.087	47.04	4.6
P_09	0.003	4.34	0.4
P_10	0.025	32.78	3
P_11	0.041	13.82	1.7
P_12	0.044	36.57	2.9
P_13	0.044	34.41	2.9
P_14	0.026	28.44	1.9
P_15	0.031	31.37	2.5
P_16	0.01	20.12	1.3
P_17	0.035	20.12	1.8
P_18	0.211	94.14	10.4
P_19	0.037	25.14	2
P_20	0.015	14.64	1.2
R_01	0.031	42.49	3.1
R_02	0.011	7.63	0.7
R_03	0.011	7.61	0.7
R_04	0.003	4.34	0.4
R_05	0.069	49.18	5

100-YEAR EVENT			
NAME	AREA [MI2]	Q [CFS]	VOLUME [AC-FT]
R_06	0.297	136.67	18.4
R_07	0.041	13.8	1.6
R_08	0.044	36.51	2.9
R_09	0.044	34.29	2.9
R_10	0.315	153	17.5
R_11	0.29	138.08	15.1
R_12	0.015	14.61	1.2
R_13	0.255	124.45	13.2
R_14	0.346	172.75	20
CP_P10	0.069	49.26	5
CP_P10a	0.297	137.2	18.4
CP_P13	0.044	34.41	2.9
CP_P5	0.031	42.73	3.1
CP_P6	0.011	7.63	0.7
CP_15	0.346	172.8	20
CP_16	0.315	153.31	17.5
CP_17	0.29	138.47	15.1
CP_18	0.255	124.92	13.2
CP_20	0.015	14.64	1.2
N.Basin1	0.087	19.07	4.5
N.Basin2	0.228	92.83	13.4
N.Basin3	0.386	58.78	23.3
S.Basin	0.416	112.84	21.8
Galena Creek	0.453	118.38	23.8

APPENDIX A-5.0

NOAA ATLAS 14 INTENSITY DATA

NOAA Atlas 14, Volume 1, Version 5
Location name: Reno, Nevada, US*
Latitude: 39.3713°, Longitude: -119.8038°
Elevation: 5581 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.112** (0.096-0.131)	**0.139** (0.120-0.164)	**0.185** (0.158-0.219)	**0.228** (0.193-0.269)	**0.298** (0.246-0.354)	**0.362** (0.289-0.436)	**0.437** (0.337-0.535)	**0.528** (0.390-0.663)	**0.675** (0.468-0.874)	**0.811** (0.533-1.07)
10-min	**0.170** (0.146-0.200)	**0.212** (0.183-0.250)	**0.282** (0.240-0.333)	**0.347** (0.294-0.410)	**0.454** (0.374-0.540)	**0.551** (0.440-0.664)	**0.665** (0.513-0.814)	**0.804** (0.594-1.01)	**1.03** (0.712-1.33)	**1.23** (0.811-1.64)
15-min	**0.211** (0.181-0.248)	**0.263** (0.226-0.310)	**0.349** (0.298-0.413)	**0.430** (0.364-0.508)	**0.563** (0.463-0.669)	**0.683** (0.545-0.823)	**0.825** (0.636-1.01)	**0.997** (0.737-1.25)	**1.27** (0.883-1.65)	**1.53** (1.01-2.03)
30-min	**0.284** (0.244-0.334)	**0.354** (0.305-0.417)	**0.471** (0.401-0.556)	**0.579** (0.491-0.684)	**0.757** (0.624-0.901)	**0.920** (0.734-1.11)	**1.11** (0.856-1.36)	**1.34** (0.992-1.69)	**1.72** (1.19-2.22)	**2.06** (1.35-2.73)
60-min	**0.351** (0.302-0.413)	**0.438** (0.377-0.517)	**0.582** (0.497-0.689)	**0.717** (0.607-0.847)	**0.938** (0.772-1.11)	**1.14** (0.909-1.37)	**1.38** (1.06-1.68)	**1.66** (1.23-2.08)	**2.12** (1.47-2.75)	**2.55** (1.68-3.38)
2-hr	**0.458** (0.404-0.523)	**0.569** (0.503-0.651)	**0.725** (0.634-0.829)	**0.858** (0.742-0.982)	**1.06** (0.892-1.22)	**1.24** (1.02-1.44)	**1.44** (1.15-1.71)	**1.71** (1.32-2.11)	**2.17** (1.60-2.77)	**2.59** (1.84-3.41)
3-hr	**0.555** (0.495-0.627)	**0.692** (0.622-0.784)	**0.861** (0.765-0.973)	**0.997** (0.881-1.13)	**1.19** (1.03-1.35)	**1.35** (1.15-1.55)	**1.53** (1.28-1.78)	**1.79** (1.47-2.12)	**2.23** (1.78-2.80)	**2.64** (2.05-3.45)
6-hr	**0.795** (0.708-0.892)	**0.992** (0.885-1.12)	**1.22** (1.08-1.38)	**1.40** (1.24-1.58)	**1.64** (1.42-1.86)	**1.81** (1.55-2.07)	**1.99** (1.67-2.30)	**2.19** (1.81-2.57)	**2.51** (2.02-2.99)	**2.81** (2.22-3.48)
12-hr	**1.06** (0.945-1.20)	**1.34** (1.19-1.51)	**1.68** (1.49-1.89)	**1.94** (1.71-2.19)	**2.29** (1.99-2.61)	**2.56** (2.19-2.94)	**2.83** (2.38-3.29)	**3.11** (2.56-3.65)	**3.47** (2.78-4.17)	**3.75** (2.95-4.59)
24-hr	**1.42** (1.27-1.61)	**1.78** (1.59-2.02)	**2.26** (2.01-2.56)	**2.64** (2.35-3.00)	**3.19** (2.80-3.62)	**3.62** (3.15-4.12)	**4.07** (3.51-4.67)	**4.54** (3.86-5.26)	**5.20** (4.33-6.08)	**5.71** (4.67-6.78)
2-day	**1.71** (1.50-1.96)	**2.15** (1.90-2.48)	**2.76** (2.42-3.19)	**3.26** (2.84-3.77)	**3.96** (3.41-4.60)	**4.53** (3.87-5.29)	**5.13** (4.32-6.04)	**5.76** (4.79-6.85)	**6.65** (5.39-8.03)	**7.37** (5.85-9.04)
3-day	**1.96** (1.73-2.24)	**2.48** (2.19-2.84)	**3.22** (2.84-3.69)	**3.83** (3.37-4.39)	**4.71** (4.09-5.41)	**5.42** (4.67-6.25)	**6.19** (5.26-7.18)	**7.01** (5.88-8.20)	**8.19** (6.70-9.70)	**9.14** (7.35-11.0)
4-day	**2.21** (1.96-2.51)	**2.81** (2.49-3.19)	**3.68** (3.26-4.19)	**4.41** (3.89-5.02)	**5.46** (4.77-6.22)	**6.32** (5.47-7.22)	**7.25** (6.20-8.33)	**8.26** (6.96-9.54)	**9.71** (8.01-11.4)	**10.9** (8.84-12.9)
7-day	**2.62** (2.30-2.99)	**3.35** (2.94-3.83)	**4.44** (3.90-5.09)	**5.33** (4.66-6.11)	**6.60** (5.72-7.58)	**7.63** (6.55-8.79)	**8.74** (7.43-10.1)	**9.93** (8.34-11.6)	**11.6** (9.57-13.7)	**13.0** (10.5-15.5)
10-day	**2.97** (2.60-3.40)	**3.82** (3.35-4.37)	**5.08** (4.45-5.82)	**6.08** (5.31-6.97)	**7.49** (6.48-8.59)	**8.62** (7.40-9.90)	**9.81** (8.36-11.3)	**11.1** (9.31-12.8)	**12.8** (10.6-15.1)	**14.2** (11.6-16.9)
20-day	**3.77** (3.33-4.29)	**4.83** (4.28-5.51)	**6.40** (5.65-7.28)	**7.61** (6.69-8.66)	**9.27** (8.10-10.6)	**10.6** (9.17-12.1)	**11.9** (10.2-13.7)	**13.3** (11.3-15.4)	**15.2** (12.8-17.8)	**16.7** (13.8-19.8)
30-day	**4.55** (4.02-5.20)	**5.85** (5.17-6.68)	**7.72** (6.81-8.82)	**9.18** (8.05-10.5)	**11.2** (9.73-12.8)	**12.7** (11.0-14.6)	**14.3** (12.3-16.5)	**15.9** (13.6-18.5)	**18.2** (15.3-21.3)	**19.9** (16.5-23.6)
45-day	**5.49** (4.85-6.17)	**7.06** (6.24-7.94)	**9.31** (8.22-10.5)	**11.0** (9.68-12.4)	**13.2** (11.6-14.9)	**15.0** (13.0-16.9)	**16.7** (14.4-18.9)	**18.4** (15.8-21.0)	**20.8** (17.6-23.9)	**22.5** (18.9-26.1)
60-day	**6.32** (5.55-7.16)	**8.18** (7.18-9.25)	**10.8** (9.44-12.2)	**12.7** (11.1-14.3)	**15.1** (13.1-17.0)	**16.8** (14.6-19.1)	**18.6** (16.0-21.2)	**20.3** (17.4-23.2)	**22.5** (19.1-25.9)	**24.1** (20.4-28.0)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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APPENDIX A-6.0

LAG TIME AND REACH CALCULATIONS – EXISTING CONDITION

Ascenté Existing Condition - Reaches

Input Values for HEC-HMS

Ex. Reach ID	1	2	3	4	5	6
Length [ft]	472	550	1134	2322	2360	1065
Slope [ft/ft]	0.02	0.01	0.11	0.09	0.08	0.01
Manning's n	0.05	0.05	0.05	0.05	0.05	0.05
Channel Shape	Trapezoid	Trapezoid	Trapezoid	Trapezoid	Trapezoid	Trapezoid
Bottom Width [ft]	200	150	25	2	2	175
Side Slope (xH:1V)	100.00	50.00	5.00	5.00	5.00	25.00

Ascenté Existing Conditions

SCS Methodology:

$$t_i = \frac{1.8(1.1 - R)L_o^{1/2}}{S^{1/3}}$$

$$FR = 0.0132CN - 0.39$$

$$R = \frac{(b + zy)y}{b + 2y\sqrt{1 + z^2}}$$

$$v = \frac{1.49R^{2/3}S^{1/2}}{n}$$

$$t_t = v/L$$

$$t_c = t_i + t_t$$

$$TLAG_{SCS} = 0.6t_c$$

$$S = \frac{1000}{CN} - 10$$

$$IA = 0.2S$$

		Watershed ID	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		Basin Area [ac]	23.5	66.8	10.22	103.53	8.71	8.74	10.23	28.16	52.5	28.5	49.83	107.23	3.41	24.63
		Basin Area [mi2]	0.037	0.104	0.016	0.162	0.014	0.014	0.016	0.044	0.082	0.045	0.078	0.168	0.005	0.038
		Total Tc Length [ft]	1726	2591	1456	3973	1414	1668	1794	1810	2719	2358	2360	3451	661	2669
Initial Overland Time	t_i	Average Basin Slope: S [%]	1.4	12.7	1.8	13.7	15.6	13.2	18.4	19.0	14.0	19.7	8.1	18.3	12.7	16.3
		Average Curve Number (CN)	78.0	75.3	78.5	71.1	70.8	70.4	71.3	72.4	69.0	72.8	70.4	75.6	45.3	57.9
		Flow Runoff Coefficient: FR	0.64	0.60	0.65	0.55	0.54	0.54	0.55	0.57	0.52	0.57	0.54	0.61	0.21	0.37
		Length of Overland Flow (Max 500): Lo [ft]	500	500	500	500	500	500	500	500	500	500	500	500	500	500
		Initial Overland Flow Time: t_i [min]	16.6	8.6	15.0	9.3	9.0	9.6	8.4	8.1	9.7	7.9	11.2	7.5	15.4	11.5
Channelized Travel Time	t_t	Typical Trapezoidal Channel Shape														
		Typical Channel Depth: y [ft]	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
		Typical Bottom Width: b [ft]	12	12	12	12	12	12	12	12	12	12	12	12	12	12
		Typical Side Slope: z:1	10	10	10	10	10	10	10	10	10	10	10	10	10	10
		Hydraulic Radius: R [ft]	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
		Slope: S [ft/ft]	0.014	0.127	0.018	0.137	0.156	0.132	0.184	0.190	0.140	0.197	0.081	0.183	0.127	0.163
		Manning's Coefficient: n	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
		Veloctiy: v [ft/s]	1.9	5.6	2.1	5.8	6.2	5.7	6.8	6.9	5.9	7.0	4.5	6.8	5.6	6.4
		Watercourse Length: L [ft]	1226	2091	956	3473	914	1168	1294	1310	2219	1858	1860	2951	161	2169
		Channelized' Travel Time: t_t [min]	10.9	6.2	7.5	9.9	2.4	3.4	3.2	3.2	6.3	4.4	6.9	7.3	0.5	5.7
	t_c	Time of Concentration [min]	27.5	14.7	22.5	19.2	11.4	12.9	11.5	11.2	15.9	12.3	18.1	14.8	15.9	17.2
	t_c	Time of Concentration Adjusted* [min]	27.5	14.7	22.5	19.2	11.4	12.9	11.5	11.2	15.9	12.3	18.1	14.8	15.9	17.2
	TLAG	Lag Time	16.5	8.8	13.5	11.5	6.8	7.8	6.9	6.7	9.6	7.4	10.9	8.9	9.5	10.3
		Available Moisture Storage Deficit: S [in]	2.82	3.28	2.73	4.06	4.13	4.21	4.02	3.80	4.50	3.73	4.20	3.23	12.07	7.29
		Initial Abstraction: IA [in]	0.56	0.66	0.55	0.81	0.83	0.84	0.80	0.76	0.90	0.75	0.84	0.65	2.41	1.46

* Minimum Time of Concentration shall be 10 minutes.

APPENDIX A-6.1

LAG TIME CALCULATIONS – PROPOSED CONDITION

Ascenté Proposed Conditions

SCS Methodology:

$$t_i = \frac{1.8(1.1-R)L_o^{1/2}}{S^{1/3}}$$

$$FR = 0.0132CN - 0.39$$

$$R = \frac{(b+zy)y}{b+2y\sqrt{1+z^2}}$$

$$v = \frac{1.49R^{2/3}S^{1.2}}{n}$$

$$t_t = L/v$$

$$t_c = t_i + t_t$$

$$TLAG_{SCS} = 0.6t_c$$

$$S = \frac{1000}{CN} - 10$$

$$IA = 0.2S$$

		Watershed ID	**1**	**2**	**3**	**4**	**5**
		Area [ac]	23.5	66.80	10.2	11.5	13.0
		Area [mi^2]	0.037	0.104	0.016	0.018	0.020
		Total Tc Length [ft]	1756	2558	1456	1110	973
Initial Overland Flow	t_i	Slope: S [%]	1.4	12.7	1.8	5.1	20.8
		Average Curve Number: CN	78.0	75.3	78.5	81.0	82.9
		Flow Runoff Coefficient: FR	0.64	0.60	0.65	0.68	0.70
		Length of Overland Flow (Max 500): Lo [ft]	500	500	500	178	168
		Initial Overland Flow Time: t_i [min]	16.6	8.6	15.0	5.9	3.4
Channelized Travel Time	t_t	Typical Channel Shape	Trape.	Trape.	Trape.	C&G	C&G
		Typical Channel Depth: y [ft]	0.5	0.5	0.5	-	-
		Typical Bottom Width: b [ft]	12	12	12	-	-
		Typical Side Slope: z:1	10	10	10	-	-
		Hydraulic Radius: R [ft]	0.39	0.39	0.39	-	-
		Slope: S [ft/ft]	0.013	0.098	0.032	-	-
		Manning's Coefficient: n	0.05	0.05	0.05	-	-
		Velociy: v [ft/s]	1.8	4.9	2.8	3.7	3.7
		Watercourse Length: L [ft]	1256	2058	956	932	805
		Travel Time in Ditch or Curb & Gutter: t_t [min]	11.8	7.0	5.6	4.2	3.6
	t_c	Time of Concentration [min]	28.3	15.5	20.6	10.1	7.0
		Basin Type (Urban or Vegetated)	Urban	Urban	Urban	Urban	Urban
	t_c	Time of Concentration Adjusted [min]	28.3	15.5	20.6	10.1	7.0
	TLAG	Lag Time [min]	17.0	9.3	12.4	6.0	4.2
		Available Moisture Storage Deficit: S [in]	2.82	3.28	2.73	2.34	2.07
		Initial Abstraction: IA [in]	0.56	0.66	0.55	0.47	0.41

Ascenté Proposed Conditions

SCS Methodology:

		Watershed ID	6		7	
		Area [ac]	7.2		15.1	
		Area [mi^2]	0.011		0.024	
		Total Tc Length [ft]	937		1700	
Initial Overland Flow	t_i	Slope: S [%]	11.1		20.0	
		Average Curve Number: CN	66.5		68.4	
		Flow Runoff Coefficient: FR	0.49		0.51	
		Length of Overland Flow (Max 500): Lo [ft]	450		500	
		Initial Overland Flow Time: t_i [min]	10.5		8.7	
Channelized Travel Time	t_t	Typical Channel Shape	Trape.	C.Swale	Trape.	C.Swale
		Typical Channel Depth: y [ft]	0.5	0.5	0.5	0.5
		Typical Bottom Width: b [ft]	12	-	12	-
		Typical Side Slope: z:1	10	3	10	3
		Hydraulic Radius: R [ft]	0.39	0.24	0.39	0.24
		Slope: S [ft/ft]	0.184	0.020	0.189	0.020
		Manning's Coefficient: n	0.05	0.013	0.05	0.013
		Velocity: v [ft/s]	6.8	6.2	6.9	6.2
		Watercourse Length: L [ft]	429	58	285	915
		Travel Time in Ditch or Curb & Gutter: t_t [min]	1.1	0.2	0.7	2.5
	t_c	Time of Concentration [min]	11.7		11.9	
		Basin Type (Urban or Vegetated)	Vege		Vege	
	t_c	Time of Concentration Adjusted [min]	11.7		11.9	
	TLAG	Lag Time [min]	7.0		7.1	
		Available Moisture Storage Deficit: S [in]	5.04		4.62	
		Initial Abstraction: IA [in]	1.01		0.92	

$$t_i = \frac{1.8(1.1-R)L_o^{1/2}}{S^{1/3}}$$

$$FR = 0.0132CN - 0.39$$

$$R = \frac{(b+zy)y}{b+2y\sqrt{1+z^2}}$$

$$v = \frac{1.49R^{2/3}S^{1.2}}{n}$$

$$t_t = L/v$$

$$t_c = t_i + t_t$$

$$TLAG_{SCS} = 0.6t_c$$

$$S = \frac{1000}{CN} - 10$$

$$IA = 0.2S$$

Ascenté Proposed Conditions

SCS Methodology:

$$t_i = \frac{1.8(1.1 - R)L_o^{1/2}}{S^{1/3}}$$

$$FR = 0.0132CN - 0.39$$

$$R = \frac{(b + zy)y}{b + 2y\sqrt{1 + z^2}}$$

$$v = \frac{1.49R^{2/3}S^{1.2}}{n}$$

$$t_t = L/v$$

$$t_c = t_i + t_t$$

$$TLAG_{SCS} = 0.6t_c$$

$$S = \frac{1000}{CN} - 10$$

$$IA = 0.2S$$

		Watershed ID	8		9	10
		Area [ac]	55.8		2.2	16.2
		Area [mi^2]	0.087		0.003	0.025
		Total Tc Length [ft]	3500		2022	2675
Initial Overland Flow	t_i	Slope: S [%]	24.0		1.0	2.0
		Average Curve Number: CN	64.1		82.6	82.7
		Flow Runoff Coefficient: FR	0.46		0.70	0.70
		Length of Overland Flow (Max 500): Lo [ft]	500		40	85
		Initial Overland Flow Time: t_i [min]	9.0		4.6	5.2
Channelized Travel Time	t_t	Typical Channel Shape	Trape.	C.Swale	C&G	C&G
		Typical Channel Depth: y [ft]	0.5	0.5	-	-
		Typical Bottom Width: b [ft]	12	-	-	-
		Typical Side Slope: z:1	10	3	-	-
		Hydraulic Radius: R [ft]	0.39	0.24	-	-
		Slope: S [ft/ft]	0.246	0.069	-	-
		Manning's Coefficient: n	0.05	0.013	-	-
		Velociy: v [ft/s]	7.8	11.5	3.7	3.7
		Watercourse Length: L [ft]	975	2025	1982	2590
		Travel Time in Ditch or Curb & Gutter: t_t [min]	2.1	2.9	8.9	11.7
	t_c	Time of Concentration [min]	14.0		13.5	16.9
		Basin Type (Urban or Vegetated)	Vege		Urban	Urban
	t_c	Time of Concentration Adjusted [min]	14.0		13.5	16.9
	TLAG	Lag Time [min]	8.4		8.1	10.1
		Available Moisture Storage Deficit: S [in]	5.60		2.11	2.09
		Initial Abstraction: IA [in]	1.12		0.42	0.42

Ascenté Proposed Conditions

SCS Methodology:

$$t_i = \frac{1.8(1.1 - R)L_o^{1/2}}{S^{1/3}}$$

$$FR = 0.0132CN - 0.39$$

$$R = \frac{(b + zy)y}{b + 2y\sqrt{1 + z^2}}$$

$$v = \frac{1.49R^{2/3}S^{1.2}}{n}$$

$$t_t = L/v$$

$$t_c = t_i + t_t$$

$$TLAG_{SCS} = 0.6t_c$$

$$S = \frac{1000}{CN} - 10$$

$$IA = 0.2S$$

		Watershed ID	**11**		**12**		**13**
		Area [ac]	26.2		27.9		27.9
		Area [mi^2]	0.041		0.044		0.044
		Total Tc Length [ft]	2480		1485		2600
Initial Overland Flow	t_i	Slope: S [%]	24.4		22.2		-
		Average Curve Number: CN	59.8		68.3		68.3
		Flow Runoff Coefficient: FR	0.40		0.51		-
		Length of Overland Flow (Max 500): Lo [ft]	500		500		-
		Initial Overland Flow Time: t_i [min]	9.7		8.4		-
Channelized Travel Time	t_t	Typical Channel Shape	Trape.	C&G	Trape.	C.Swale	C&G
		Typical Channel Depth: y [ft]	0.5	-	0.5	0.5	-
		Typical Bottom Width: b [ft]	12	-	12	-	-
		Typical Side Slope: z:1	10	-	10	3	-
		Hydraulic Radius: R [ft]	0.39	-	0.39	0.24	-
		Slope: S [ft/ft]	0.121	-	0.263	0.120	-
		Manning's Coefficient: n	0.05	-	0.05	0.013	-
		Veloctiy: v [ft/s]	5.5	3.7	8.1	15.2	3.7
		Watercourse Length: L [ft]	1160	820	175	810	2600
		Travel Time in Ditch or Curb & Gutter: t_t [min]	3.5	3.7	0.4	0.9	11.7
	t_c	Time of Concentration [min]	16.9		9.7		11.7
		Basin Type (Urban or Vegetated)	Vege		Vege		Urban
	t_c	Time of Concentration Adjusted [min]	16.9		10.0		11.7
	TLAG	Lag Time [min]	10.2		6.0		7.0
		Available Moisture Storage Deficit: S [in]	6.71		4.64		4.64
		Initial Abstraction: IA [in]	1.34		0.93		0.93

Ascenté Proposed Conditions

SCS Methodology:

$$t_i = \frac{1.8(1.1 - R)L_o^{1/2}}{S^{1/3}}$$

$$FR = 0.0132CN - 0.39$$

$$R = \frac{(b + zy)y}{b + 2y\sqrt{1 + z^2}}$$

$$v = \frac{1.49R^{2/3}S^{1.2}}{n}$$

$$t_t = L/v$$

$$t_c = t_i + t_t$$

$$TLAG_{SCS} = 0.6t_c$$

$$S = \frac{1000}{CN} - 10$$

$$IA = 0.2S$$

		Watershed ID	**14**		**15**	
		Area [ac]	16.5		19.8	
		Area [mi^2]	0.026		0.031	
		Total Tc Length [ft]	1570		1660	
Initial Overland Flow	t_i	Slope: S [%]	-		17.0	
		Average Curve Number: CN	70.9		73.0	
		Flow Runoff Coefficient: FR	-		0.57	
		Length of Overland Flow (Max 500): Lo [ft]	-		500	
		Initial Overland Flow Time: t_i [min]	-		8.2	
Channelized Travel Time	t_t	Typical Channel Shape	C&G	Trape.	C&G	Trape.
		Typical Channel Depth: y [ft]	-	0.5	-	3
		Typical Bottom Width: b [ft]	-	12	-	6
		Typical Side Slope: z:1	-	10	-	3
		Hydraulic Radius: R [ft]	-	0.39	-	1.80
		Slope: S [ft/ft]	-	0.218	-	0.056
		Manning's Coefficient: n	-	0.05	-	0.035
		Veloctiy: v [ft/s]	3.7	7.4	3.7	14.9
		Watercourse Length: L [ft]	1570	124	650	378
		Travel Time in Ditch or Curb & Gutter: t_t [min]	7.1	0.3	2.9	0.4
	t_c	Time of Concentration [min]	7.1		11.9	
		Basin Type (Urban or Vegetated)	Urban		Urban	
	t_c	Time of Concentration Adjusted [min]	7.1		11.9	
	TLAG	Lag Time [min]	4.2		7.1	
		Available Moisture Storage Deficit: S [in]	4.11		3.70	
		Initial Abstraction: IA [in]	0.82		0.74	

Ascenté Proposed Conditions

SCS Methodology:

$$t_i = \frac{1.8(1.1 - R)L_o^{1/2}}{S^{1/3}}$$

$$FR = 0.0132CN - 0.39$$

$$R = \frac{(b + zy)y}{b + 2y\sqrt{1 + z^2}}$$

$$v = \frac{1.49R^{2/3}S^{1.2}}{n}$$

$$t_t = L/v$$

$$t_c = t_i + t_t$$

$$TLAG_{SCS} = 0.6t_c$$

$$S = \frac{1000}{CN} - 10$$

$$IA = 0.2S$$

		Watershed ID	**16**		**17**	
		Area [ac]	6.6		22.6	
		Area [mi^2]	0.010		0.035	
		Total Tc Length [ft]	1070		1960	
Initial Overland Flow	t_i	Slope: S [%]	25.5		16.4	
		Average Curve Number: CN	84.3		64.1	
		Flow Runoff Coefficient: FR	0.72		0.46	
		Length of Overland Flow (Max 500): Lo [ft]	365		500	
		Initial Overland Flow Time: t_i [min]	4.4		10.2	
Channelized Travel Time	t_t	Typical Channel Shape	C&G	Trape.	Trape.	C.Swale	Trape.
		Typical Channel Depth: y [ft]	-	3	0.5	0.5	3
		Typical Bottom Width: b [ft]	-	6	12	-	6
		Typical Side Slope: z:1	-	3	10	3	3
		Hydraulic Radius: R [ft]	-	1.80	0.39	0.24	1.80
		Slope: S [ft/ft]	-	0.069	0.267	0.116	0.054
		Manning's Coefficient: n	-	0.035	0.05	0.013	0.035
		Veloctiy: v [ft/s]	3.7	16.5	8.2	15.0	14.6
		Watercourse Length: L [ft]	400	305	330	740	390
		Travel Time in Ditch or Curb & Gutter: t_t [min]	1.8	0.3	0.7	0.8	0.4
	t_c	Time of Concentration [min]	6.5		12.2	
		Basin Type (Urban or Vegetated)	Urban		Vege	
	t_c	Time of Concentration Adjusted [min]	6.5		12.2	
	TLAG	Lag Time [min]	3.9		7.3	
		Available Moisture Storage Deficit: S [in]	1.86		5.61	
		Initial Abstraction: IA [in]	0.37		1.12	

Ascenté Proposed Conditions

SCS Methodology:

$$t_i = \frac{1.8(1.1 - R)L_o^{1/2}}{S^{1/3}}$$

$$FR = 0.0132CN - 0.39$$

$$R = \frac{(b + zy)y}{b + 2y\sqrt{1 + z^2}}$$

$$v = \frac{1.49R^{2/3}S^{1.2}}{n}$$

$$t_t = L/v$$

$$t_c = t_i + t_t$$

$$TLAG_{SCS} = 0.6t_c$$

$$S = \frac{1000}{CN} - 10$$

$$IA = 0.2S$$

		Watershed ID	**18**		**19**		**20**
		Area [ac]	134.9		23.6		9.8
		Area [mi^2]	0.211		0.037		0.015
		Total Tc Length [ft]	3645		2350		1513
Initial Overland Flow	t_i	Slope: S [%]	32.0		-		21.2
	t_i	Average Curve Number: CN	63.1		64.5		72.0
	t_i	Flow Runoff Coefficient: FR	0.44		-		0.56
	t_i	Length of Overland Flow (Max 500): Lo [ft]	500		-		260
	t_i	Initial Overland Flow Time: t_i [min]	8.3		-		5.7
Channelized Travel Time	t_t	Typical Channel Shape	Trape.	C&G	C&G	C.Swale	C&G
	t_t	Typical Channel Depth: y [ft]	0.5	-	-	0.5	-
	t_t	Typical Bottom Width: b [ft]	12	-	-	-	-
	t_t	Typical Side Slope: z:1	10	-	-	3	-
	t_t	Hydraulic Radius: R [ft]	0.39	-	-	0.24	-
	t_t	Slope: S [ft/ft]	0.160	-	-	0.015	-
	t_t	Manning's Coefficient: n	0.05	-	-	0.013	-
	t_t	Veloctiy: v [ft/s]	6.3	3.7	3.7	5.3	3.7
	t_t	Watercourse Length: L [ft]	2576	569	904	1446	1253
	t_t	Travel Time in Ditch or Curb & Gutter: t_t [min]	6.8	2.6	4.1	4.6	5.6
	t_c	Time of Concentration [min]	17.7		8.6		11.3
		Basin Type (Urban or Vegetated)	Vege		Urban		Urban
	t_c	Time of Concentration Adjusted [min]	17.7		8.6		11.3
	TLAG	Lag Time [min]	10.6		5.2		6.8
		Available Moisture Storage Deficit: S [in]	5.84		5.51		3.89
		Initial Abstraction: IA [in]	1.17		1.10		0.78

APPENDIX A-6.2

REACHES – PROPOSED CONDITION

Ascenté Proposed Reaches

Input Values for HEC-HMS

Route ID	from	Elevation	to	Elevation	Length	Slope	n	Shape[1]	WD	Z	Dia[2]
R_01	CP_P5	5459	N.Basin 3	5455	260	0.015	0.013	½ Street	-	-	-
R_02	CP_P6	5490	CP_P6a	5480	190	0.053	0.013	Triang.	-	3	-
R_03	CP_P6a	5480	CP_P5	5459	515	0.041	0.013	½ Street	-	-	-
R_04	P9	5595	CP_P10	5589	465	0.013	0.013	Pipe	-	-	24"
R_05	CP_P10	5589	CP_P10a	5461	1775	0.072	0.013	Pipe	-	-	30"
R_06	CP_P10a	5460	N.Basin 3	5455	1000	0.005	0.013	Pipe	-	-	72"
R_07	P11	5740	CP_P10	5601	2675	0.052	0.013	Pipe	-	-	24"
R_08	P12	5410	S.Basin	5374	1570	0.023	0.013	½ Street	-	-	-
R_09	CP_13	5641	CP_18	5555	1150	0.075	0.013	Street	-	-	-
R_10	CP_16	5391	S.Basin	5369	378	0.058	0.035	Trape.	6	3	-
R_11	CP_17	5416	CP_16	5391	305	0.082	0.035	Trape.	6	3	-
R_12	CP_20	5432	CP_16	5419	215	0.060	0.013	Pipe	-	-	24"
R_13	CP_18	5552	CP_17	5416	1275	0.107	0.035	Trape.	6	3	-

[1] Reference Appendix for "HEC-HMS Equivalent Reach Sections".

[2] Autodesk Storm and Sanitay Analysis 2016 used for pipe analysis.

APPENDIX A-7.0

CN VALUES FOR EXISTING SUBBASINS

Ascenté Existing CN Values				
Cover Type	Soil Comp A (CN)	Soil Comp B (CN)	Soil Comp C (CN)	Soil Comp D (CN)
Developed (Open Space)	68	79	86	89
Developed (Low Intensity)	57	72	81	86
Developed (Medium Intensity)	77	85	90	92
Sagebrush w/ Grass, Good	35	35	47	55
Desert Shrub, Good	49	68	79	84

	A		B		C		D		COMPOSITE CN
	PERCENT	AREA (AC)	PERCENT	AREA (AC)	PERCENT	AREA (AC)	PERCENT	AREA (AC)	
AREA 1									
N Face Ex. Slopes	0 ac								
W/S/E Face Ex. Slopes	6.06 ac								
Fraction of C	1.00								
Fraction of D	0.00								
Developed (Open Space)	0.00%	0.00	0.00%	0.00	10.98%	2.58	0.00%	0.00	9.44
Developed (Low Intensity)	0.00%	0.00	0.00%	0.00	55.91%	13.14	0.00%	0.00	45.29
Developed (Medium Intensity)	0.00%	0.00	0.00%	0.00	7.32%	1.72	0.00%	0.00	6.59
Sagebrush w/ Grass, Good	0.00%	0.00	0.00%	0.00	23.21%	5.45	0.00%	0.00	10.91
Desert Shrub, Good	0.00%	0.00	0.00%	0.00	2.58%	0.61	0.00%	0.00	2.04
Total	0.00%	**0.00**	0.00%	**0.00**	100.00%	**23.50**	0.00%	**0.00**	**74.27**
AREA 2									
N Face Ex. Slopes	25.04 ac								
W/S/E Face Ex. Slopes	25.53 ac								
Fraction of C	0.29								
Fraction of D	0.71								
Developed (Open Space)	0.00%	0.00	0.00%	0.00	10.07%	3.02	0.00%	0.00	3.89
Developed (Low Intensity)	0.00%	0.00	0.00%	0.00	37.44%	11.23	2.45%	0.90	14.78
Developed (Medium Intensity)	0.00%	0.00	0.00%	0.00	3.60%	1.08	0.00%	0.00	1.46
Sagebrush w/ Grass, Good	0.00%	0.00	0.00%	0.00	34.32%	10.29	68.48%	25.20	27.99
Desert Shrub, Good	0.00%	0.00	0.00%	0.00	14.57%	4.37	29.08%	10.70	18.63
Total	0.00%	**0.00**	0.00%	**0.00**	44.90%	**30.00**	55.10%	**36.80**	**66.74**

APPENDIX A-7.0

CN VALUES FOR EXISTING SUBBASINS

AREA 3									
N Face Ex. Slopes	0 ac								
W/S/E Face Ex. Slopes	2.67 ac								
Fraction of C	1.00								
Fraction of D	0.00								
Developed (Low Intensity)	0.00%	0.00	0.00%	0.00	54.31%	5.55	0.00%	0.00	43.99
Developed (Medium Intensity)	0.00%	0.00	0.00%	0.00	19.57%	2.00	0.00%	0.00	17.61
Sagebrush w/ Grass, Good	0.00%	0.00	0.00%	0.00	23.51%	2.40	0.00%	0.00	11.05
Desert Shrub, Good	0.00%	0.00	0.00%	0.00	2.61%	0.27	0.00%	0.00	2.06
Total	0.00%	**0.00**	0.00%	**0.00**	100.00%	**10.22**	0.00%	**0.00**	**74.71**

AREA 4									
N Face Ex. Slopes	46.71 ac								
W/S/E Face Ex. Slopes	56.82 ac								
Fraction of C	0.52								
Fraction of D	0.48								
Sagebrush w/ Grass, Good	0.00%	0.00	0.00%	0.00	71.95%	38.74	71.95%	35.76	36.58
Desert Shrub, Good	0.00%	0.00	0.00%	0.00	28.05%	15.10	28.05%	13.94	22.83
Total	0.00%	**0.00**	0.00%	**0.00**	52.00%	**53.84**	48.00%	**49.69**	**59.41**

AREA 5									
N Face Ex. Slopes	0 ac								
W/S/E Face Ex. Slopes	8.71 ac								
Fraction of C	0.12								
Fraction of D	0.88								
Sagebrush w/ Grass, Good	0.00%	0.00	0.00%	0.00	90.00%	0.94	90.00%	6.90	48.64
Desert Shrub, Good	0.00%	0.00	0.00%	0.00	10.00%	0.10	10.00%	0.77	8.34
Total	0.00%	**0.00**	0.00%	**0.00**	12.00%	**1.05**	88.00%	**7.66**	**56.98**

AREA 6									
N Face Ex. Slopes	0 ac								
W/S/E Face Ex. Slopes	8.74 ac								
Fraction of C	0.18								
Fraction of D	0.82								
Sagebrush w/ Grass, Good	0.00%	0.00	0.00%	0.00	89.61%	1.42	90.09%	6.45	48.20
Desert Shrub, Good	0.00%	0.00	0.00%	0.00	9.96%	0.16	10.01%	0.72	8.31
Total	0.00%	**0.00**	0.00%	**0.00**	18.08%	**1.58**	81.92%	**7.16**	**56.51**

APPENDIX A-7.0

CN VALUES FOR EXISTING SUBBASINS

AREA 7									
N Face Ex. Slopes	0 ac								
W/S/E Face Ex. Slopes	10.23 ac								
Fraction of C	0.03								
Fraction of D	0.97								
Sagebrush w/ Grass, Good	0.00%	0.00	0.00%	0.00	86.32%	0.28	90.03%	8.93	49.24
Desert Shrub, Good	0.00%	0.00	0.00%	0.00	9.59%	0.03	10.00%	0.99	8.38
Total	0.00%	**0.00**	0.00%	**0.00**	3.13%	**0.32**	96.88%	**9.92**	**57.61**

AREA 8									
N Face Ex. Slopes	3.69 ac								
W/S/E Face Ex. Slopes	24.47 ac								
Fraction of C	0.00								
Fraction of D	1.00								
Sagebrush w/ Grass, Good	0.00%	0.00	0.00%	0.00	0.00%	0.00	84.76%	23.87	46.62
Desert Shrub, Good	0.00%	0.00	0.00%	0.00	0.00%	0.00	15.24%	4.29	12.80
Total	0.00%	**0.00**	0.00%	**0.00**	0.00%	**0.00**	100.00%	**28.16**	**59.42**

AREA 9									
N Face Ex. Slopes	0 ac								
W/S/E Face Ex. Slopes	52.50 ac								
Fraction of B	0.09								
Fraction of C	0.14								
Fraction of D	0.77								
Sagebrush w/ Grass, Good	0.00%	0.00	90.00%	4.25	90.00%	6.62	90.00%	36.38	46.87
Desert Shrub, Good	0.00%	0.00	10.00%	0.47	10.00%	0.74	10.00%	4.04	8.19
Total	0.00%	**0.00**	9.00%	**4.73**	14.00%	**7.35**	77.00%	**40.43**	**55.06**

AREA 10									
N Face Ex. Slopes	5.42 ac								
W/S/E Face Ex. Slopes	23.08 ac								
Fraction of C	0.00								
Fraction of D	1.00								
Sagebrush w/ Grass, Good	0.00%	0.00	0.00%	0.00	0.00%	0.00	82.39%	23.48	45.32
Desert Shrub, Good	0.00%	0.00	0.00%	0.00	0.00%	0.00	17.61%	5.02	14.79
Total	0.00%	**0.00**	0.00%	**0.00**	0.00%	**0.00**	100.00%	**28.50**	**60.11**

APPENDIX A-7.0

CN VALUES FOR EXISTING SUBBASINS

AREA 11									
N Face Ex. Slopes	28.22 ac								
W/S/E Face Ex. Slopes	20.61 ac								
Fraction of A	0.10								
Fraction of B	0.01								
Fraction of C	0.17								
Fraction of D	0.72								
Sagebrush w/ Grass, Good	66.88%	3.27	66.88%	0.33	66.88%	5.55	66.88%	23.51	34.40
Desert Shrub, Good	33.12%	1.62	33.12%	0.16	33.12%	2.75	33.12%	11.64	26.32
Total	10.00%	**4.88**	1.00%	**0.49**	17.00%	**8.30**	72.00%	**35.16**	**60.73**

AREA 12									
N Face Ex. Slopes	67.17 ac								
W/S/E Face Ex. Slopes	40.06 ac								
Fraction of C	0.00								
Fraction of D	1.00								
Sagebrush w/ Grass, Good	0.00%	0.00	0.00%	0.00	0.00%	0.00	64.94%	69.64	35.72
Desert Shrub, Good	0.00%	0.00	0.00%	0.00	0.00%	0.00	35.06%	37.59	29.45
Total	0.00%	**0.00**	0.00%	**0.00**	0.00%	**0.00**	100.00%	**107.23**	**65.17**

AREA 13									
N Face Ex. Slopes	0 ac								
W/S/E Face Ex. Slopes	3.41 ac								
Fraction of A	0.55								
Fraction of B	0.19								
Fraction of C	0.26								
Fraction of D	0.00								
Sagebrush w/ Grass, Good	90.00%	1.69	90.00%	0.58	90.00%	0.80	0.00%	0.00	34.31
Desert Shrub, Good	10.00%	0.19	10.00%	0.06	10.00%	0.09	0.00%	0.00	6.04
Total	55.00%	**1.88**	19.00%	**0.65**	26.00%	**0.89**	0.00%	**0.00**	**40.35**

AREA 14									
N Face Ex. Slopes	0 ac								
W/S/E Face Ex. Slopes	24.63 ac								
Fraction of A	0.36								
Fraction of B	0.00								
Fraction of C	0.00								
Fraction of D	0.64								
Sagebrush w/ Grass, Good	90.00%	7.98	0.00%	0.00	0.00%	0.00	90.00%	14.19	43.02
Desert Shrub, Good	10.00%	0.89	0.00%	0.00	0.00%	0.00	10.00%	1.58	7.14
Total	36.00%	**8.87**	0.00%	**0.00**	0.00%	**0.00**	64.00%	**15.76**	**50.16**

APPENDIX A-7.1

CN VALUES FOR PROPOSED SUBBASINS

Ascenté Proposed CN Values				
Cover Type	Soil Comp A (CN)	Soil Comp B (CN)	Soil Comp C (CN)	Soil Comp D (CN)
Developed (Open Space)	68	79	86	89
Developed (Low Intensity)	57	72	81	86
Developed (Medium Intensity)	77	85	90	92
Sagebrush w/ Grass, Good	35	35	47	55
Desert Shrub, Good	49	68	79	84
Residential (1/4 Acre)	61	75	83	87
Residential (1/2 Acre)	54	70	80	85
Residential (3/7 Acre)*	56	71	81	86
Residential (1/3 Acre)	57	72	81	86
Residential (1 Acre)	51	68	79	84
Residential (2 Acre)	46	65	77	82
Residential (1 2/7 Acre)*	50	67	78	83
Paved	89	89	89	89

*Residential values interpolated.

Lot Sizes		
North Pod	1/3	acre
Upper Pod	1	acre
South Pod	3/7	acre
Custom	1 2/7	acre

	A		B		C		D		COMPOSITE CN
	PERCENT	AREA (AC)	PERCENT	AREA (AC)	PERCENT	AREA (AC)	PERCENT	AREA (AC)	
AREA 1									
N Face Ex. Slopes	0 ac								
W/S/E Face Ex. Slopes	6.06 ac								
Fraction of C	1.00								
Fraction of D	0.00								
Developed (Open Space)	0.00%	0.00	0.00%	0.00	10.98%	2.58	0.00%	0.00	9.44
Developed (Low Intensity)	0.00%	0.00	0.00%	0.00	55.91%	13.14	0.00%	0.00	45.29
Developed (Medium Intensity)	0.00%	0.00	0.00%	0.00	7.32%	1.72	0.00%	0.00	6.59
Sagebrush w/ Grass, Good	0.00%	0.00	0.00%	0.00	23.21%	5.45	0.00%	0.00	10.91
Desert Shrub, Good	0.00%	0.00	0.00%	0.00	2.58%	0.61	0.00%	0.00	2.04
Total	0.00%	**0.00**	0.00%	**0.00**	100.00%	**23.50**	0.00%	**0.00**	**74.27**
AREA 2									
N Face Ex. Slopes	25.04 ac								
W/S/E Face Ex. Slopes	25.53 ac								
Fraction of C	0.29								
Fraction of D	0.71								
Developed (Open Space)	0.00%	0.00	0.00%	0.00	10.07%	3.02	0.00%	0.00	3.89
Developed (Low Intensity)	0.00%	0.00	0.00%	0.00	37.44%	11.23	2.45%	0.90	14.78
Developed (Medium Intensity)	0.00%	0.00	0.00%	0.00	3.60%	1.08	0.00%	0.00	1.46
Sagebrush w/ Grass, Good	0.00%	0.00	0.00%	0.00	34.32%	10.29	68.48%	25.20	27.99
Desert Shrub, Good	0.00%	0.00	0.00%	0.00	14.57%	4.37	29.08%	10.70	18.63
Total	0.00%	**0.00**	0.00%	**0.00**	44.90%	**30.00**	55.10%	**36.80**	**66.74**

APPENDIX A-7.1

CN VALUES FOR PROPOSED SUBBASINS

AREA 3

N Face Ex. Slopes	0 ac
W/S/E Face Ex. Slopes	2.67 ac
Fraction of C	1.00
Fraction of D	0.00

Developed (Low Intensity)	0.00%	0.00	0.00%	0.00	54.31%	5.55	0.00%	0.00	43.99
Developed (Medium Intensity)	0.00%	0.00	0.00%	0.00	19.57%	2.00	0.00%	0.00	17.61
Sagebrush w/ Grass, Good	0.00%	0.00	0.00%	0.00	23.51%	2.40	0.00%	0.00	11.05
Desert Shrub, Good	0.00%	0.00	0.00%	0.00	2.61%	0.27	0.00%	0.00	2.06
Total	0.00%	**0.00**	0.00%	**0.00**	100.00%	**10.22**	0.00%	**0.00**	**74.71**

P04

% Soil Comp A	0.00%	**Total Residential:**	11.49 ac
% Soil Comp B	0.00%	**Total Area:**	11.49 ac
% Soil Comp C	99.40%		
% Soil Comp D	0.60%		
	100.00%		

	A		B		C		D		
Residential (1/3 Acre)	0.00%	0.00	0.00%	0.00	100.00%	11.42	100.00%	0.07	81.03
Total	0.00%	0.00	0.00%	0.00	99.40%	11.42	0.60%	0.07	**81.03**

P05

% Soil Comp A	0.00%	**Total Residential:**	13.03 ac
% Soil Comp B	0.00%	**Total Area:**	13.03 ac
% Soil Comp C	62.50%		
% Soil Comp D	37.50%		
	100.00%		

	A		B		C		D		
Residential (1/3 Acre)	0.00%	0.00	0.00%	0.00	100.00%	8.14	100.00%	4.89	82.88
Total	0.00%	0.00	0.00%	0.00	62.50%	8.14	37.50%	4.89	**82.88**

P06

% Soil Comp A	0.00%	**Total Existing Cond.:**	5.04 ac
% Soil Comp B	0.00%	**Total Residential:**	2.17 ac
% Soil Comp C	20.90%	**Total Area:**	7.21 ac
% Soil Comp D	79.10%		
	100.00%		
Existing CN	59.41		

	A		B		C		D		
Residential (1 Acre)	0.00%	0.00	0.00%	0.00	100.00%	0.45	100.00%	1.72	82.96
Total	0.00%	0.00	0.00%	0.00	20.90%	0.45	79.10%	1.72	**66.50**

APPENDIX A-7.1

CN VALUES FOR PROPOSED SUBBASINS

P07

% Soil Comp A	0.00%	**Total Existing Cond.:**	8.90 ac
% Soil Comp B	0.00%	**Total Residential:**	6.15 ac
% Soil Comp C	17.60%	**Total Area:**	15.05 ac
% Soil Comp D	82.40%		
	100.00%		
Existing CN	58.19		

	A		B		C		D		
Residential (1 Acre)	0.00%	0.00	0.00%	0.00	100.00%	1.08	100.00%	5.07	83.12
Total	0.00%	0.00	0.00%	0.00	17.60%	1.08	82.40%	5.07	**68.38**

P08

% Soil Comp A	0.00%	**Total Existing Cond.:**	45.06 ac
% Soil Comp B	0.00%	**Total Residential:**	9.87 ac
% Soil Comp C	51.10%	**Total Paved:**	0.84 ac
% Soil Comp D	48.90%	**Total Area:**	55.77 ac
	100.00%		
Existing CN	59.41		

	A		B		C		D		
Residential (1/3 Acre)	0.00%	0.00	0.00%	0.00	92.16%	5.04	92.16%	4.83	83.88
Paved	0.00%	0.00	100.00%	0.00	7.84%	0.43	7.84%	0.41	
Total	0.00%	0.00	0.00%	0.00	51.10%	5.47	48.90%	5.24	**64.11**

P09

% Soil Comp A	0.00%	**Total Residential:**	2.16 ac
% Soil Comp B	0.00%	**Total Area:**	2.16 ac
% Soil Comp C	28.50%		
% Soil Comp D	71.50%		
	100.00%		

	A		B		C		D		
Residential (1 Acre)	0.00%	0.00	0.00%	0.00	100.00%	0.62	100.00%	1.54	82.58
Total	0.00%	0.00	0.00%	0.00	28.50%	0.62	71.50%	1.54	**82.58**

P10

% Soil Comp A	0.00%	**Total Residential:**	16.24 ac
% Soil Comp B	0.00%	**Total Area:**	16.24 ac
% Soil Comp C	25.80%		
% Soil Comp D	74.20%		
	100.00%		

	A		B		C		D		
Residential (1 Acre)	0.00%	0.00	0.00%	0.00	100.00%	4.19	100.00%	12.05	82.71
Total	0.00%	0.00	0.00%	0.00	25.80%	4.19	74.20%	12.05	**82.71**

APPENDIX A-7.1

CN VALUES FOR PROPOSED SUBBASINS

P11			
% Soil Comp A	0.00%	**Total Existing Cond.:**	25.80 ac
% Soil Comp B	0.00%	**Total Paved:**	0.37 ac
% Soil Comp C	0.00%	**Total Area:**	26.17 ac
% Soil Comp D	100.00%		
	100.00%		
Existing CN	59.42		

	A		B		C		D		
Paved	0.00%	0.00	0.00%	0.00	0.00%	0.00	100.00%	0.37	89.00
Total	0.00%	0.00	0.00%	0.00	0.00%	0.00	100.00%	0.37	**59.83**

P12			
% Soil Comp A	0.00%	**Total Existing Cond.:**	15.63 ac
% Soil Comp B	0.00%	**Total Residential:**	12.23 ac
% Soil Comp C	0.10%	**Total Area:**	27.86 ac
% Soil Comp D	99.90%		
	100.00%		
Existing CN	56.06		

	A		B		C		D		
Residential (1 Acre)	0.00%	0.00	0.00%	0.00	100.00%	0.01	100.00%	12.22	84.00
Total	0.00%	0.00	0.00%	0.00	0.10%	0.01	99.90%	12.22	**68.32**

P13			
% Soil Comp A	0.00%	**Total Residential:**	16.67 ac
% Soil Comp B	0.00%	**Total Area:**	16.67 ac
% Soil Comp C	0.00%		
% Soil Comp D	100.00%		
	100.00%		

	A		B		C		D		
Residential (1 Acre)	0.00%	0.00	0.00%	0.00	0.00%	0.00	100.00%	16.67	84.00
Total	0.00%	0.00	0.00%	0.00	0.00%	0.00	100.00%	16.67	**84.00**

P14			
% Soil Comp A	9.23%	**Total Existing Cond.:**	2.36 ac
% Soil Comp B	32.33%	**Total Residential:**	14.15 ac
% Soil Comp C	45.63%	**Total Area:**	16.51 ac
% Soil Comp D	12.83%		
	100.00%		
Existing CN	55.06		

	A		B		C		D		
Residential (1 Acre)	100.00%	1.31	100.00%	4.57	100.00%	6.46	100.00%	1.81	73.50
Total	9.23%	1.31	32.33%	4.57	45.63%	6.46	12.83%	1.81	**70.87**

APPENDIX A-7.1

CN VALUES FOR PROPOSED SUBBASINS

P15									
% Soil Comp A	22.77%		Total Existing Cond.:		4.44 ac				
% Soil Comp B	0.00%		Total Residential:		15.35 ac				
% Soil Comp C	31.47%		Total Area:		19.79 ac				
% Soil Comp D	45.77%								
	100.00%								
Existing CN	57.89								
	A		B		C		D		
Residential (3/7 Acre)	100.00%	3.49	0.00%	0.00	100.00%	4.83	100.00%	7.02	77.34
Total	22.77%	3.49	0.00%	0.00	31.47%	4.83	45.77%	7.02	**72.97**

P16									
% Soil Comp A	0.00%		Total Residential:		6.55 ac				
% Soil Comp B	0.00%		Total Area:		6.55 ac				
% Soil Comp C	26.20%								
% Soil Comp D	73.80%								
	100.00%								
	A		B		C		D		
Residential (3/7 Acre)	0.00%	0.00	0.00%	0.00	100.00%	1.72	100.00%	4.83	84.32
Total	0.00%	0.00	0.00%	0.00	26.20%	1.72	73.80%	4.83	**84.32**

P17									
% Soil Comp A	0.00%		Total Existing Cond.:		17.52 ac				
% Soil Comp B	0.00%		Total Residential:		5.04 ac				
% Soil Comp C	1.40%		Total Area:		22.56 ac				
% Soil Comp D	98.60%								
	100.00%								
Existing CN	57.89								
	A		B		C		D		
Residential (1 Acre)	0.00%	0.00	0.00%	0.00	100.00%	0.07	100.00%	4.97	85.49
Total	0.00%	0.00	0.00%	0.00	1.40%	0.07	98.60%	4.97	**64.06**

APPENDIX A-7.1

CN VALUES FOR PROPOSED SUBBASINS

P18

% Soil Comp A	0.00%	Total Existing Cond.:	128.41 ac
% Soil Comp B	0.00%	Total Residential:	4.81 ac
% Soil Comp C	0.00%	Total Paved:	1.66 ac
% Soil Comp D	100.00%	Total Area:	134.88 ac
	100.00%		
Existing CN	65.17		

	A		B		C		D		
Residential (Custom)	0.00%	0.00	0.00%	0.00	0.00%	0.00	74.35%	4.81	22.83
Paved	0.00%	0.00	100.00%	0.00	0.00%	0.00	25.65%	1.66	
Total	0.00%	0.00	0.00%	0.00	0.00%	0.00	100.00%	6.47	**63.13**

P19

% Soil Comp A	41.50%	Total Existing Cond.:	7.47 ac
% Soil Comp B	1.10%	Total Residential (3/7):	8.37 ac
% Soil Comp C	1.70%	Total Residential-Custom	7.71 ac
% Soil Comp D	55.70%	Total Area:	23.55 ac
	100.00%		
Existing CN	50.16		

	A		B		C		D		
Residential (3/7)	52.05%	3.47	52.05%	0.09	52.05%	0.14	52.05%	4.66	38.02
Residential (Custom)	47.95%	3.20	47.95%	0.08	47.95%	0.13	47.95%	4.29	33.13
Total	41.50%	6.67	1.10%	0.18	1.70%	0.27	55.70%	8.96	**64.49**

P20

% Soil Comp A	0.00%	Total Existing Cond.:	5.15 ac
% Soil Comp B	0.00%	Total Residential:	3.78 ac
% Soil Comp C	2.10%	Total Paved:	0.91 ac
% Soil Comp D	97.90%	Total Area:	9.84 ac
	100.00%		
Existing CN	60.73		

	A		B		C		D		
Residential (Custom)	0.00%	0.00	0.00%	0.00	80.60%	0.08	80.60%	3.70	67.15
Paved	0.00%	0.00	0.00%	0.00	19.40%	0.02	19.40%	0.89	17.27
Total	0.00%	0.00	0.00%	0.00	2.10%	0.10	97.90%	4.59	**72.02**

APPENDIX A-8.0

DETENTION BASIN PAIRED DATA (AREA-ELEVATION)

Ascenté Proposed Basins
Area-Elevation Data

Elevation [ft]	Area [ft2]	Area [ac]	Vol [ac-ft]
North Basin 1			
5452	2140	0.049	0.00
5454	3408	0.078	0.13
5456	4893	0.112	0.32
5458	6604	0.152	0.58
5460	8541	0.196	**0.93**
North Basin 2			
5450	8975	0.206	0.00
5452	11967	0.275	0.48
5454	15258	0.350	1.11
5456	18762	0.431	1.89
5458	22493	0.516	2.83
5460	26451	0.607	**3.96**
North Basin 3			
5444	26806	0.615	0.00
5446	31342	0.720	1.33
5448	36104	0.829	2.88
5450	41093	0.943	4.66
5452	46307	1.063	6.66
5454	51748	1.188	**8.91**
South Basin			
5350	18326	0.421	0
5352	22051	0.506	0.93
5354	26035	0.598	2.03
5356	30262	0.695	3.32
5358	34714	0.797	4.81
5360	39313	0.903	**6.51**

APPENDIX A-8.1

DETENTION BASIN OUTLET STRUCTURES

Ascenté Proposed Basins
Detention Basin Outlet Structure Data

North Basin 1			
Type:	Culvert	IE(up): [ft]	5452.5
Shape:	Circular	IE(down): [ft]	5450.5
Length: [ft]	140	Mannings n:	0.013
Slope:	1.43%		
Max WSE: [ft]	5458.79		
Diameter: [ft]	1.5	#	1
North Basin 2			
Type:	Culvert	IE(up): [ft]	5450.5
Shape:	Circular	IE(down): [ft]	5450.0
Length: [ft]	80	Mannings n:	0.013
Slope:	0.63%	St. Vol: [ac-ft]	0.5
Max WSE: [ft]	5458.08		
Diameter: [ft]	3.5	#	1
North Basin 3			
Type:	Broad-Crested Weir		
Elevation: [ft]	5452.5	Length: [ft]	18.85
Barrel Dia: [ft]	6	WSE (high flow):	5452.51
Coefficient:	2.8	Depth: [ft]	-
Total #:	1		
Type:	Orifice	Area [sf]	0.13635
Shape:	Circular	IE [ft]	5444.50
Diameter: [in]	5	Center Elev [ft]	5444.71
Total #:	4	WSE (low flow):	5446.81
Type:	Orifice	Area [sf]	1.767
Shape:	Circular	IE [ft]	5448.00
Diameter: [in]	18	Center Elev [ft]	5448.75
Total #:	3	WSE (high flow):	5452.51

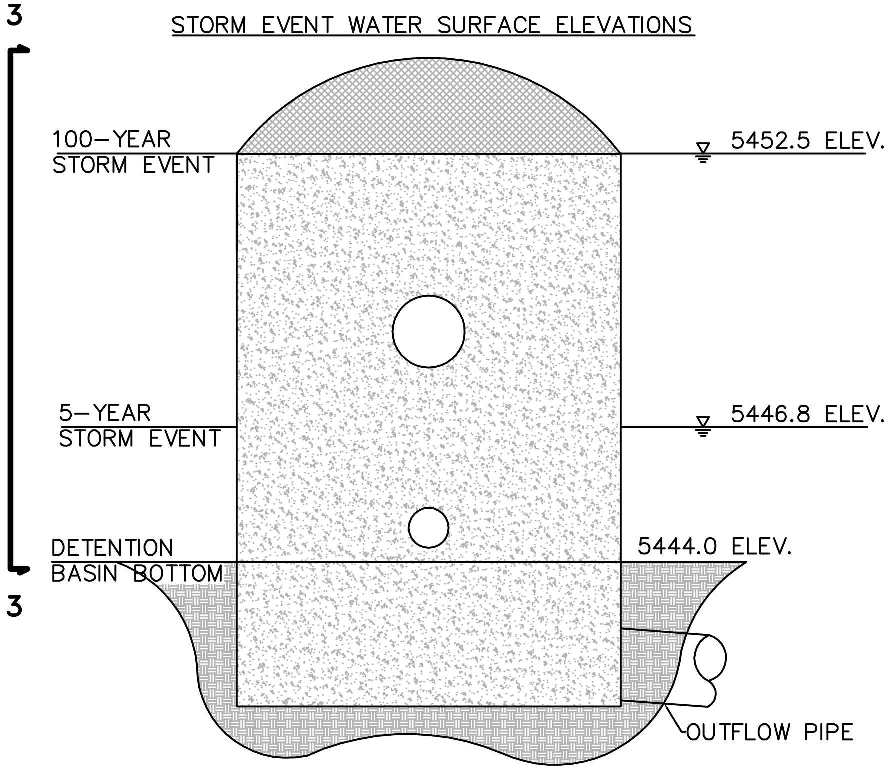
South Basin			
Type:	Orifice	Area [sf]	0.087
Shape:	Circular	IE [ft]	0.50
Diameter: [in]	4	Center Elev [ft]	0.67
Total #:	2	WSE (low flow):	5354.85
Type:	Orifice	Area [sf]	3.142
Shape:	Circular	IE [ft]	5355.00
Diameter: [in]	24	Center Elev [ft]	5356.00
Total #:	4	WSE (high flow):	5458.93
Type:	Broad-Crested Weir		
Elevation: [ft]	5358.8	Length: [ft]	25.13
Barrel Dia: [ft]	8	WSE (high flow):	5358.93
Coefficient:	2.8	Depth: [ft]	0.13
Total #:	1		

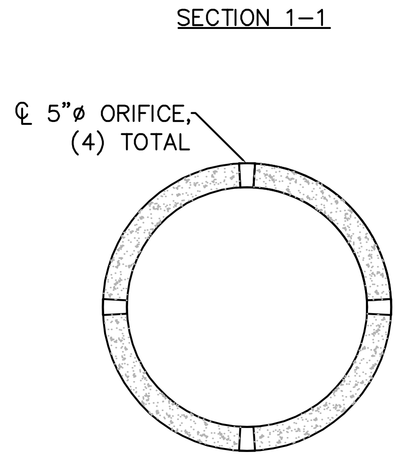
Ascenté Proposed Basins
Outlet Structure Input Data

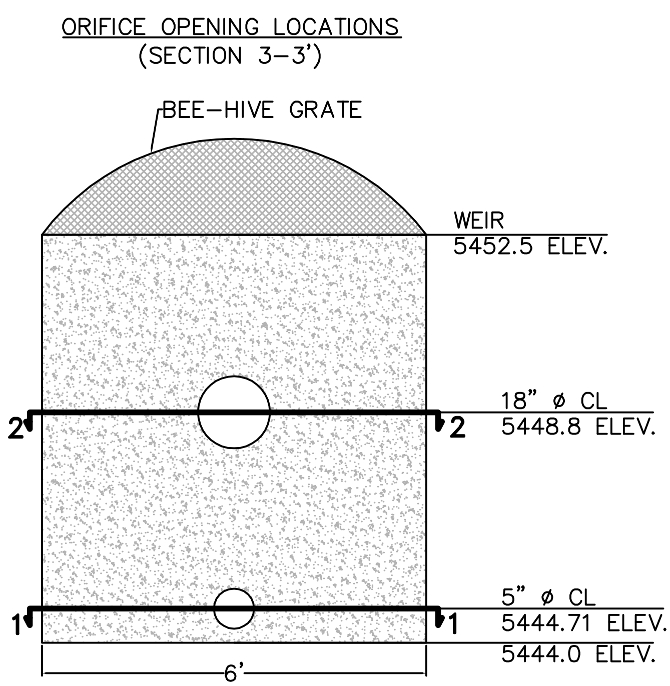
North Basin 3		
$Q_{100\ allowable}$=	124.6	cfs
Q_{100}=	58.8	cfs
$Q_{5\ allowable}$=	4.9	cfs
Q_{5}=	3.9	cfs
South Basin (including Outfall from P_19)		
$Q_{100\ allowable}$=	162.5	cfs
Q_{100}=	112.8	cfs
$Q_{5\ allowable}$=	2.0	cfs
Q_{5}=	2.0	cfs

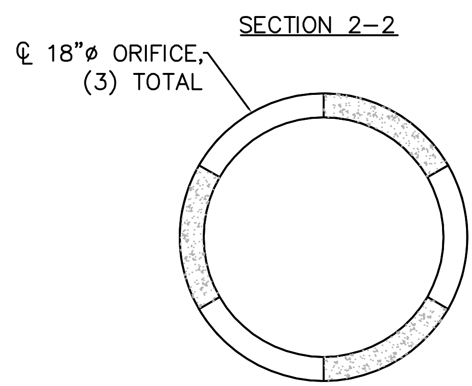
APPENDIX A-8.2

OUTLET STRUCTURE – NORTH BASIN









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OUTLET STRUCTURE - NORTH BASIN 3

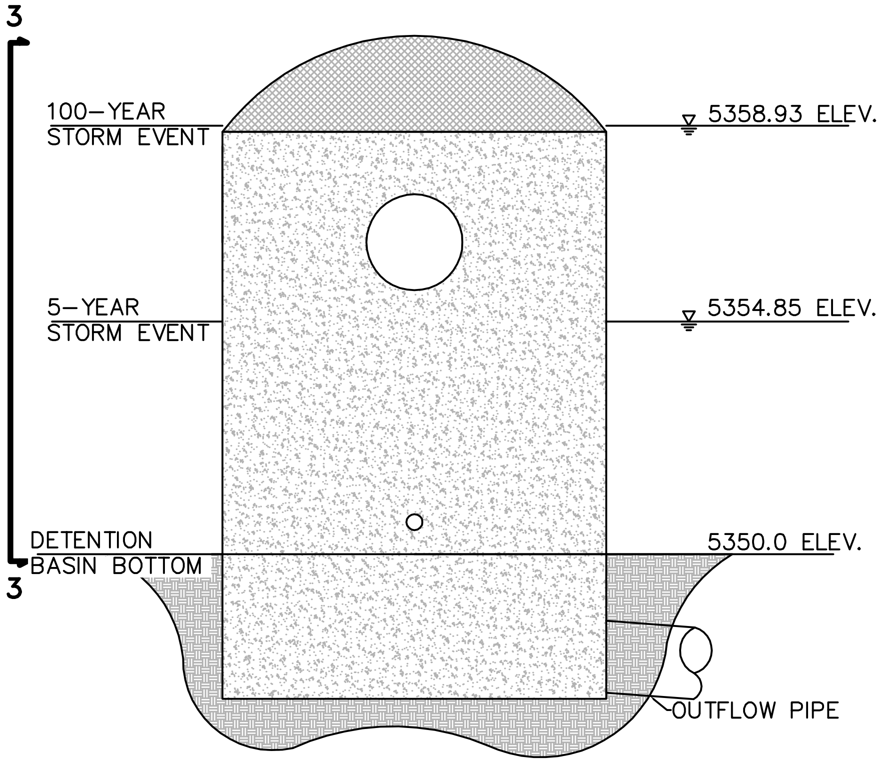
WASHOE COUNTY NEVADA

Date: 4/10/2017
Scale: NTS
Job No: 9019.000

A-8.2

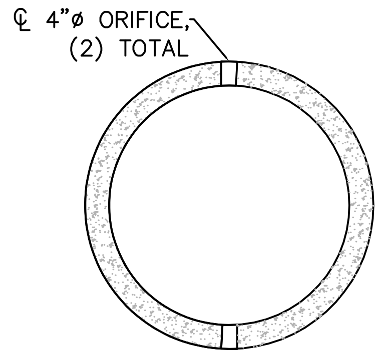
APPENDIX A-8.3

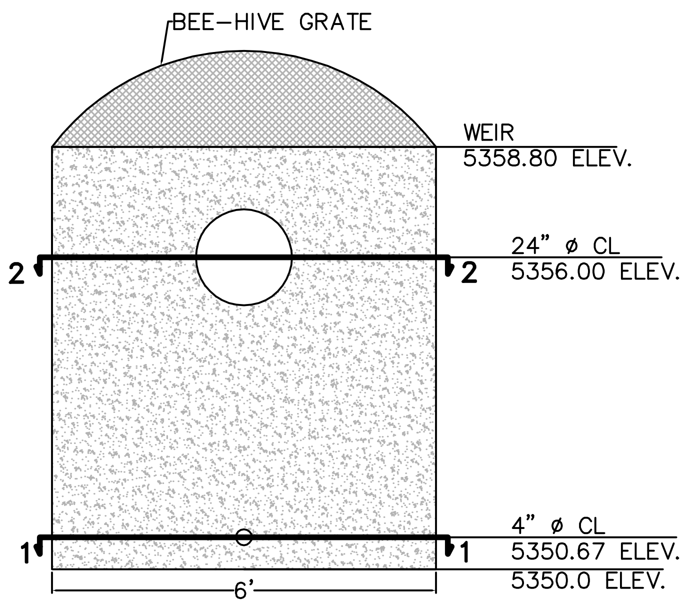
OUTLET STRUCTURE – SOUTH BASIN



POSITION OF GRATE WITHIN BASIN

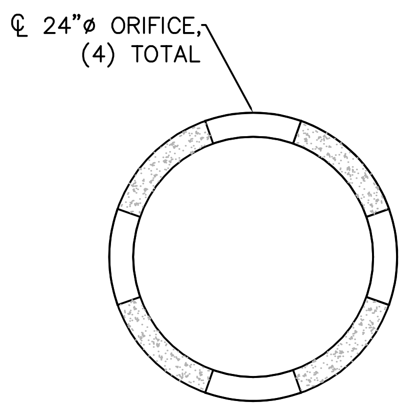
SECTION 1-1





SECTION 3-3

SECTION 2-2



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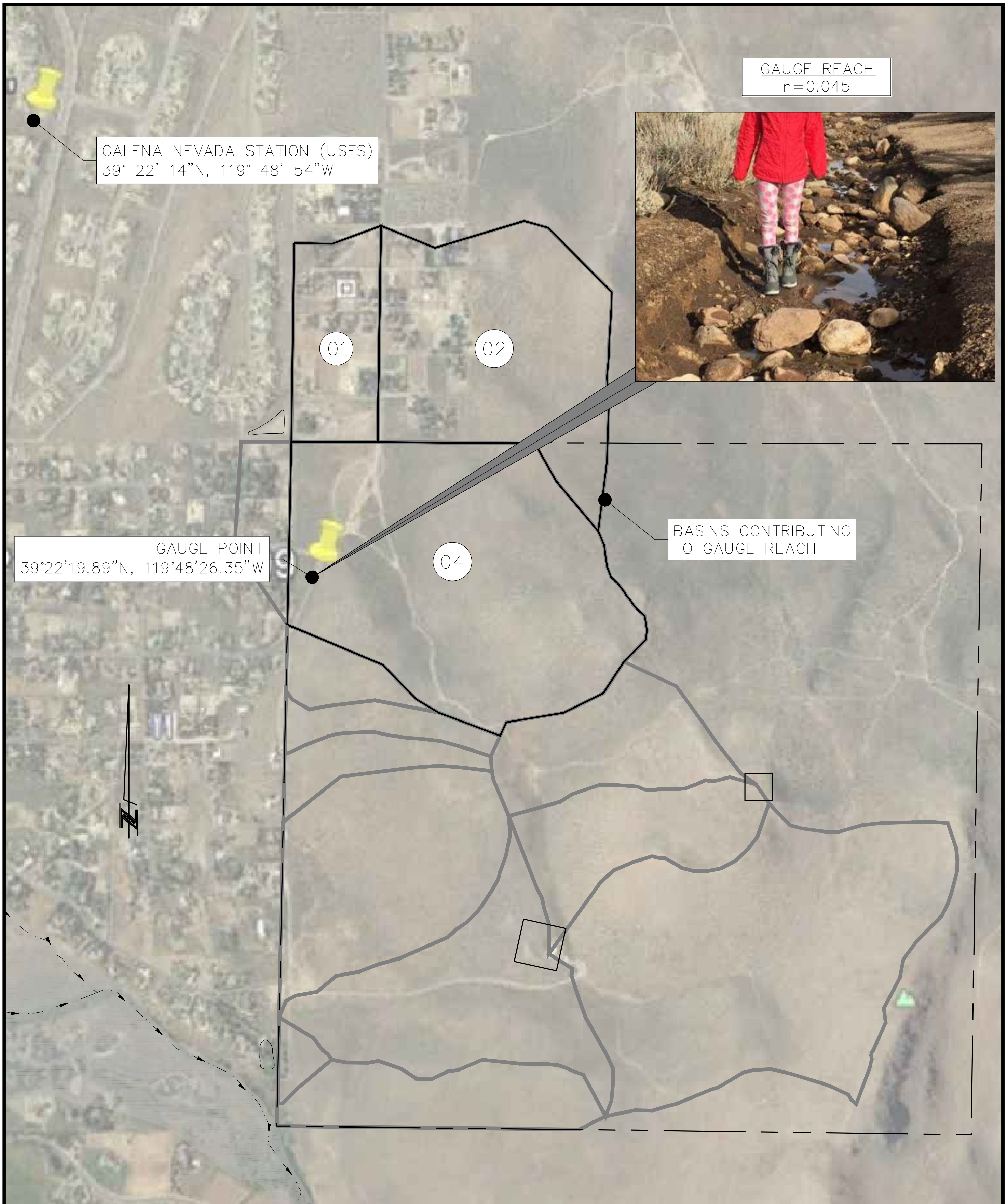
OUTLET STRUCTURE - SOUTH BASIN

WASHOE COUNTY NEVADA

Date:	4/10/2017
Scale:	NTS
Job No:	9019.000
	A-8.3

APPENDIX A-9.0

CALIBRATION OVERVIEW



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CALIBRATION OVERVIEW

WASHOE NEVADA

Date:	04/03/2017
Scale:	N.T.S
Job No:	9019.000
	A-9.0

APPENDIX A-9.1

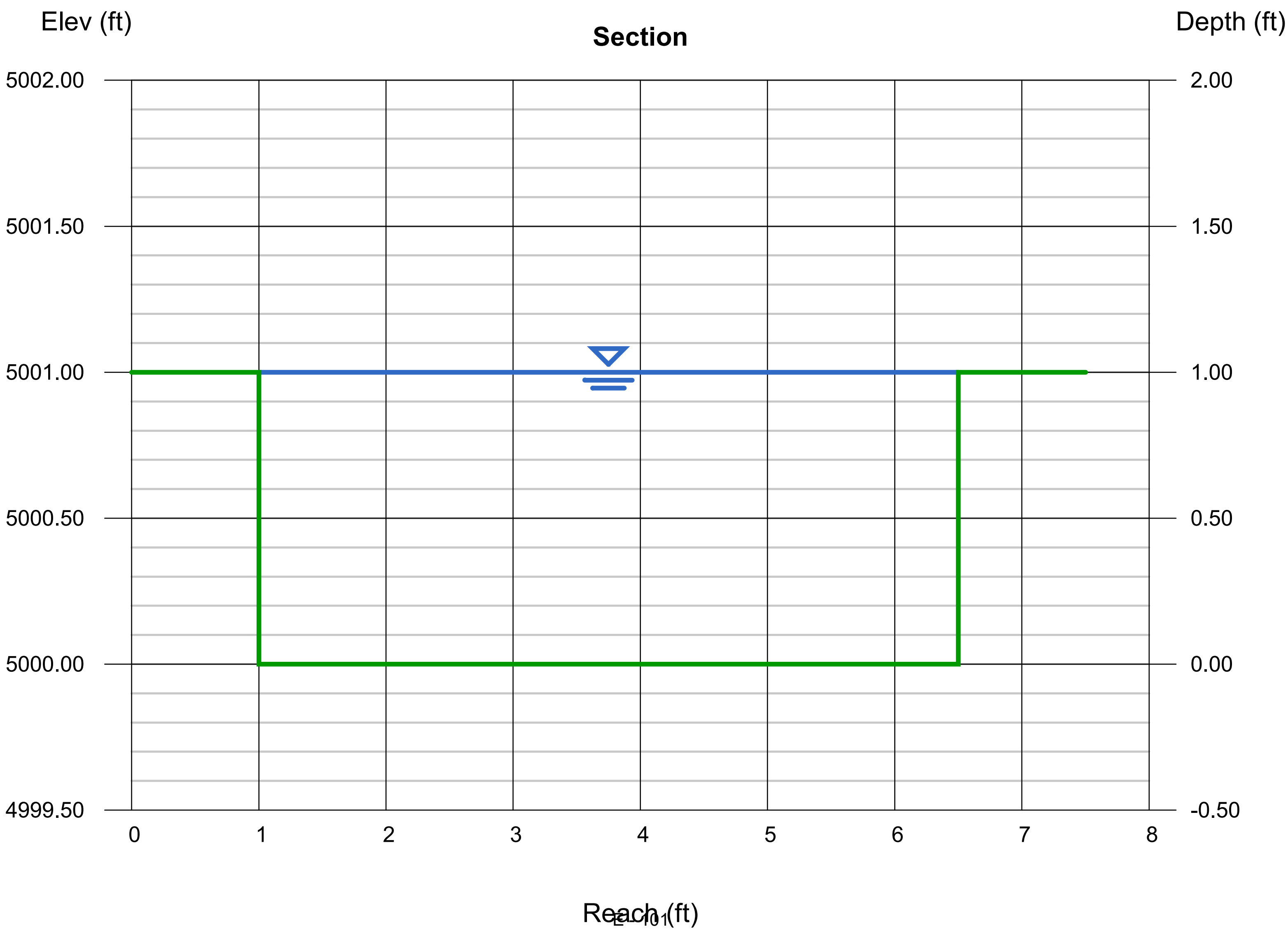
CALIBRATION GAUGE REACH

Channel Report

Gauge Reach (n=0.045)

Rectangular	
Bottom Width (ft)	= 5.50
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 5000.00
Slope (%)	= 2.60
N-Value	= 0.045
Calculations	
Compute by:	Known Depth
Known Depth (ft)	= 1.00

Highlighted	
Depth (ft)	= 1.00
Q (cfs)	= 23.81
Area (sqft)	= 5.50
Velocity (ft/s)	= 4.33
Wetted Perim (ft)	= 7.50
Crit Depth, Yc (ft)	= 0.84
Top Width (ft)	= 5.50
EGL (ft)	= 1.29

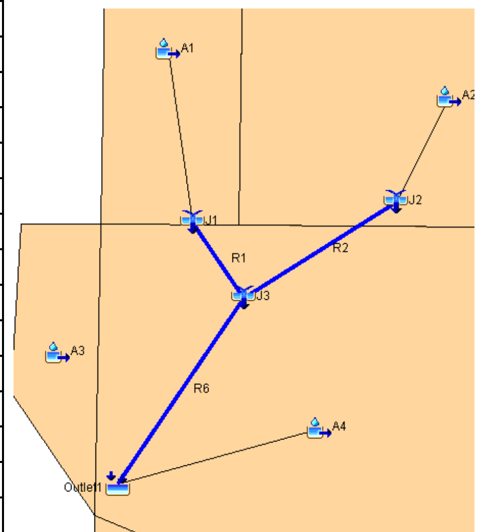


APPENDIX A-9.2

CALIBRATION DATA

Ascenté Existing Conditions		
Calibration CN Values		
Basin ID	Original	Calibrated
	CN	CN
1*	78.0	74.3
2*	75.3	66.7
3	78.5	74.7
4*	71.1	59.4
5	70.8	57.0
6	70.4	56.5
7	71.3	57.6
8	72.4	59.4
9	69.0	55.1
10	72.8	60.1
11	70.4	60.7
12	75.6	65.2
13	45.3	40.3
14	57.9	50.2

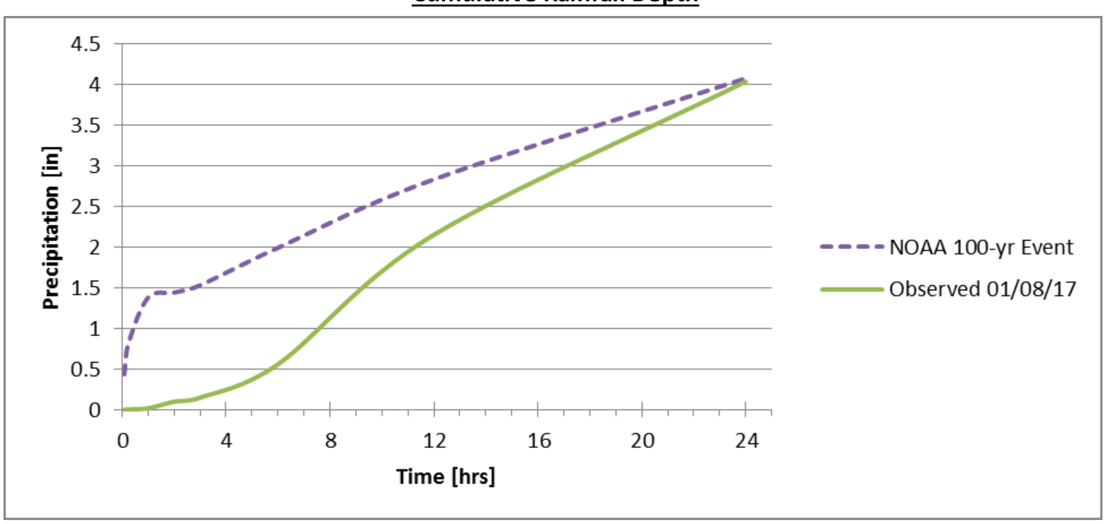
**Basins contributing to gauge reach.*



$Q_{\text{guage reach}}$	=	23.8 cfs
$Q_{\text{observed, ex. CN}}$	=	39.1 cfs
$Q_{\text{calibrated}}$	=	26.0 cfs

Note: Flow information based on observed Galena Station data from January 8, 2017.

Cumulative Rainfall Depth



PRELIMINARY SEWER REPORT
for

ASCENTÉ

R E N O • N E V A D A

Prepared For:
NNV1 Partners, LLC
6151 Lakeside Drive, Suite 1000
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PROFESSIONAL ENGINEER - STATE OF NEVADA
THOMAS W. YOUNG
4/13/2017
CIVIL
No. 13797
Exp 6/30/18

Prepared By:

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JN 9019.000
April, 2017

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APPENDICES

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LIST OF FIGURES

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April 12, 2017

I. INTRODUCTION & PROJECT LOCATION

Ascenté is situated approximately two (2) miles west of the US395-580/Nevada State Route 431 (Mt. Rose Hwy.) interchange and approximately one (1) mile south of Mt. Rose Hwy. Refer to **Figure 1** for the Project Vicinity Map. The site is located within Section 1, T17N, R19E, of Washoe County, Nevada, including a total project area of 225 acres within Assessors Parcel Number (APN) 045-252-11. APN 045-252-10 and APN 045-252-03 are fully contained within the project boundary but are not part of this project. The project property is bound by United States of America property to the east and partially to the north and south. Additionally, the project property is bound by residential property to the west and partially to the north and south. The proposed project will consist of 225 residential units zoned as Medium Density Suburban (MDS) or Low Density Suburban (LDS). The site is currently undeveloped and covered with natural vegetation. Several dirt roads are on the property.

Wastewater generated from Ascenté will be collected through a network of on-site gravity sanitary sewer pipelines, conveyed to two, proposed on-site lift stations and pumped through force mains to existing Washoe County facilities. The purpose of this report is to evaluate options and provide preliminary design recommendations for the on-site and off-site sewer systems.

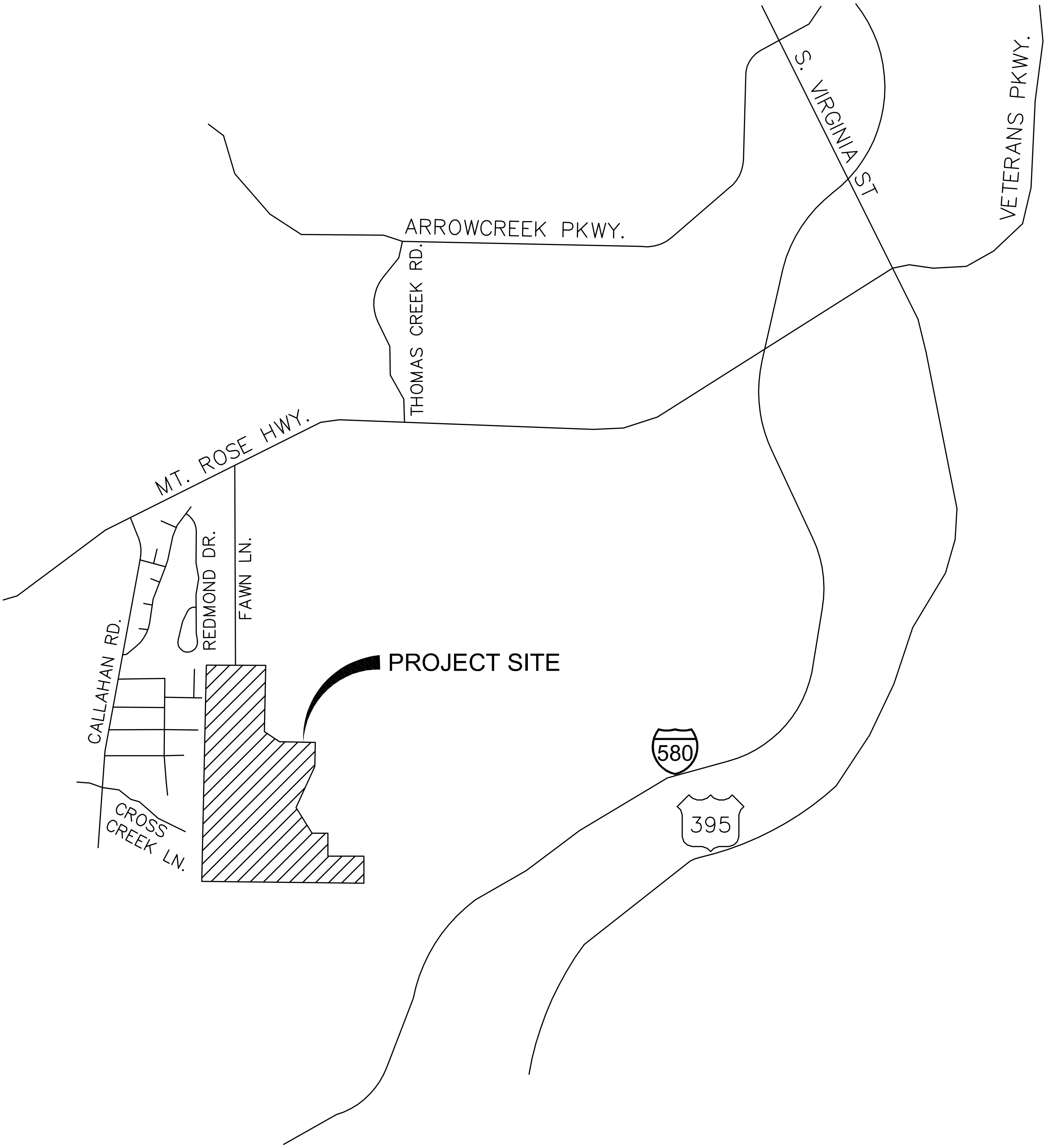

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FIGURE 1

PROJECT VICINITY MAP

WASHOE

NEVADA

Date:	APRIL 2016
Scale:	N.T.S.
Job No:	9019.000

II. EXISTING SANITARY SEWER FACILITIES

Existing sanitary sewer facilities that will serve Ascenté are owned and maintained by Washoe County. Existing 8” gravity sanitary sewer mains in Callahan Rd. and Chatelaine Cir. and a 24" gravity sanitary sewer interceptor contribute to the Montreux Sanitary Sewer Lift Station from the Parc Chateau, Galena Forest Estates, White Rose Estates, Timberline Estates, Montreux subdivisions, and the Mt. Rose Ski area. The 8” main in Callahan Rd. is approximately 2,700 feet west of the western border of Ascenté. From the Montreux Sanitary Sewer Lift Station, flow is pumped north into Callahan Rd., through a 10” sanitary sewer force main, to the southern border of The Estates at Mount Rose subdivision. At that juncture, the force main ends and a 15” gravity sanitary sewer interceptor begins. The 15” interceptor directs flow northeast, behind parcels on the east side of Chateau Ave., into a 20-30 ft. variable width sewer easement (refer to subdivision tract map 4273). The Estates at Mount Rose subdivision contributes flow to the 15” interceptor from several locations: Redmond Loop through a sanitary sewer easement to the east of the interceptor, Chateau Ave. through two sanitary sewer easements to the west of the interceptor, and Redmond Dr. from both the west and east of the interceptor in the Redmond Dr. right-of-way. The 8” main in Redmond Loop is approximately 500 feet northwest of the northwest corner of Ascenté. The 15” interceptor enters Mt. Rose Hwy at the northeast corner of The Estates at Mount Rose subdivision and flows east under Mt. Rose Hwy. Sanitary sewer flows in the 15” interceptor ultimately flow to the South Truckee Meadows Water Reclamation Facility (STMWRF), operated by the WCDWR. Refer to **Figure 2** for existing Washoe County sanitary sewer facilities adjacent to the proposed development. Existing Washoe County sanitary sewer data is referenced from the Washoe County GIS Map.

III. DESIGN CRITERIA

Preliminary flow projections used in designing the on-site and off-site sewer system are based on the 2010 Washoe County Department of Water Resources (WCDWR) Gravity Sewer Collection Design Standards (WCDWR Standards) [2].

A. Sanitary Sewer Generation Factors

Design criteria for sanitary sewer generation and peaking factors are based on the following:

- Residential Average Daily Flow (ADF): 270 gallons per day per dwelling unit (gpd/DU)
- Peaking factor: 3.0 (applied to ADF to establish peak flows)

B. Gravity Sanitary Sewer System

Design criteria for gravity sanitary sewer systems are based on [3] *Gravity Sewer Collection Design Standards*:

<u>Gravity Pipelines</u>

- Pipe sizing: Peak flow
- Minimum main diameter: 8-inch
- Minimum depth of cover for mains: 48-inches
- Minimum velocity: 2.5 feet per second (fps) when flowing half full

- Maximum velocity: 10 fps
- Manning's roughness coefficient "n": 0.012
- Pipe material: SDR 35 PVC pipe
- Maximum depth of flow (depth/diameter: d/D): 0.8

Manholes

- Placed at all intersections, angle points, and grade changes
- Maximum spacing of 400 feet (ft.) on straight line runs
- Minimum depth of five (5) ft. from finish grade to pipe invert
- Type and size:
    - Type 1-A, 48-inch diameter for sewer pipes less than 18-inch diameter at depths less than 18 ft.
- Invert elevation (IE):
    - Exit IE should be 0.1 ft. below entrance IE(s) for same diameter pipe sizes
    - Crown elevations should match for pipes of different diameter intersecting at a manhole

C. Lift Station

Design criteria for lift stations, based on industry standards, are provided below:

- Lift station sizing: peak flow
- Minimum number of pumps: Duplex configuration (1 duty + 1 standby), each designed to pump 100% of peak flow
- Pump type: submersible
- Minimum cycle time between pump starts: 8-10 minutes
- Wet well: 72" I.D. precast concrete manhole

D. Sanitary Sewer Force Main

Design criteria for sanitary sewer force mains are based on [1] *Recommended Standards for Wastewater Facilities*:

- Force main sizing: peak flow
- Minimum depth of cover: 48-inches
- Minimum pipe diameter: 4-inches
- Velocity: 2-6 fps
- Pipe material: HDPE
- Hazen-Williams roughness coefficient, "C": 120

IV. PROPOSED SANITARY SEWER FACILITIES

Most villages of Ascenté will utilize gravity sanitary sewer systems to convey wastewater flows to lift stations, located at regional low points on the project, that will transport wastewater to existing Washoe County facilities. However, some of the parcels in Whitney Village will require individual sanitary sewer force mains. Due to geographical constraints, two lift stations will be needed prior to project build-out.

One lift station will be required in Sierra Village and another will be required in Donner Village. Refer to **Figure 3** for the preliminary overall lot layout, lift station locations, and sanitary sewer flow directions.

A. North System

The North System consists of Sierra Village and part of Tioga Village, constructed in separate phases. Sierra Village will be constructed first, including 3,300 LF of on-site, 8” SDR 35 PVC gravity sanitary sewer main that will convey wastewater to the Sierra Lift Station. Refer to **Figure 3** for lift station location. Construction of Tioga Village will include 6,700 LF of on-site, 8” SDR 35 PVC gravity sanitary sewer main that will tie into the gravity sanitary sewer facilities constructed in Sierra Village. Detailed calculations are included in Appendix A. The Sierra Lift Station will pump wastewater to existing Washoe County facilities in Redmond Loop, to the northwest. Refer to **Figure 4** for preliminary sanitary sewer force main alignments starting at the Sierra Lift Station. The alternatives will be discussed below. Using Washoe County design standards, the proposed North System, consisting of 117 single-family homes at 270 gallons per dwelling unit per day (gal/DU), will produce 31,590 gallons per day (gpd) of wastewater. Using the required peaking factor of 3.0, the peak flow will be 94,770 gpd. The calculations for wastewater generation are summarized in **Table 1**.

Table 1: North System: Projected Wastewater Generation

Village	DU Count	ADF (gpd)	Peak Flow (gpd)
Sierra	65	17,550	52,650
Tioga	52	14,040	42,120
Total	**117**	**31,590**	**94,770**

Using a minimum slope of 0.4% as estimated by preliminary grading of the site, the maximum depth of flow (d/D = 0.8), and Manning’s roughness coefficient of 0.012, an 8” SDR 35 PVC gravity sanitary sewer main can accommodate a maximum of 511,883 gpd. The velocity of the wastewater at half-capacity in this design scenario would be 2.36 fps. Based on these calculations, an 8” gravity sanitary sewer main will be sufficient to service the North System in all areas, leaving approximately 417,113 gpd of available capacity.

1. Sierra Lift Station: Alternate 1

One option for pumping wastewater produced by the North System to existing Washoe County sanitary sewer facilities is to construct approximately 1,500 ft. of force main from the Sierra Lift Station, northwest, to an existing 8” gravity main in Redmond Loop. The proposed alignment will utilize Common Space produced as part of the Ascenté project on the western border of Sierra Village until it reaches the northwest corner of the project. There the alignment will enter a 15’ Public Utility Easement (P.U.E.) in the rear of 15448 Balsawood Dr. (APN: 045-555-06) and either enter a 5’ P.U.E. on the north border of the same property or a 5’ P.U.E. on the south border of Parcel C: Common Area shown on Subdivision Map 4478A. From there it will enter an existing 32’ P.U.E. within APN: 150-451-12, and into Redmond Loop right-of-way. The existing 8” main in Redmond Loop currently serves 27, single-family residences and has an approximate slope of 0.4%, based on data from the Washoe County GIS Map. Using the same design criteria as the proposed gravity system, the capacity of the existing 8” main in Redmond Loop is 511,883 gpd. At half-capacity the velocity is 2.36 fps. Existing flows in Redmond Loop are estimated to be approximately 21,870 gpd. The combined existing and proposed flows will be approximately 116,640 gpd leaving 395,243 gpd of available capacity.

a. Lift Station and Force Main Sizing

Preliminary wet well, pump, and force main sizing calculations were performed using the total peak flows anticipated, estimated elevation differential, and the total force main length of the alignment. Velocity, friction loss, and total dynamic head (TDH) are estimated for various pipe diameters summarized in **Table 2**. Detailed calculations are included in Appendix C. Further variations of the Sierra Lift Station pump arrangement may also be evaluated during the final design to ensure the most efficient and economical pump arrangement. A 4” force main is recommended for this alternative due to lower material and operating costs than the 6” force main option. The recommended configuration for the lift station wet well is a 72” I.D. precast concrete manhole and the preliminary wet well depth is 18 ft. Refer to Appendix B for preliminary wet well depth calculations.

Table 2: Sierra Lift Station: Alternate 1 Pump & Force Main Sizing

Force Main Diameter(s) (inch)	Velocity (fps)	Friction Loss[1] (ft)	TDH[1] (ft)	Required Pump Size (hp)
4	3.4	21.8	64.0	4.0
6	3.1	11.9	55.0	7.0

[1] Assumes Hazen Williams friction coefficient 'C' value of 120 and pipe length of 1,500 LF.

Because Ascenté will be developed in phases, initial sewer flows will be lower than total flows projected at full build out. To avoid oversized pumps/wet well and high operating costs for initial sewer flows (and low flow conditions at buildout), a smaller initial pump should be considered at final design. Further variations of the Sierra Lift Station pump arrangement may also be evaluated during the final design to ensure the most efficient and economical pump arrangement.

2. Sierra Lift Station: Alternate 2

Another option for pumping wastewater produced by the North System to existing Washoe County sanitary sewer facilities is to construct approximately 1,500 ft. of force main from the Sierra Lift Station, northwest, to an existing 8” gravity main in Redmond Loop. The proposed alignment will utilize public right-of-way in Brushwood Way and Balsawood Drive, and an existing 32’ P.U.E. within APN: 150-451-12. The existing 8” main in Redmond Loop currently serves 27, single-family residences and has an approximate slope of 0.4%, based on data from the Washoe County GIS Map. Using the same design criteria as the proposed gravity system, the capacity of the existing 8” main in Redmond Loop is 511,883 gpd. At half-capacity the velocity is 2.36 fps. Existing flows in Redmond

Loop are estimated to be approximately 21,870 gpd. The combined existing and proposed flows will be approximately 116,640 gpd leaving 395,243 gpd of available capacity.

a. Lift Station and Force Main Sizing

Preliminary wet well, pump, and force main sizing calculations were performed using the total peak flows anticipated, estimated elevation differential, and the total force main length of the alignment. Velocity, friction loss, and total dynamic head (TDH) are estimated for various pipe diameters summarized in **Table 3**. Detailed calculations are included in Appendix C. Further variations of the Sierra Lift Station pump arrangement may also be evaluated during the final design to ensure the most efficient and economical pump arrangement. A 4" force main is recommended for this alternative due to lower material and operating costs than the 6" force main option. The recommended configuration for the lift station wet well is a 72" I.D. precast concrete manhole and the preliminary wet well depth is 18 ft. Refer to Appendix B for preliminary wet well depth calculations.

Table 3: Sierra Lift Station: Alternate 2 Pump & Force Main Sizing

Force Main Diameter(s) (inch)	Velocity (fps)	Friction Loss[1] (ft)	TDH[1] (ft)	Required Pump Size (hp)
4	3.4	21.8	64.0	4.0
6	3.1	11.9	55.0	7.0

[1] Assumes Hazen Williams friction coefficient 'C' value of 120 and pipe length of 1,500 LF.

Because Ascenté will be developed in phases, initial sewer flows will be lower than total flows projected at full build out. To avoid oversized pumps/wet well and high operating costs for initial sewer flows (and low flow conditions at buildout), a smaller initial pump should be considered at final design. Further variations of the Sierra Lift Station pump arrangement may also be evaluated during the final design to ensure the most efficient and economical pump arrangement.

B. South System

The South System consists of Donner Village, Whitney Village, and part of Tioga Village, constructed in separate phases. Donner Village will be constructed first, including 5,300 LF of on-site, 8" SDR 35 PVC gravity sanitary sewer main that will convey wastewater to the Donner Lift Station. Refer to **Figure 3** for lift station location. Construction of Tioga Village will include 3,000 LF of on-site, 8" SDR 35 PVC gravity sanitary sewer main that will tie into the gravity sanitary sewer facilities constructed for Donner Village. Construction of Whitney Village will include 2,500 LF of on-site, 8" SDR 35 PVC gravity sanitary sewer main that will tie into the South System gravity sanitary sewer facilities constructed for Tioga Village. Detailed calculations are included in Appendix A. The Donner Lift Station will pump wastewater to existing Washoe county facilities in Callahan Rd, to the west, or Tioga Village to the northeast. Refer to **Figure 5** for preliminary sanitary sewer force main alignments to service the South System. The alternatives will be discussed below. Using Washoe County design standards, the proposed South System, consisting of 108 single-family homes at 270 gallons per dwelling unit per day (gal/DU), will produce 29,160 (gpd) of wastewater. Using the required peaking factor of 3.0, the peak flow will be 87,480 gpd. The calculations for wastewater generation are summarized in **Table 4**.

Table 4: South System: Projected Wastewater Generation

Village	DU Count	ADF (gpd)	Peak Flow (gpd)
Donner	84	22,680	68,040
Whitney	17	4,590	13,770
Tioga	7	1,890	5,670
Total	**108**	**29,160**	**87,480**

Using a minimum slope of 0.4% as estimated by preliminary grading of the site, the maximum depth of flow (d/D = 0.8), and Manning's roughness coefficient of 0.012, an 8" SDR 35 PVC gravity sanitary sewer main can accommodate approximately 511,883 gpd. The velocity of the wastewater at half-capacity in this design scenario would be 2.36 fps. Based on these calculations, an 8" gravity sanitary sewer main will be sufficient to service the South System in all areas, leaving approximately 424,403 gpd in available capacity.

1. Donner & Sierra Lift Stations: Alternate 1.1 & 1.2

One option for pumping wastewater produced by the South System to existing Washoe County sanitary sewer facilities is to construct approximately 4,400 LF of force main from the Donner Lift Station, through Donner Village, northeast to Tioga Village. There it will enter the 8" gravity sanitary sewer network constructed with Tioga Village. This gravity network has a capacity of 511,883 gpd. The North System produces a combined 94,770 gpd peak flow, and the South System produces 87,480 gpd peak flow. This would result in a combined flow of 182,250 gpd and 329,633 gpd in remaining capacity. The capacity of the existing 8" main in Redmond Loop is 511,883 gpd. The combined existing and proposed flows will be approximately 204,120 gpd leaving 307,763 gpd of available capacity.

a. Lift Station and Force Main Sizing

Preliminary wet well, pump, and force main sizing calculations were performed using the total peak flows anticipated, estimated elevation differential, and the total force main length of the alignment. Velocity, friction loss, and total dynamic head (TDH) are estimated for various pipe diameters summarized in **Table 5**. Detailed calculations are included in Appendix C. The Sierra Lift Station was reanalyzed incorporating the wastewater contributions of the Donner Lift Station. Further variations of the Donner and Sierra Lift Station's pump arrangements may also be evaluated during the final design to ensure the most efficient and economical pump arrangement. A 4" force main is recommended for transporting wastewater from the Donner Lift Station to the Tioga Village gravity system and from the Sierra Lift Station to existing Washoe County facilities due to lower material and operating costs than the 6" force main option. The recommended configuration for the wet wells are 72" I.D. and 96" I.D. precast concrete manholes in the Donner Lift Station and Sierra Lift

Station, respectively. Preliminary wet well depth is 18 ft. for the Donner Lift Station and 19 ft. for the Sierra Lift Station. Refer to Appendix B for preliminary wet well depth calculations.

Table 5: Donner & Sierra Lift Stations: Alternate 1.1 & 1.2 Pump & Force Main Sizing

Lift Station	Force Main Diameter(s) (inch)	Velocity (fps)	Friction Loss[1] (ft)	TDH[1] (ft)
Donner	4	3.4	65.7	408.0
	6	3.3	38.6	381.0
Sierra: Alt. 1	4	4.8	41.8	85.0
	6	2.3	6.9	50.0
Sierra: Alt. 2	4	4.8	41.8	85.0
	6	2.3	6.9	50.0

[1] Assumes Hazen Williams friction coefficient 'C' value of 120, Donner force main pipe length of 4,400 LF, and Sierra force main pipe length of 1,500 LF.

2. Donner Lift Station: Alternate 2

Another option for pumping wastewater produced by the South System to existing Washoe County sanitary sewer facilities is to construct approximately 3,600 LF of force main from the Donner Lift Station, through Donner Village, east through a 20' Sanitary Sewer & Water Facility Easement on the north border of 5260 Cross Creek Ln. (APN: 045-471-53), east through Cross Creek Ln., ending in an existing sanitary sewer manhole at the intersection of Callahan Rd. and Cross Creek Ln. There it will enter an existing Washoe County 8" gravity main and flow approximately 460 feet to the existing Montreux Sanitary Sewer Lift Station. The existing 8" main currently serves eight single-family residences and has an approximate slope of 0.4%, based on data from the Washoe County GIS Map. Using the same design criteria as the proposed gravity system, the capacity of the existing 8" main in Callahan Rd. is 511,883 gpd. At half-capacity the velocity is 2.36 fps. The eight single family residences are estimated to produce approximately 6,480 gpd peak flow. The combined existing and proposed peak flows will be approximately 93,960 gpd leaving 417,923 gpd of available capacity.

a. Montreux Lift Station Impacts

According to the *Addendum to the Callamont Wastewater Lift Station Study* [1], with regard to the Montreux Lift Station:

> The June 2004 report summarized potential wastewater loading on the Montreux Lift Station. The peak hour loading of the Montreux Lift Station was conservatively estimated to be 1.562 MGD based on 280 GPD per ERU and a 3.0 peaking factor. The 1.562 MGD value represents wastewater loading for a potential 1859 ERUs, which includes proposed development from Upper Mount Rose, North Galena Forest Estates, Wentworth, Montreux, and other adjacent properties. The peak hour pumping capacity of the triplex Montreux Lift Station with two (2) pumps in operation was determined to

be 1.901 MGD (1320 GPM pumping capacity). The remaining available peak hour capacity is 0.339 MGD (235 GPM).

- Equivalent Residential Unit (ERU)

Also from the same report:

> The capacity of the Montreux Lift Station emergency storage basin is approximately 81,000 gallons (data provided by SPB Utilities)… The average day capacity of the Montreux Lift Station, assuming building-out of existing and planned development that is contributory, is approximately 0.521 MGD (21,700 gallons per hour average), which equates to 3.7 hours of storage.

As previously stated, the South System will produce approximately 87,480 gpd, equivalent to 0.087 million gallons per day (mgd). With this addition to the Montreux Lift Station there will still be a remaining reserve capacity of approximately 0.252 mgd or 252,000 gpd. Also, the average daily flow produced by the South System will reduce the hours of emergency storage at the lift station from 3.7 to 3.2 hours. The Montreux Lift Station has sufficient reserve capacity to accommodate the South System. This analysis was performed with the most recent data possible, however, a more in-depth and detailed investigation would need to be performed to solidify this alternative as a viable option.

b. Lift Station and Force Main Sizing

Preliminary wet well, pump, and force main sizing calculations were performed using the total peak flows anticipated, estimated elevation differential, and the total force main length of the alignment. Velocity, friction loss, and total dynamic head (TDH) are estimated for various pipe diameters summarized in **Table 6**. Detailed calculations are included in Appendix C. Further variations of the Donner Lift Station pump arrangement may also be evaluated during the final design to ensure the most efficient and economical pump arrangement. A 4” force main is recommended for this alternative due to lower material and operating costs than the 6” force main option. The recommended configuration for the lift station wet well is a 72” I.D. precast concrete manhole and the preliminary wet well depth is 18 ft. Refer to Appendix B for preliminary wet well depth calculations.

Table 6: Donner Lift Station: Alternate 2 Pump & Force Main Sizing

Force Main Diameter(s) (inch)	Velocity (fps)	Friction Loss[1] (ft)	TDH[1] (ft)
4	3.4	53.7	139.0
6	3.3	31.6	117.0

[1] Assumes Hazen Williams friction coefficient 'C' value of 120 and pipe length of 3,600 LF.

V. RECOMMENDED SANITARY SEWER FACILITIES

A. System Description

Lumos & Associates recommends the use of an 8" SDR 35 PVC gravity sanitary sewer system to service all Villages in the Ascenté project. The gravity system would convey wastewater to two (2) on-site lift stations (Sierra & Donner Lift Stations) which will pump to existing Washoe County sanitary sewer facilities. Preliminary recommendations for the lift station and force main improvements include 72" I.D. and 96" I.D. precast concrete manholes for use as wet wells in the Donner Lift Station and Sierra Lift Station, respectively, a duplex pumping arrangement (1 duty and 1 standby), a 4" force main connecting the Sierra Lift Station to the existing 8" gravity main in Redmond Loop and a 4" force main connecting the Donner Lift Station to the 8" gravity main system constructed with Tioga Village (Donner & Sierra Lift Stations: Alternate 1.1 or 1.2).

B. Opinion of Probable Costs

A preliminary opinion of probable project costs for the recommended on-site and off-site sewer facilities is presented in Appendix D. The combination of the North System and the South System utilizing the Donner & Sierra Lift Stations: Alternate 1.1 or 1.2 are the best options for this project. These options are the most cost effective for addressing wastewater conveyance for Ascenté with a total project cost for sanitary sewer infrastructure of $2,248,100.00 or $2,289,700.00, respectively. All of the alternative costs are summarized in **Table 7**.

Table 7: Preliminary Opinion of Probable Costs Summary

Sanitary Sewer System Alternates	Total Alternate Cost
Sierra Lift Station: Alternate 1 Donner Lift Station: Alternate 2	$2,419,800.00
Sierra Lift Station: Alternate 2 Donner Lift Station: Alternate 2	$2,462,800.00
Donner & Sierra Lift Stations: Alternate 1.1	$2,248,400.00
Donner & Sierra Lift Stations: Alternate 1.2	$2,289,700.00

C. Permitting Requirements

Permits and approvals that will be required for construction of the on-site and off-site sewer system will include, but not limited to, the following:

- Washoe County Encroachment Permit
- Approval from Washoe County

D. Construction Considerations

Considerations for design and construction of the on-site and off-site sewer system are summarized below:

- Phasing: The gravity sanitary sewer infrastructure should be constructed with each phase, with the lift stations and off-site infrastructure constructed with the Sierra and Donner Villages;
- Easements: Existing utility easements may be utilized for portions of the force and gravity main alignments through private property;
- Utility conflicts: A thorough investigation of existing utilities along all main alignments will need to be conducted during design including review of record drawings, coordination with utility companies, and potentially potholing;
- Connection to Montreux Sanitary Sewer Lift Station: Available capacity and possible upsizing of existing facilities will need to be coordinated with Washoe County;
- Traffic control: Traffic control measures will need to be developed and implemented in accordance with the requirements of Washoe County and the Manual on Uniform Traffic Control Devices (MUTCD).

VI. CONCLUSION

The preliminary outlook for the sanitary sewer systems for the Sierra, Tioga, Whitney, and Donner Villages of Ascenté will service 225, single-family residences utilizing gravity sanitary sewer mains to convey wastewater to two (2) on-site lift stations. The Donner Lift Station will pump wastewater contributions produced by the South System to Tioga Village, where wastewater will gravity flow to the Sierra Lift Station will pump all project wastewater to existing Washoe County sanitary sewer facilities in Redmond Loop, to the northwest. Sewer infrastructure will be phased to be constructed concurrently with the Village it will be servicing. The final layout and sizing of sewer infrastructure will be determined during final design. The total estimated cost for sanitary sewer infrastructure is $2,248,100.00 or $2,289,700.00.

VII. REFERENCES

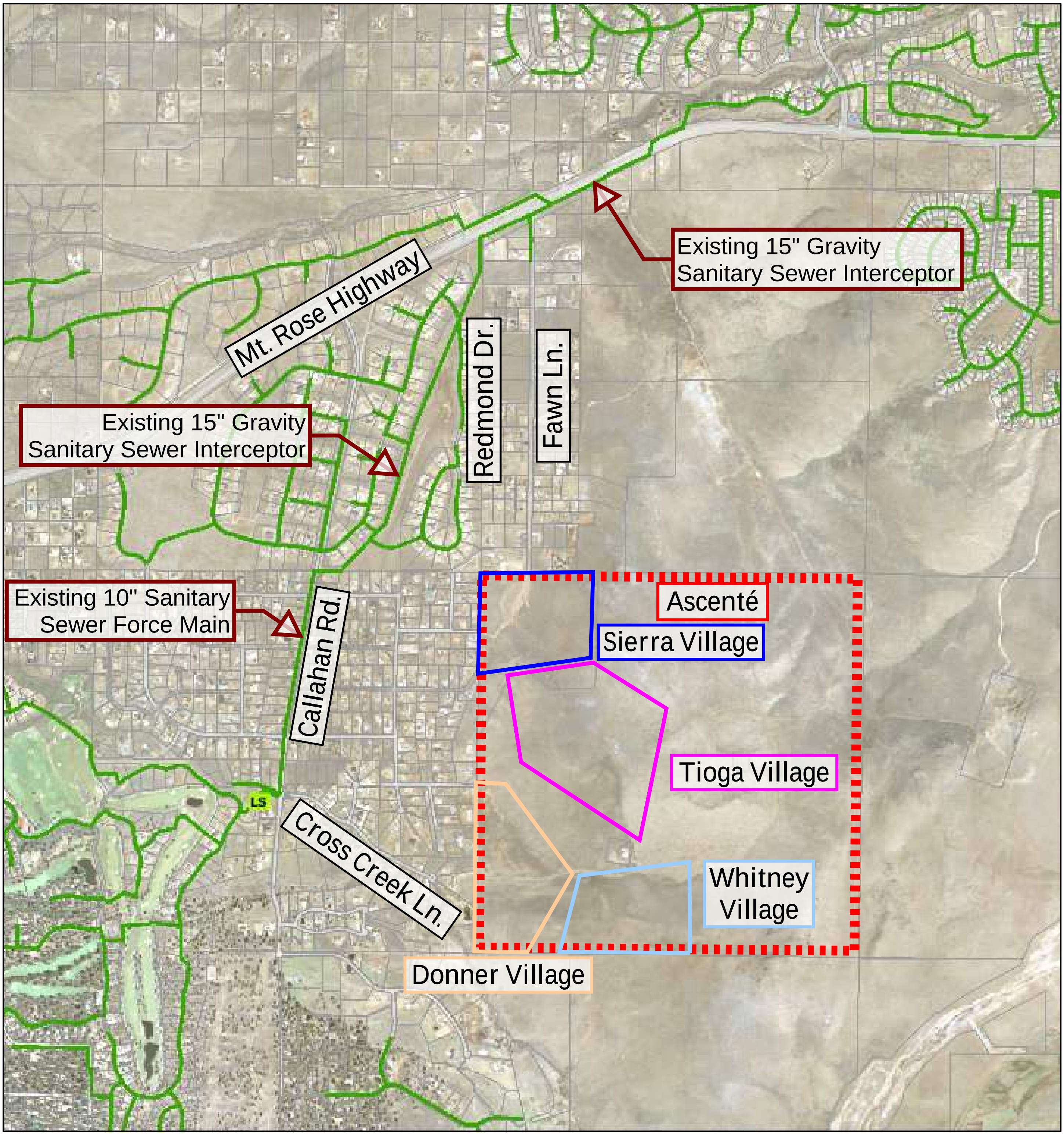
[1] *Recommended Standards for Wastewater Facilities*. 2014 ed. N.p.: Health Research,, Health Education Services Division, n.d. *10 States Standards*. Health Research, Inc., Health Education Services Division, 2014. Web. 11 Apr. 2017.

[2] Shaw Engineering. *Addendum to the Callamont Wastewater Lift Station Study.* Rep. N.p.: n.p., n.d. Print, 2004.

[3] Washoe County Department of Water Resources, *Gravity Sewer Collection Design Standards*, May 2010.
<https://www.washoecounty.us/csd/engineering_capitalprojects/files-engineering-capital-projects/development_review_forms/DWR_2009_Sewer_Design_Standards_Rev_5-28-10.pdf>

FIGURES

Figure 2:
Washoe County Existing Sanitary Sewer Facilities Map



May 24, 2016

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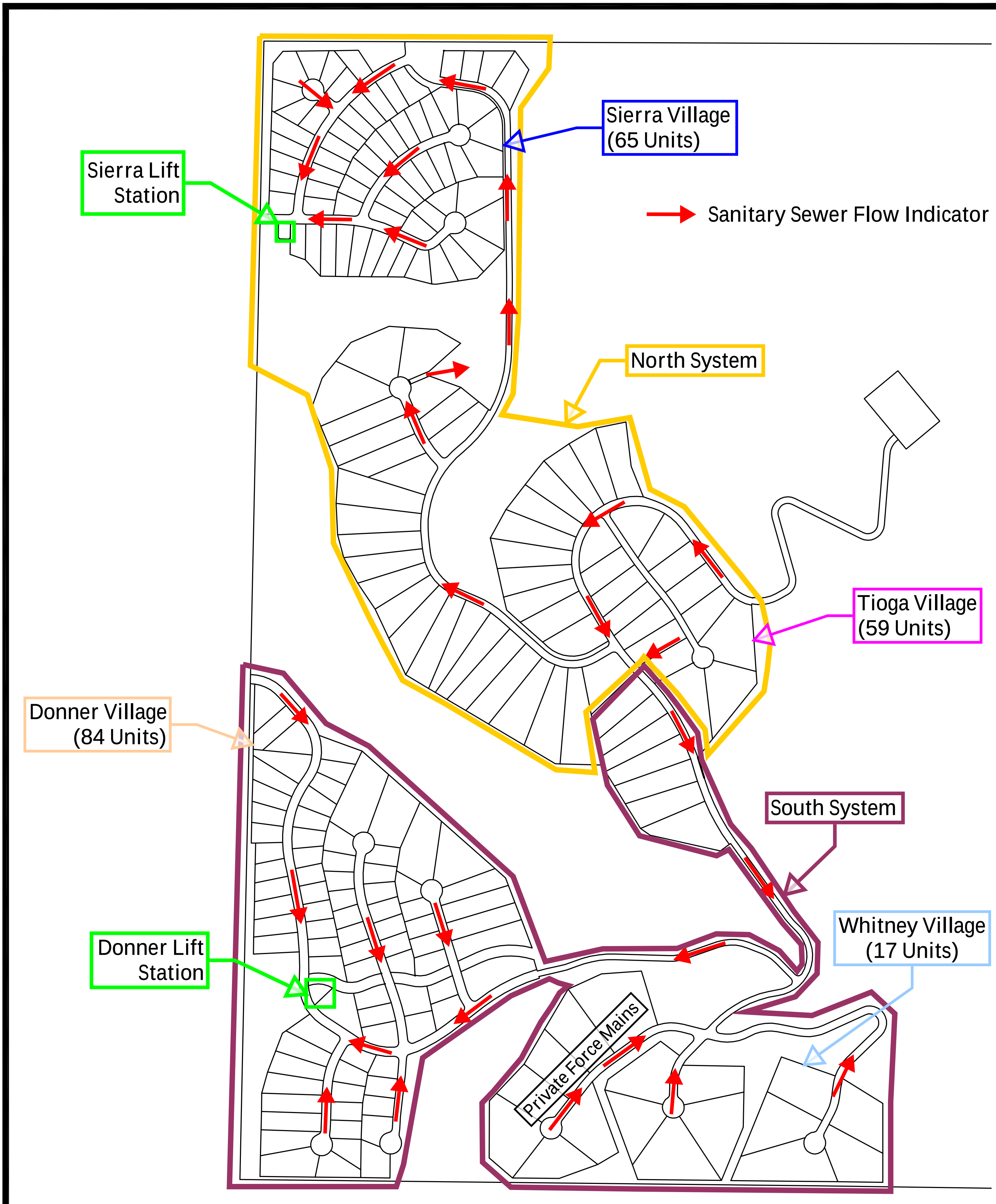

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FIGURE 3

PRELIMINARY OVERALL
LOT LAYOUT DISPLAY

WASHOE NEVADA

Date:	APRIL 2016
Scale:	N.T.S.
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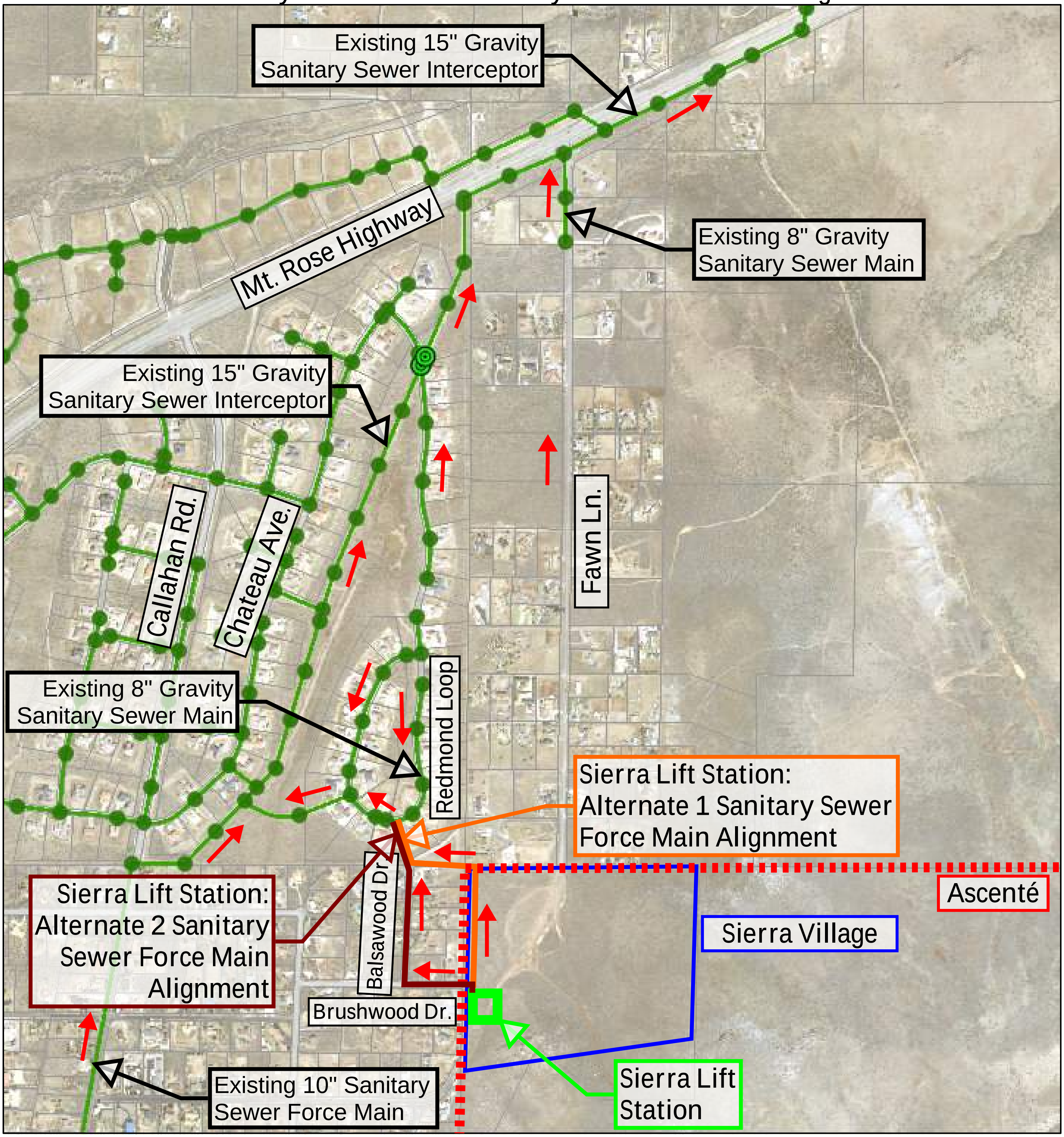
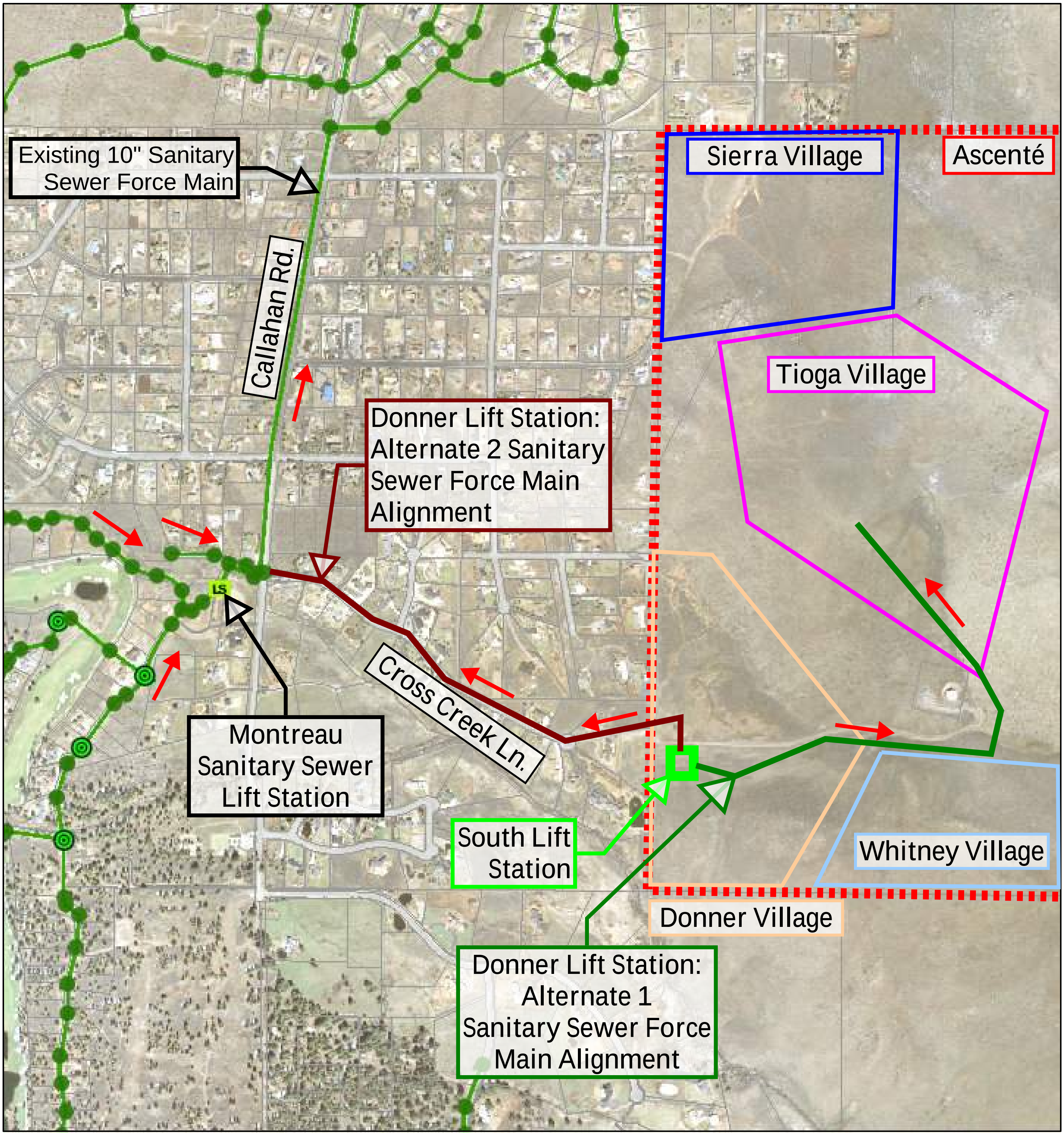
Figure 4:
Preliminary Off-site Sierra Sanitary Sewer Force Main Alignments



May 24, 2016

Sanitary Sewer Flow Indicator

Figure 5:
Preliminary Off-site Donner Sanitary Sewer Force Main Alignments



May 24, 2016

Sanitary Sewer Flow Indicator

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APPENDICES

Appendix A

Existing/Preliminary Gravity Main Pipe Calculations

Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Monday, Aug 15 2016

Redmond Loop: Existing 8 in. Sanitary Sewer Main: Half-Full

Circular

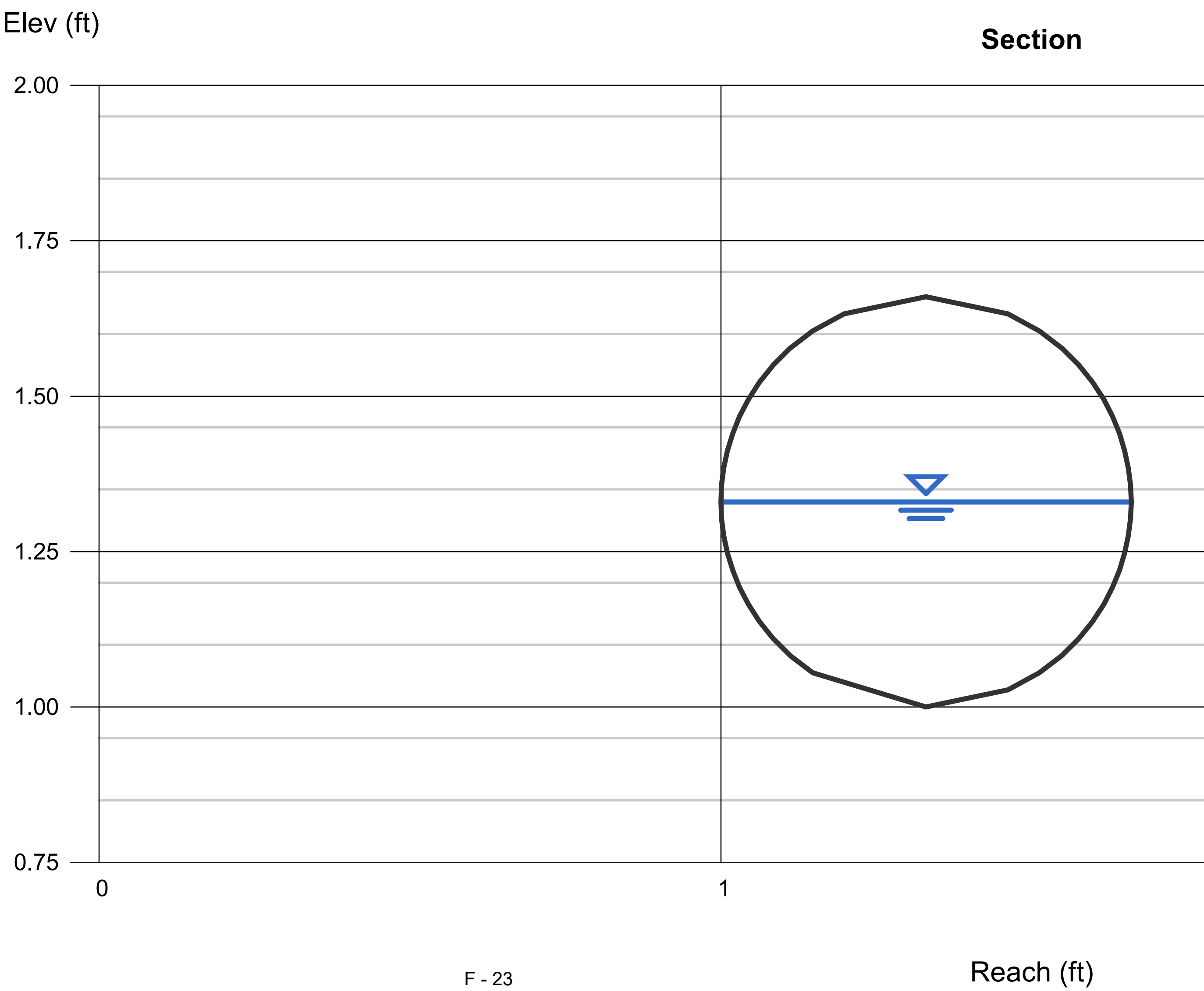
Diameter (ft)	= 0.66
Invert Elev (ft)	= 1.00
Slope (%)	= 0.40
N-Value	= 0.012

Calculations

Compute by:	Known Depth
Known Depth (ft)	= 0.33

Highlighted

Depth (ft)	= 0.33
Q (cfs)	= 0.406
Area (sqft)	= 0.17
Velocity (ft/s)	= 2.36
Wetted Perim (ft)	= 1.04
Crit Depth, Yc (ft)	= 0.30
Top Width (ft)	= 0.66
EGL (ft)	= 0.42



Channel Report

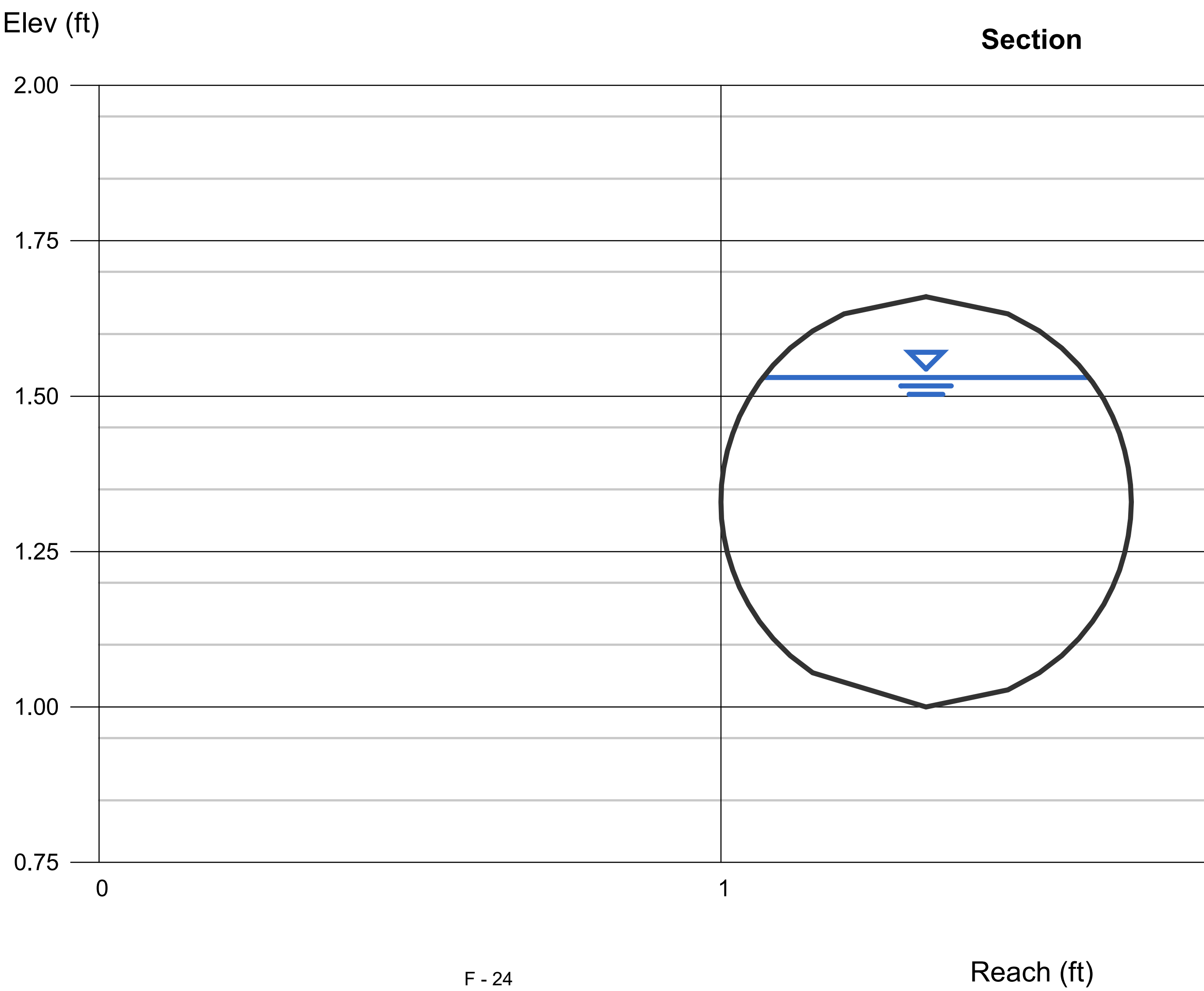
Redmond Loop: Existing 8 in. Sanitary Sewer Main: 0.8-Full

Circular
Diameter (ft) = 0.66

Invert Elev (ft) = 1.00
Slope (%) = 0.40
N-Value = 0.012

Calculations
Compute by: Known Depth
Known Depth (ft) = 0.53

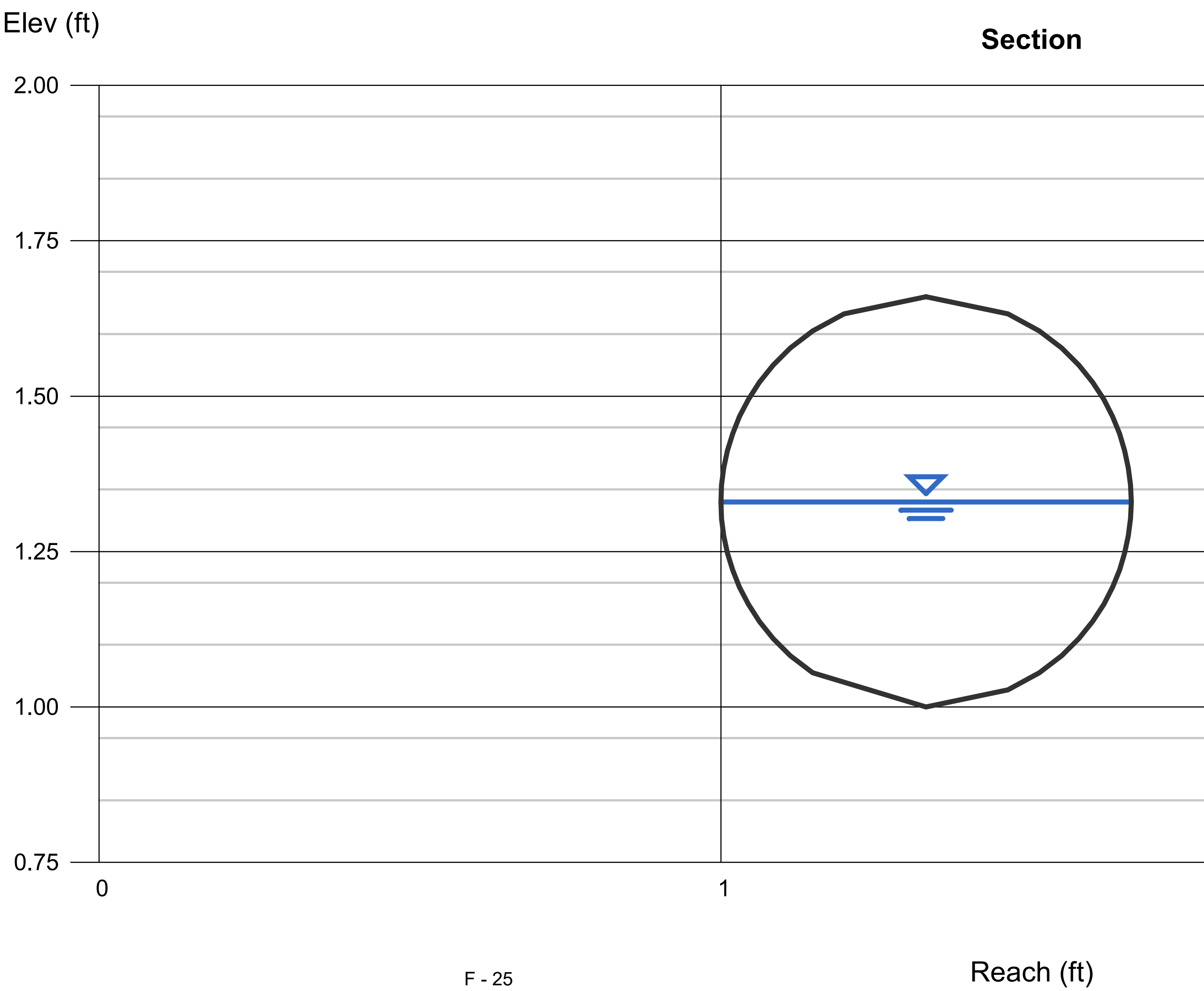
Highlighted
Depth (ft) = 0.53
Q (cfs) = 0.792
Area (sqft) = 0.29
Velocity (ft/s) = 2.68
Wetted Perim (ft) = 1.47
Crit Depth, Yc (ft) = 0.43
Top Width (ft) = 0.52
EGL (ft) = 0.64



Channel Report

Callahan Road: Existing 8 in. Sanitary Sewer Main: Half-Full

Circular		**Highlighted**	
Diameter (ft)	= 0.66	Depth (ft)	= 0.33
		Q (cfs)	= 0.406
		Area (sqft)	= 0.17
Invert Elev (ft)	= 1.00	Velocity (ft/s)	= 2.36
Slope (%)	= 0.40	Wetted Perim (ft)	= 1.04
N-Value	= 0.012	Crit Depth, Yc (ft)	= 0.30
		Top Width (ft)	= 0.66
Calculations		EGL (ft)	= 0.42
Compute by:	Known Depth		
Known Depth (ft)	= 0.33		

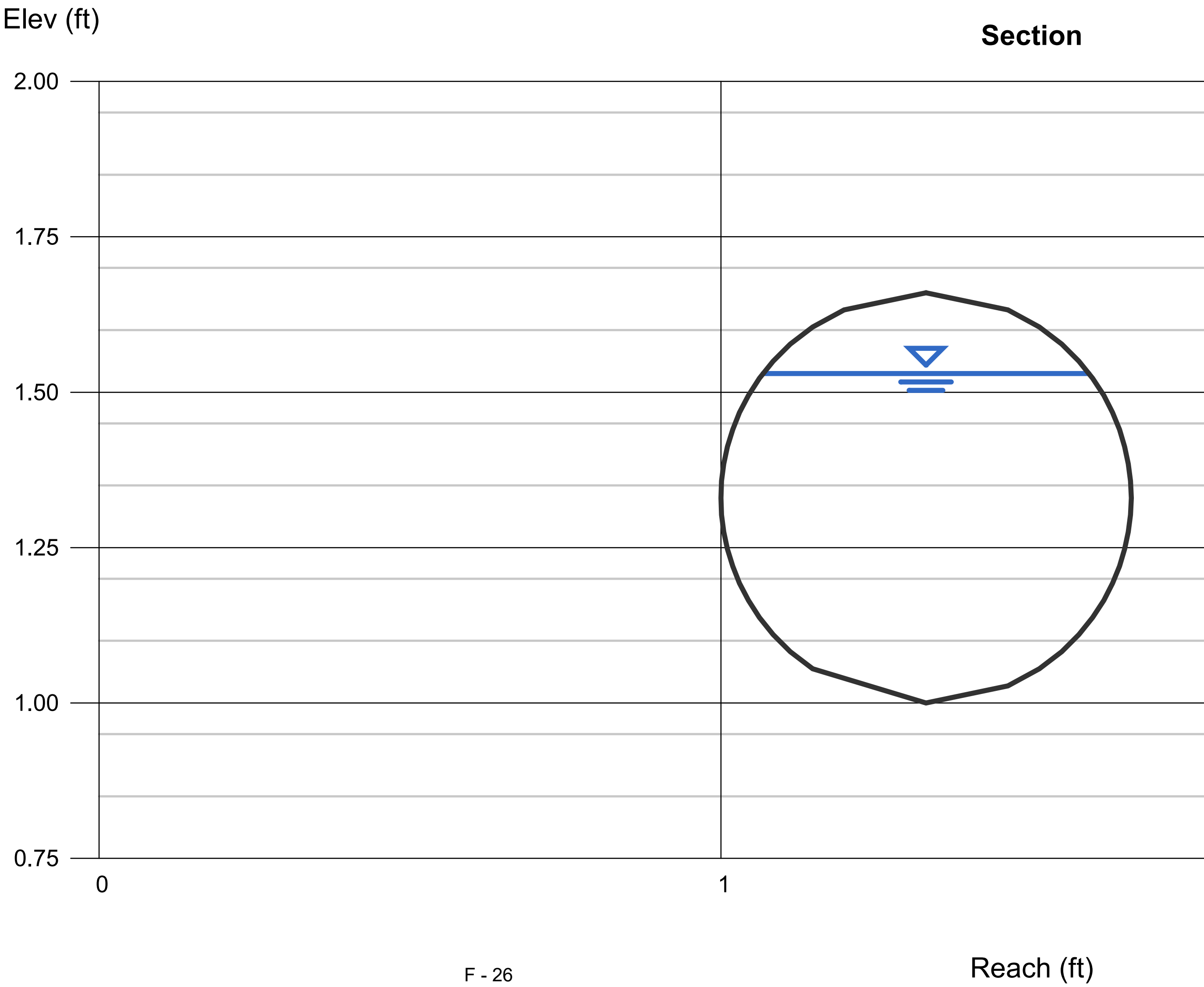


Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Monday, Aug 15 2016

Callahan Road: Existing 8 in. Sanitary Sewer Main: 0.8-Full

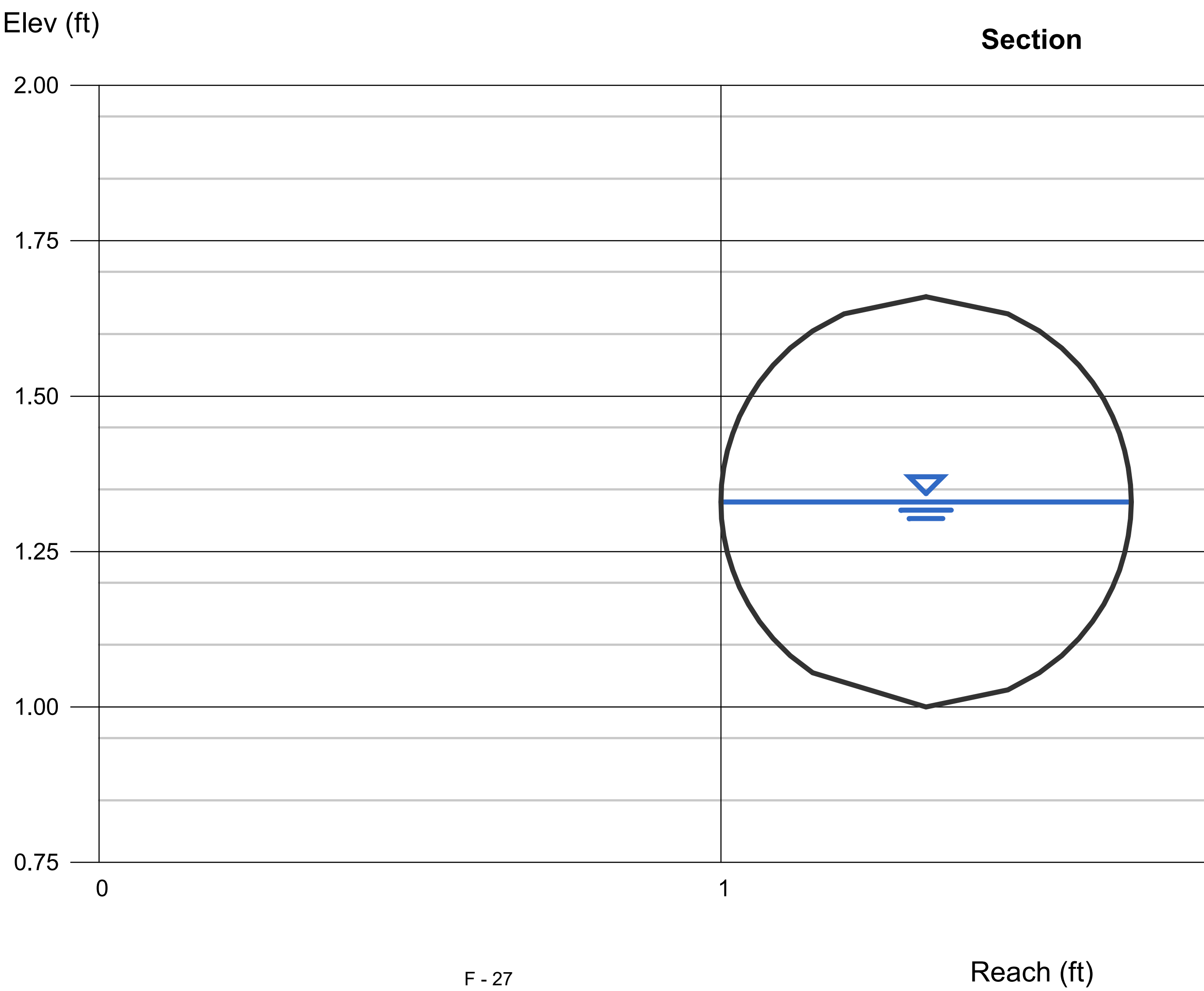
Circular		**Highlighted**	
Diameter (ft)	= 0.66	Depth (ft)	= 0.53
		Q (cfs)	= 0.792
		Area (sqft)	= 0.29
Invert Elev (ft)	= 1.00	Velocity (ft/s)	= 2.68
Slope (%)	= 0.40	Wetted Perim (ft)	= 1.47
N-Value	= 0.012	Crit Depth, Yc (ft)	= 0.43
		Top Width (ft)	= 0.52
Calculations		EGL (ft)	= 0.64
Compute by:	Known Depth		
Known Depth (ft)	= 0.53		



Channel Report

Proposed 8 in. Sanitary Sewer Main: Half-Full

Circular		**Highlighted**	
Diameter (ft)	= 0.66	Depth (ft)	= 0.33
		Q (cfs)	= 0.406
		Area (sqft)	= 0.17
Invert Elev (ft)	= 1.00	Velocity (ft/s)	= 2.36
Slope (%)	= 0.40	Wetted Perim (ft)	= 1.04
N-Value	= 0.012	Crit Depth, Yc (ft)	= 0.30
		Top Width (ft)	= 0.66
Calculations		EGL (ft)	= 0.42
Compute by:	Known Depth		
Known Depth (ft)	= 0.33		



Channel Report

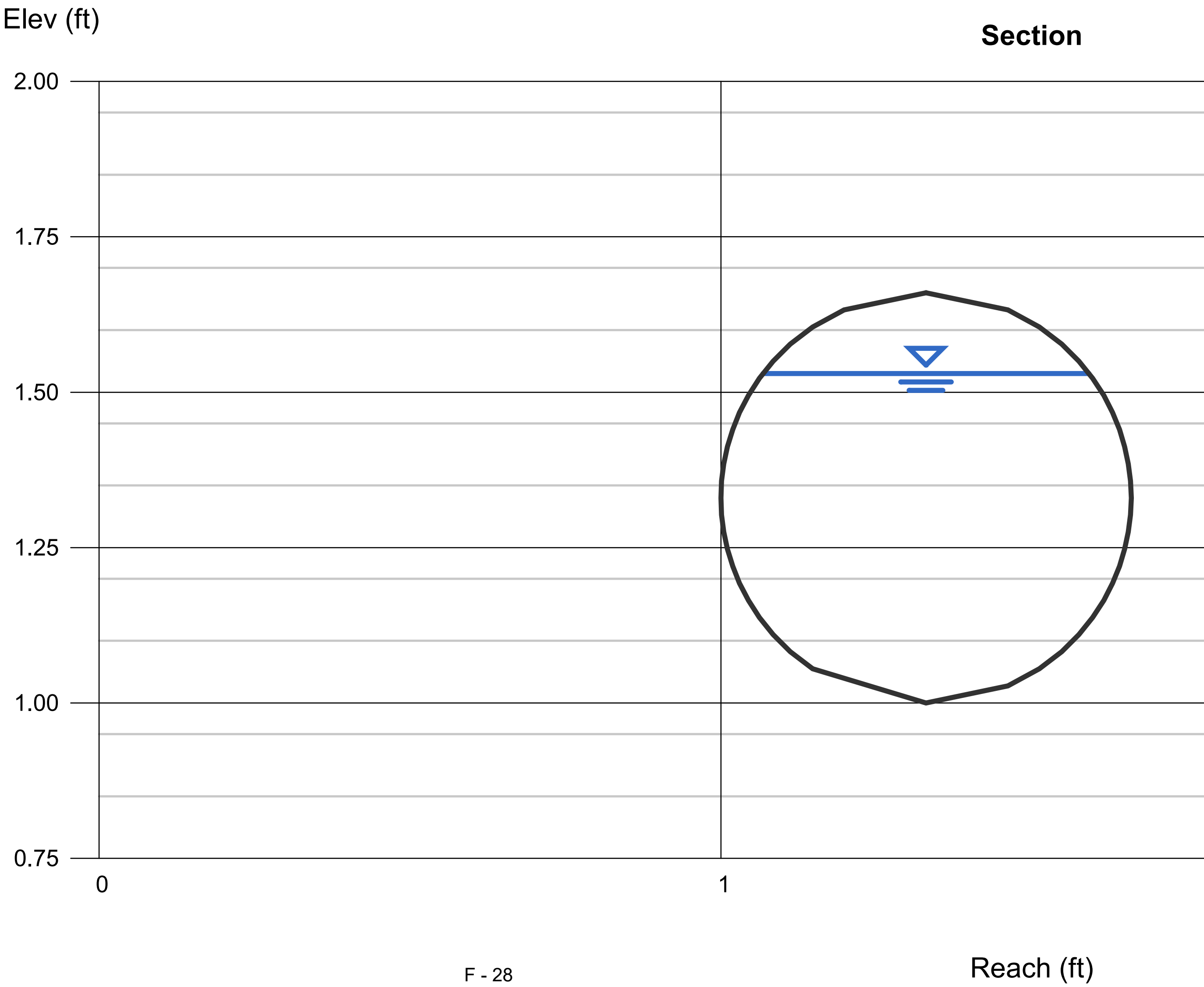
Proposed 8 in. Sanitary Sewer Main: 0.8-Full

Circular
Diameter (ft) = 0.66

Invert Elev (ft) = 1.00
Slope (%) = 0.40
N-Value = 0.012

Calculations
Compute by: Known Depth
Known Depth (ft) = 0.53

Highlighted
Depth (ft) = 0.53
Q (cfs) = 0.792
Area (sqft) = 0.29
Velocity (ft/s) = 2.68
Wetted Perim (ft) = 1.47
Crit Depth, Yc (ft) = 0.43
Top Width (ft) = 0.52
EGL (ft) = 0.64



Appendix B

Preliminary Wet Well Sizing Calculations

ASCENTÉ
PRELIMINARY LIFT STATION WET WELL SIZING CALCULATIONS

Sierra Lift Station: Alternates 1 & 2

Inflow to Wet Well		Wet Well Size	
Qin, gpd	94,770	Dimensions (circular), ft	6
Qin, gpm	66	Area, A, sq ft	28.3
Discharge from Wet Well			
Qout, gpd	189540		
Qout, gpm	132		
Minimum Cycle Time between Pump Starts			
Tmin, minutes	30		
Min Storage Volume Required, Pumps Off			
Vmin = Tmin*Qout, gallons	1,974		
Min Pump Submergence			
S, ft	1.5		
Minimum Storage Depth			
Hmin, ft = Vmin/A =	9.34		
Wet Well Depth (JN 32)			
Ground Elevation, ft	5456.0		
Lowest Inlet Pipe Invert, ft	5450.0		
Reserve Depth, ft	1.0		
Pump On, ft	5449.0		
Minimum Storage Depth, ft	9.4		
Pump Off, ft	5439.6		
Sump Depth, ft	1.5		
Base of Wet Well, ft	5438.1		
Total Depth Wet Well, ft	**18.0**		

Donner Lift Station: Alternates 1 & 2

Inflow to Wet Well	
Qin, gpd	87,480
Qin, gpm	61
Discharge from Wet Well	
Qout, gpd	174960
Qout, gpm	122
Minimum Cycle Time between Pump Starts	
Tmin, minutes	30
Min Storage Volume Required, Pumps Off	
Vmin = Tmin*Qout, gallons	1,823
Min Pump Submergence	
S, ft	1.5
Minimum Storage Depth	
Hmin, ft = Vmin/A =	8.62
Wet Well Depth (JN 32)	
Ground Elevation, ft	5375.0
Lowest Inlet Pipe Invert, ft	5369.0
Reserve Depth, ft	1.0
Pump On, ft	5368.0
Minimum Storage Depth, ft	8.7
Pump Off, ft	5359.3
Sump Depth, ft	1.5
Base of Wet Well, ft	5357.8
Total Depth Wet Well, ft	**18.0**

Wet Well Size	
Dimensions (circular), ft	6
Area, A, sq ft	28.3

Sierra Lift Station for Donner Lift Station: Alternate 1.1 & 1.2

Inflow to Wet Well		Wet Well Size	
Qin, gpd	182250	Dimensions (circular), ft	8
Qin, gpm	127	Area, A, sq ft	50.3

Discharge from Wet Well	
Qout, gpd	182250
Qout, gpm	253
Minimum Cycle Time between Pump Starts	
Tmin, minutes	30
Min Storage Volume Required, Pumps Off	
Vmin = Tmin*Qout, gallons	3,797
Min Pump Submergence	
S, ft	1.5
Minimum Storage Depth	
Hmin, ft = Vmin/A =	10.10
Wet Well Depth (JN 32)	
Ground Elevation, ft	5375.0
Lowest Inlet Pipe Invert, ft	5369.0
Reserve Depth, ft	1.0
Pump On, ft	5368.0
Minimum Storage Depth, ft	10.1
Pump Off, ft	5357.9
Sump Depth, ft	1.5
Base of Wet Well, ft	5356.4
Total Depth Wet Well, ft	**19.0**

Appendix C

Preliminary Pump and Force Main Sizing Calculations

ASCENTÉ
PUMP CALCULATIONS - SIERRA LIFT STATION: ALTERNATE 1

Sierra Lift Station	
Wet Well Low EL, ft	5,439.6
Wet Well High EL, ft	5,449.0
Discharge: Redmond Loop SSMH	
Pipe IE Elev., ft	5,481
Discharge: Lift Station	
Peak Flow, mgd	189540
Peak Flow, gpm	132
Discharge Pressure, psi	0
Max Static Head, ft	42.0
Min Static Head, ft	32.0

Force main	Alt 1	Alt 2
Pipe Length, ft	1,500	1,500
Pipe Diameter, inches	4	6
Pipe Area, ft^2	0.09	0.20
Roughness Coefficient, C	120	120

Total Dynamic Head (TDH) = $h_s + h_f + h_{m} + V^2/2g + h_p$

h_s = Static Head
h_f = Friction Losses
h_m = Minor Losses
$V^2/2g$ = Velocity Head
h_p = Pressure Head

4-inch Force Main

Design Flow (gpd)	Wet Well Discharge (cfs)	Velocity (fps)	Static Head, h_s (ft)	Friction Loss, h_f (ft)	Velocity Head, $V^2/2g$ (ft)	Pressure Head, h_p (ft)	TDH (ft)
189540	0.29	3.36	42.00	21.76	0.18	0.00	63.93

Estimated Pump Sizing	
Q, cfs	0.29
TDH, ft	64
Pump horsepower, HP	2.1
Brake Horsepower, HP	3.3
Total Horsepower, HP	3.9
Required Motor Size, HP	**4.0**

Estimated Pump Efficiency	65%
Estimated Motor Efficiency	85%

6-inch Force Main

Design Flow (gpd)	Wet Well Discharge (cfs)	Velocity (fps)	Static Head, h_s (ft)	Friction Loss, h_f (ft)	Velocity Head, $V^2/2g$ (ft)	Pressure Head, h_p (ft)	TDH (ft)
189540	0.62	3.14	42.00	11.93	0.15	0.00	54.08

Estimated Pump Sizing	
Q, cfs	0.62
TDH, ft	55
Pump horsepower, HP	3.8
Brake Horsepower, HP	5.9
Total Horsepower, HP	7.0
Required Motor Size, HP	**7.0**

Estimated Pump Efficiency	65%
Estimated Motor Efficiency	85%

ASCENTÉ

PUMP CALCULATIONS - SIERRA LIFT STATION: ALTERNATE 1

Sierra Lift Station	
Wet Well Low EL, ft	5,439.6
Wet Well High EL, ft	5,449.0
Discharge: Redmond Loop SSMH	
Pipe IE Elev., ft	5,481
Discharge: Lift Station	
Peak Flow, mgd	189540
Peak Flow, gpm	132
Discharge Pressure, psi	0
Max Static Head, ft	42.0
Min Static Head, ft	32.0

Force main	Alt 1	Alt 2
Pipe Length, ft	1,500	1,500
Pipe Diameter, inches	4	6
Pipe Area, ft^2	0.09	0.20
Roughness Coefficient, C	120	120

Total Dynamic Head (TDH) = $h_s + h_f + h_{m} + V^2/2g + h_p$

h_s = Static Head

h_f = Friction Losses

h_m = Minor Losses

$V^2/2g$ = Velocity Head

h_p = Pressure Head

4-inch Force Main

Design Flow (gpd)	Wet Well Discharge (cfs)	Velocity (fps)	Static Head, h_s (ft)	Friction Loss, h_f (ft)	Velocity Head, $V^2/2g$ (ft)	Pressure Head, h_p (ft)	TDH (ft)
189540	0.29	3.36	42.00	21.76	0.18	0.00	63.93

		Estimated Pump Sizing	
		Q, cfs	0.29
		TDH, ft	64
		Pump horsepower, HP	2.1
Estimated Pump Efficiency	65%	Brake Horsepower, HP	3.3
Estimated Motor Efficiency	85%	Total Horsepower, HP	3.9
		Required Motor Size, HP	**4.0**

6-inch Force Main

Design Flow (gpd)	Wet Well Discharge (cfs)	Velocity (fps)	Static Head, h_s (ft)	Friction Loss, h_f (ft)	Velocity Head, $V^2/2g$ (ft)	Pressure Head, h_p (ft)	TDH (ft)
189540	0.62	3.14	42.00	11.93	0.15	0.00	54.08

		Estimated Pump Sizing	
		Q, cfs	0.62
		TDH, ft	55
		Pump horsepower, HP	3.8
Estimated Pump Efficiency	65%	Brake Horsepower, HP	5.9
Estimated Motor Efficiency	85%	Total Horsepower, HP	7.0
		Required Motor Size, HP	**7.0**

ASCENTÉ
PUMP CALCULATIONS - DONNER LIFT STATION: ALTERNATES 1.1 & 1.2

Donner Lift Station		Force main	Alt 1	Alt 2
Wet Well Low EL, ft	5,359.3	Pipe Length, ft	4,400	4,400
Wet Well High EL, ft	5,368.0	Pipe Diameter, inches	4	6
		Pipe Area, ft^2	0.09	0.20
Discharge: Tioga Village		Roughness Coefficient, C	120	120
Pipe IE Elev., ft	5,701			

Discharge: Lift Station

Peak Flow, mgd	174960
Peak Flow, gpm	122
Discharge Pressure, psi	0
Max Static Head, ft	342.0
Min Static Head, ft	333.0

Total Dynamic Head (TDH) = $h_s + h_f + h_m + V^2/2g + h_p$

h_s = Static Head
h_f = Friction Losses
h_m = Minor Losses
$V^2/2g$ = Velocity Head
h_p = Pressure Head

4-inch Force Main

Design Flow (gpd)	Wet Well Discharge (cfs)	Velocity (fps)	Static Head, h_s (ft)	Friction Loss, h_f (ft)	Velocity Head, $V^2/2g$ (ft)	Pressure Head, h_p (ft)	TDH (ft)
174960	0.30	3.41	342.00	65.65	0.18	0.00	407.83

		Estimated Pump Sizing	
		Q, cfs	0.30
		TDH, ft	408
		Pump horsepower, HP	13.8
Estimated Pump Efficiency	65%	Brake Horsepower, HP	21.2
Estimated Motor Efficiency	85%	Total Horsepower, HP	24.9
		Required Motor Size, HP	**25**

6-inch Force Main

Design Flow (gpd)	Wet Well Discharge (cfs)	Velocity (fps)	Static Head, h_s (ft)	Friction Loss, h_f (ft)	Velocity Head, $V^2/2g$ (ft)	Pressure Head, h_p (ft)	TDH (ft)
174960	0.65	3.31	342.00	38.64	0.17	0.00	380.81

		Estimated Pump Sizing	
		Q, cfs	0.65
		TDH, ft	381
		Pump horsepower, HP	28.1
Estimated Pump Efficiency	65%	Brake Horsepower, HP	43.2
Estimated Motor Efficiency	85%	Total Horsepower, HP	50.8
		Required Motor Size, HP	**51.0**

Sierra Lift Station: Alt. 1		Force main	Alt 1	Alt 2
Wet Well Low EL, ft	5,439.6	Pipe Length, ft	1,500	1,500
Wet Well High EL, ft	5,449.0	Pipe Diameter, inches	4	6
		Pipe Area, ft^2	0.09	0.20
Discharge: Fawn Ln. SSMH		Roughness Coefficient, C	120	120
Pipe IE Elev., ft	5,481			

Discharge: Lift Station	
Peak Flow, mgd	269730
Peak Flow, gpm	187
Discharge Pressure, psi	0
Max Static Head, ft	42.0
Min Static Head, ft	32.0

Total Dynamic Head (TDH) = $h_s + h_f + h_m + V^2/2g + h_p$

h_s = Static Head

h_f = Friction Losses

h_m = Minor Losses

$V^2/2g$ = Velocity Head

h_p = Pressure Head

4-inch Force Main

Design Flow (gpd)	Wet Well Discharge (cfs)	Velocity (fps)	Static Head, h_s (ft)	Friction Loss, h_f (ft)	Velocity Head, $V^2/2g$ (ft)	Pressure Head, h_p (ft)	TDH (ft)
269730	0.42	4.78	42.00	41.82	0.36	0.00	84.17

		Estimated Pump Sizing	
		Q, cfs	0.42
		TDH, ft	85
		Pump horsepower, HP	4.0
Estimated Pump Efficiency	65%	Brake Horsepower, HP	6.2
Estimated Motor Efficiency	85%	Total Horsepower, HP	7.3
		Required Motor Size, HP	**8**

6-inch Force Main

Design Flow (gpd)	Wet Well Discharge (cfs)	Velocity (fps)	Static Head, h_s (ft)	Friction Loss, h_f (ft)	Velocity Head, $V^2/2g$ (ft)	Pressure Head, h_p (ft)	TDH (ft)
269730	0.46	2.34	42.00	6.92	0.08	0.00	49.01

		Estimated Pump Sizing	
		Q, cfs	0.46
		TDH, ft	50
		Pump horsepower, HP	2.6
Estimated Pump Efficiency	65%	Brake Horsepower, HP	4.0
Estimated Motor Efficiency	85%	Total Horsepower, HP	4.7
		Required Motor Size, HP	**5**

Sierra Lift Station: Alt. 2		Force main	Alt 1	Alt 2
Wet Well Low EL, ft	5,439.6	Pipe Length, ft	1,500	1,500
Wet Well High EL, ft	5,449.0	Pipe Diameter, inches	4	6
		Pipe Area, ft^2	0.09	0.20
Discharge: Redmond Loop SSMH		Roughness Coefficient, C	120	120
Pipe IE Elev., ft	5,481			

Discharge: Lift Station	
Peak Flow, mgd	269730
Peak Flow, gpm	187
Discharge Pressure, psi	0
Max Static Head, ft	42.0
Min Static Head, ft	32.0

Total Dynamic Head (TDH) = $h_s + h_f + h_m + V^2/2g + h_p$

h_s = Static Head
h_f = Friction Losses
h_m = Minor Losses
$V^2/2g$ = Velocity Head
h_p = Pressure Head

4-inch Force Main

Design Flow (gpd)	Wet Well Discharge (cfs)	Velocity (fps)	Static Head, h_s (ft)	Friction Loss, h_f (ft)	Velocity Head, $V^2/2g$ (ft)	Pressure Head, h_p (ft)	TDH (ft)
269730	0.42	4.78	42.00	41.82	0.36	0.00	84.17

		Estimated Pump Sizing	
		Q, cfs	0.42
		TDH, ft	85
		Pump horsepower, HP	4.0
Estimated Pump Efficiency	65%	Brake Horsepower, HP	6.2
Estimated Motor Efficiency	85%	Total Horsepower, HP	7.3
		Required Motor Size, HP	**8**

6-inch Force Main

Design Flow (gpd)	Wet Well Discharge (cfs)	Velocity (fps)	Static Head, h_s (ft)	Friction Loss, h_f (ft)	Velocity Head, $V^2/2g$ (ft)	Pressure Head, h_p (ft)	TDH (ft)
269730	0.46	2.34	42.00	6.92	0.08	0.00	49.01

		Estimated Pump Sizing	
		Q, cfs	0.46
		TDH, ft	50
		Pump horsepower, HP	2.6
Estimated Pump Efficiency	65%	Brake Horsepower, HP	4.0
Estimated Motor Efficiency	85%	Total Horsepower, HP	4.7
		Required Motor Size, HP	**5**

ASCENTÉ
PUMP CALCULATIONS - DONNER LIFT STATION: ALTERNATE 2

Donner Lift Station		Force main	Alt 1	Alt 2
Wet Well Low EL, ft	5,359.3	Pipe Length, ft	3,600	3,600
Wet Well High EL, ft	5,368.0	Pipe Diameter, inches	4	6
		Pipe Area, ft^2	0.09	0.20
Discharge: Callahan Rd. SSMH		Roughness Coefficient, C	120	120
Pipe IE Elev., ft	5,444			

Discharge: Lift Station	
Peak Flow, mgd	174960
Peak Flow, gpm	122
Discharge Pressure, psi	0
Max Static Head, ft	85.0
Min Static Head, ft	76.0

Total Dynamic Head (TDH) = $h_s + h_f + h_m + V^2/2g + h_p$

h_s = Static Head

h_f = Friction Losses

h_m = Minor Losses

$V^2/2g$ = Velocity Head

h_p = Pressure Head

4-inch Force Main

Design Flow (gpd)	Wet Well Discharge (cfs)	Velocity (fps)	Static Head, h_s (ft)	Friction Loss, h_f (ft)	Velocity Head, $V^2/2g$ (ft)	Pressure Head, h_p (ft)	TDH (ft)
174960	0.30	3.41	85.00	53.72	0.18	0.00	138.90

		Estimated Pump Sizing	
		Q, cfs	0.30
		TDH, ft	139
		Pump horsepower, HP	4.7
Estimated Pump Efficiency	65%	Brake Horsepower, HP	7.2
Estimated Motor Efficiency	85%	Total Horsepower, HP	8.5
		Required Motor Size, HP	**9.0**

6-inch Force Main

Design Flow (gpd)	Wet Well Discharge (cfs)	Velocity (fps)	Static Head, h_s (ft)	Friction Loss, h_f (ft)	Velocity Head, $V^2/2g$ (ft)	Pressure Head, h_p (ft)	TDH (ft)
174960	0.65	3.31	85.00	31.62	0.17	0.00	116.79

		Estimated Pump Sizing	
		Q, cfs	0.65
		TDH, ft	117
		Pump horsepower, HP	8.6
Estimated Pump Efficiency	65%	Brake Horsepower, HP	13.3
Estimated Motor Efficiency	85%	Total Horsepower, HP	15.6
		Required Motor Size, HP	**16.0**

Appendix D

Preliminary Opinion of Probable Costs

North System
Sierra Lift Station: Alternate 1

Item	Description	Unit	Quantity	Unit Cost	Total Cost
On-Site Sewer					
1	Mobilization and Demobilization	LS	1	$ 40,000	$ 40,000
2	8-inch Gravity Pipeline[1]	LF	9,900	$ 40	$ 396,000
3	Manholes	EA	30	$ 3,500	$ 105,000
4	On-Site Lift Station	LS	1	$ 180,000	$ 180,000
Subtotal					$ 721,000
Off-Site Sewer					
5	Mobilization and Demobilization	LS	1	$ 40,000	$ 40,000
6	4-inch Force Main[2]	LF	1,500	$ 30	$ 45,000
7	Permanent Pavement Patch	LF	400	$ 30	$ 12,000
8	Connection to Existing Facilities	LS	1	$ 4,000	$ 4,000
9	Air/Vacuum Valves	EA	2	$ 4,000	$ 8,000
Subtotal					$ 109,000
Subtotal On-Site and Off-Site Sewer					$ 830,000
Contingency (15%)					$ 124,500
Total Construction Costs					$ 954,500
Design, Permitting, Survey, Testing, Inspection, and Other (15%)					$ 144,000
Total Project Costs					$ 1,098,500

[1] Quantities include fittings, excavation, backfill, restoration to finish grade, connection to structures.

[2] Includes restrained joints, fittings, excavation, backfill, traffic control.

North System
Sierra Lift Station: Alternate 2

Item	Description	Unit	Quantity	Unit Cost	Total Cost
On-Site Sewer					
1	Mobilization and Demobilization	LS	1	$ 40,000	$ 40,000
2	8-inch Gravity Pipeline[1]	LF	9,900	$ 40	$ 396,000
3	Manholes	EA	30	$ 3,500	$ 105,000
4	On-Site Lift Station	LS	1	$ 180,000	$ 180,000
Subtotal					$ 721,000
Off-Site Sewer					
5	Mobilization and Demobilization	LS	1	$ 40,000	$ 40,000
6	4-inch Force Main[2]	LF	1,500	$ 30	$ 45,000
7	Permanent Pavement Patch	LF	1,500	$ 30	$ 45,000
8	Connection to Existing Facilities	LS	1	$ 4,000	$ 4,000
9	Air/Vacuum Valves	EA	2	$ 4,000	$ 8,000
Subtotal					$ 142,000
Subtotal On-Site and Off-Site Sewer					$ 863,000
Contingency (15%)					$ 129,500
Total Construction Costs					$ 992,500
Design, Permitting, Survey, Testing, Inspection, and Other (15%)					$ 149,000
Total Project Costs					$ 1,141,500

[1] Quantities include fittings, excavation, backfill, restoration to finish grade, connection to structures.

[2] Includes restrained joints, fittings, excavation, backfill, traffic control.

North & South Systems
Donner & Sierra Lift Stations: Alternate 1.1

Item	Description	Unit	Quantity	Unit Cost	Total Cost
On-Site Sewer (All Phases)					
1	Mobilization and Demobilization	LS	1	$ 40,000	$ 40,000
2	8-inch Gravity Pipeline[1]	LF	20,600	$ 40	$ 824,000
3	Manholes	EA	62	$ 3,500	$ 217,000
4	4-inch Force Main[1]	LF	4,400	$ 30	$ 132,000
5	On-Site Lift Station	LS	2	$ 180,000	$ 360,000
6	Air/Vacuum Valves	EA	4	$ 4,000	$ 16,000
Subtotal					$ 1,589,000
Off-Site Sewer					
7	Mobilization and Demobilization	LS	1	$ 40,000	$ 40,000
8	4-inch Force Main[2]	LF	1,500	$ 30	$ 45,000
9	Permanent Pavement Patch	LF	400	$ 30	$ 12,000
10	Connection to Existing Facilities	LS	1	$ 1,500	$ 1,500
11	Air/Vacuum Valves	EA	3	$ 4,000	$ 12,000
Subtotal					$ 110,500
Subtotal On-Site and Off-Site Sewer					$ 1,699,500
Contingency (15%)					$ 254,900
Total Construction Costs					$ 1,954,400
Design, Permitting, Survey, Testing, Inspection, and Other (15%)					$ 294,000
Total Project Costs					$ 2,248,400

[1] Quantities include fittings, excavation, backfill, restoration to finish grade, connection to structures.

[2] Includes restrained joints, fittings, excavation, backfill, traffic control.

North & South Systems
Donner & Sierra Lift Stations: Alternate 1.2

Item	Description	Unit	Quantity	Unit Cost	Total Cost
On-Site Sewer (All Phases)					
1	Mobilization and Demobilization	LS	1	$ 40,000	$ 40,000
2	8-inch Gravity Pipeline[1]	LF	20,600	$ 40	$ 824,000
3	Manholes	EA	62	$ 3,500	$ 217,000
4	4-inch Force Main[1]	LF	4,400	$ 30	$ 132,000
5	On-Site Lift Station	LS	2	$ 180,000	$ 360,000
6	Air/Vacuum Valves	EA	4	$ 4,000	$ 16,000
Subtotal					$ 1,589,000
Off-Site Sewer					
7	Mobilization and Demobilization	LS	1	$ 40,000	$ 40,000
8	4-inch Force Main[2]	LF	1,500	$ 30	$ 45,000
9	Permanent Pavement Patch	LF	1,500	$ 30	$ 45,000
10	Connection to Existing Facilities	LS	1	$ 4,000	$ 4,000
11	Air/Vacuum Valves	EA	2	$ 4,000	$ 8,000
Subtotal					$ 142,000
Subtotal On-Site and Off-Site Sewer					$ 1,731,000
Contingency (15%)					$ 259,700
Total Construction Costs					$ 1,990,700
Design, Permitting, Survey, Testing, Inspection, and Other (15%)					$ 299,000
Total Project Costs					$ 2,289,700

[1] Quantities include fittings, excavation, backfill, restoration to finish grade, connection to structures.

[2] Includes restrained joints, fittings, excavation, backfill, traffic control.

South System
Donner Lift Station: Alternate 2

Item	Description	Unit	Quantity	Unit Cost	Total Cost
On-Site Sewer					
1	Mobilization and Demobilization	LS	1	$ 40,000	$ 40,000
2	8-inch Gravity Pipeline[1]	LF	10,700	$ 40	$ 428,000
3	Manholes	EA	33	$ 3,500	$ 115,500
4	On-Site Lift Station	LS	1	$ 180,000	$ 180,000
Subtotal					$ 763,500
Off-Site Sewer					
5	Mobilization and Demobilization	LS	1	$ 40,000	$ 40,000
6	4-inch Force Main[2]	LF	3,600	$ 30	$ 108,000
7	Permanent Pavement Patch	LF	2,400	$ 30	$ 72,000
8	Connection to Existing Facilities	LS	1	$ 3,000	$ 3,000
9	Air/Vacuum Valves	EA	3	$ 4,000	$ 12,000
Subtotal					$ 235,000
Subtotal On-Site and Off-Site Sewer					$ 998,500
Contingency (15%)					$ 149,800
Total Construction Costs					$ 1,148,300
Design, Permitting, Survey, Testing, Inspection, and Other (15%)					$ 173,000
Total Project Costs					$ 1,321,300

[1] Quantities include fittings, excavation, backfill, restoration to finish grade, connection to structures.

[2] Includes restrained joints, fittings, excavation, backfill, traffic control.

Exhibit #1 - 157.935 acre feet

U.S. Forest Service Permits
Tessa Wells

	Permit	Diversion Rate	GPM	Duty	QTR QTR	Section	Bearing District Tie
	65958	0.04377	19.6457268	31.669	SWSW	35	N.52°20'00"E.; 6,408 ft
	65959	0.04377	19.6457268	31.669	NWSW	35	N.52°20'00"E.; 6,408 ft
	65960	0.04375	19.63675	31.569	NESW	35	N.48°41'46"E.; 4,574 ft
	65961	0.04377	19.6457268	31.669	NESW	35	N.48°41'46"E.; 4,574 ft
	77729	0.04334	19.4976096	31.359	NESW	35	N.48°41'46"E.; 4,574 ft
Total		0.2184	98.07154	157.935			

- Water Rights Deeded to Washoe County by Stonefield, Inc.
  See Washoe County Recorded Document No. 3714700 Dated 12/23/2008
- Permit No. 77729 changed from 65957

Exhibit #2 - 41.17 acre feet

C.W.H. 2011 Revocable Trust and W.B.H. 2011 Trust

Permit	Changed	Total Duty
61265	70262	103.33
61266	70261	103.33
61267	NA	103.33
61268	NA	130.01
61269	NA	135
61270	NA	135

Total combined duty of the amount being transferred: 41.17

ASSIGNMENT OF BENEFICIAL INTEREST IN WATER RIGHTS

This ASSIGNMENT OF BENEFICIAL INTEREST IN WATER RIGHTS ("Assignment"), dated for identification purposes as of the 18th day of August, 2015, is made by and between Matera Ridge, LLC., a Nevada limited liability company ("Assignor") and Gary Nelson and Jeannie Janning, Co-Trustees FBO C.W.H. 2011 Revocable Trust Agreement of Trust dated December 29, 2011, and Gary Nelson and Jeannie Janning, Co-Trustees FBO W.B.H. 2011 Trust Agreement of Trust dated December 29, 2011. ("Assignee") and is consented and agreed to by the Truckee Meadows Water Authority, a joint powers authority ("TMWA").

WHEREAS, Washoe County has conveyed 41.17 AF of water and water rights ("Water Rights") (portion of Permit No.'s 61267, 61268, 61269, 61270, 70261, & 70262) to Truckee Meadows Water Authority, for the beneficial interest of Assignor, by a Water Rights Deed, Document No. 4422989, recorded on December 31, 2014 Official Records of Washoe County, Nevada, more particularly described in Exhibit "A" attached hereto and incorporated herein by reference; and

WHEREAS, as of the date of this Assignment, Assignor has 41.17 AF of uncommitted Water Rights held by TMWA for the benefit of Assignor; and

WHEREAS, Assignor and Assignee desires Assignor to assign all of its beneficial right, title and interest to the use of **41.17 AF** of the Water Rights to Assignee.

NOW THEREFORE, for good and valuable consideration, receipt of which is hereby acknowledged, Assignor, Assignee and TMWA agree as follows:

1. **Assignment of Beneficial Interest**. Assignor hereby assigns to Assignee all of Assignor's right, title and interest to, and the beneficial use of 41.17 AF of the Water Rights (portion of Permit No.'s 61267, 61268, 61269, 61270, 70261, & 70262) ("Assigned Water Rights") held by TMWA on behalf of and for the benefit of the Assignor. Assignor reserves for itself all beneficial right, title and interest in the remaining Water Rights not assigned to Assignee hereunder.

IN WITNESS WHEREOF, the parties hereto have caused their names to be hereunto subscribed the day and year first above written.

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/
/

ASSIGNOR	ASSIGNEE
Matera Ridge, LLC, a Nevada limited liability company By: [signature] Name: Hugh Hempel Title: Manager Consented to: TRUCKEE MEADOWS WATER AUTHORITY By:________________ Name: John A. Erwin, Director Natural Resources Planning and Management	Gary Nelson and Jeannie Janning, Co-Trustees FBO C.W.H. 2011 Revocable Trust Agreement of Trust dated December 29, 2011, and Gary Nelson and Jeannie Janning, Co-Trustees FBO W.B.H. 2011 Trust Agreement of Trust dated December 29, 2011. By: [signature] Name: Gary Nelson Title: Co-Trustee By: Jeannie Janning Name: Jeannie Janning Title: Co-Trustee

STATE OF Nevada)
) ss.
COUNTY OF Washoe)

This instrument was acknowledged before me on 17th day of August, 2015, by **Hugh Hempel** as **Manager** of **Matera Ridge, LLC.**, a Nevada limited liability company therein named.

RAECHEL INGRAHAM
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 08-7719-2 - Expires August 14, 2016

[signature]
Notary Public

STATE OF Nevada)
) ss.
COUNTY OF Washoe)

This instrument was acknowledged before me on 18th day of August, 2015, by **Gary Nelson** as **Co-Trustees** FBO C.W.H. 2011 Revocable Trust Agreement of Trust dated December 29, 2011, and Gary Nelson and Jeannie Janning, Co-Trustees FBO W.B.H. 2011 Trust Agreement of Trust dated December 29, 2011 therein named.

RAECHEL INGRAHAM
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 08-7719-2 - Expires August 14, 2016

[signature]
Notary Public

STATE OF Nevada)
) ss.
COUNTY OF Washoe)

This instrument was acknowledged before me on 18th day of August, 2015, by **Jeannie Janning** as **Co-Trustees** FBO C.W.H. 2011 Revocable Trust Agreement of Trust dated December 29, 2011, and Gary Nelson and Jeannie Janning, Co-Trustees FBO W.B.H. 2011 Trust Agreement of Trust dated December 29, 2011 therein named.

RAECHEL INGRAHAM
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 08-7719-2 - Expires August 14, 2016

Notary Public

EXHIBIT "A"

1. A portion of underground **Permit 61267** which consists of **2.66 acre-feet**, along with a pro-rata portion of the diversion rate, granted by the State Engineer on May 14, 1997 and filed in the office of the Nevada Division of Water Resources.

2. A portion of underground **Permit 61268** which consists of **2.96 acre-feet**, along with a pro-rata portion of the diversion rate, granted by the State Engineer on May 14, 1997 and filed in the office of the Nevada Division of Water Resources..

3. A portion of underground **Permit 61269** which consists of **3.10 acre-feet**, along with a pro-rata portion of the diversion rate, granted by the State Engineer on May 14, 1997 and filed in the office of the Nevada Division of Water Resources..

4. A portion of underground **Permit 61270** which consists of **3.10 acre-feet**, along with a pro-rata portion of the diversion rate, granted by the State Engineer on May 14, 1997 and filed in the office of the Nevada Division of Water Resources..

5. A portion of underground **Permit 70261** which consists of **14.58 acre-feet**, along with a pro-rata portion of the diversion rate, granted by the State Engineer on February 18, 2005 and filed in the office of the Nevada Division of Water Resources..

6. A portion of underground **Permit 70262** which consists of **14.77 acre-feet**, along with a pro-rata portion of the diversion rate, granted by the State Engineer on February 18, 2005 and filed in the office of the Nevada Division of Water Resources..

ASSIGNMENT OF BENEFICIAL INTEREST IN WATER RIGHTS

This ASSIGNMENT OF BENEFICIAL INTEREST IN WATER RIGHTS ("Assignment"), dated for identification purposes as of the 28th day of April, 2016, is made by and between Gary Nelson and Jeannie Janning, Co-Trustees of the C.W.H. 2011 Irrevocable Trust Agreement of Trust dated December 29, 2011, and Gary Nelson and Jeannie Janning, Co-Trustees of the W.B.H. 2011 Irrevocable Trust Agreement of Trust dated December 29, 2011 ("Assignor") and NNV1 Partnership, LLC ("Assignee").

WHEREAS, as of the date of this Assignment, Assignor has 38.96 AF of uncommitted water and water rights ("Water Rights") (portion of Permit No.'s 61267, 61268, 61269, 61270, 70261, & 70262) held by TMWA for the benefit of Assignor and

WHEREAS, Assignor and Assignee desires Assignor to assign all of its beneficial right, title and interest to the use of **38.96 AF** of the Water Rights to Assignee.

NOW THEREFORE, for good and valuable consideration, receipt of which is hereby acknowledged, Assignor, Assignee and TMWA agree as follows:

1. **Assignment of Beneficial Interest**. Assignor hereby assigns to Assignee all of Assignor's right, title and interest to, and the beneficial use of 39.86 AF of the Water Rights (portion of Permit No.'s 61267, 61268, 61269, 61270, 70261, & 70262) ("Assigned Water Rights") held by TMWA on behalf of and for the benefit of the Assignor. Assignor reserves for itself all beneficial right, title and interest in the remaining Water Rights not assigned to Assignee hereunder.

IN WITNESS WHEREOF, the parties hereto have caused their names to be hereunto subscribed the day and year first above written.

[SIGNATURE PAGE FOLLOWS]

ASSIGNOR

Gary Nelson and Jeannie Janning, Co-Trustees of the C.W.H. 2011 Irrevocable Trust Agreement of Trust dated December 29, 2011, and Gary Nelson and Jeannie Janning, Co-Trustees of the W.B.H. 2011 Irrevocable Trust Agreement of Trust dated December 29, 2011

By: ______________________
Name: Gary Nelson
Title: Co-Trustee

By: ______________________
Name: Jeannie Janning
Title: Co-Trustee

ASSIGNEE

NNV1 Partnership, LLC

By: ______________________
Name: Paul Tanguay
Title: Manager

STATE OF Nevada)
) ss.
COUNTY OF Washoe)

This instrument was acknowledged before me on 28th day of April, 2016, by **Gary Nelson** and **Jeannie Janning**, Co-Trustees of the C.W.H. 2011 Irrevocable Trust Agreement of Trust dated December 29, 2011, and Gary Nelson and Jeannie Janning, Co-Trustees of the W.B.H. 2011 Irrevocable Trust Agreement of Trust dated December 29, 2011therein named as ASSIGNOR.

____
Notary Public

RAECHEL INGRAHAM
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 08-7719-2 - Expires August 14, 2016

STATE OF Nevada)
) ss.
COUNTY OF Washoe)

This instrument was acknowledged before me on 28TH day of April, 2016, by **Paul Tanguay**, Manager of NNV1Partnership, LLC therein named as ASSIGNEE.

____
Notary Public

LORENE DEVITO
Notary Public - State of Nevada
Appointment Recorded in Storey County
No: 10-3481-16 - Expires December 2, 2018

Return to:
Washoe County
Department of Water Resources
4930 Energy Way
Reno, NV 89502-4106

DOC # 3714700
12/23/2008 10:35:06 AM
Requested By
WASHOE COUNTY WATER RESOURCES
Washoe County Recorder
Kathryn L. Burke - Recorder
Fee: $0.00 RPTT: $0.00
Page 1 of 6

AGREEMENT

THE PARTIES TO THIS AGREEMENT are **WASHOE COUNTY**, a political subdivision of the State of Nevada, (hereinafter "Grantee") and **STONEFIELD INC.**, (hereinafter "Grantor").

The parties agree as follows:

1. This Agreement states the rights and obligations of the parties in connection with the conveyance of all or part of Water Rights Permit No.s 65957-61, a copy of which is incorporated by reference as Exhibit "A".

2. Grantee, as may be necessary or convenient, will prepare applications to change the permits described in paragraph 1 which, if granted, will change the point of diversion and/or place of use and/or manner of use of the described permits. During the term said rights remain uncommitted for an approved project, all administrative costs, and filing fees paid by Grantee shall be reimbursed by the Grantor to Grantee.

3. Grantee will file all necessary applications for extensions of time, proofs and other appropriate documents for the purpose of maintaining the validity of the permits and for obtaining the maximum use of the permits. During the term said water rights remain uncommitted for an approved project, all administrative costs and filing fees paid by Grantee shall be reimbursed by the Grantor to Grantee. Upon commitment to an approved project, said permits will be complied with by Grantee to the end that water available under the permits will be placed to beneficial use.

4. To the extent of actual availability, as may be determined by matters beyond the control of Grantee, including the physical characteristics of the wells and the source of supply and orders of agencies and courts having jurisdiction, Grantee will provide water service to Grantor with water available under the permits. This commitment to provide water service is not to be construed as approval of any project. This commitment may be used for the sole purpose of complying with the requirement that adequate water rights be dedicated to Grantee as a condition to approval of projects at which time Grantee will assume all administrative costs and filing fees.

5. To obtain water service for any project based on these water rights, Grantor must comply with all requirements at the time of applications, imposed by the water purveyor and governmental entities having jurisdiction, including the construction and dedication of facilities required for the projects, payment for applicable connection fees, and/or inclusion of land to be served within the service area or general improvement district designated by Washoe County.

6. Except as provided in this section, this Agreement may be terminated by either party by delivering a written notice of that fact to the other party; however, the Agreement may not be terminated to the extent that portions of the permits have been committed by Grantor to approved projects.

7. If all or part of the permits become canceled or otherwise invalid, or if Grantor becomes dissatisfied with Grantee's performance of this Agreement, the sole remedy for Grantor is to terminate this Agreement to the extent provided in Paragraph 6 and to demand and receive reconveyance by deed of the remainder of the water rights not used for a project. By agreeing to this sole remedy, Grantor waives all other remedies, legal or equitable, which may otherwise be available. Within thirty (30) days of written demand, Grantee will reconvey the water rights, except those portions committed as described in Paragraph 6.

8. Grantor shall have the right to arrange for the office of the State Engineer to provide Grantor with copies of all official notices and other correspondence that may hereafter be sent to Grantee in connection with the water rights. Grantor shall have the same

STATE OF NEVADA)
) ss.
COUNTY OF WASHOE)

On this 17th day of November, 2008, before me, a Notary Public, personally appeared Gery Nelson as Vice President of Stonefield, Inc., on behalf of said ~~Limited Liability Company~~ Corporation therein named.

JEANNIE JANNING
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 02-78119-2 - Expires October 4, 2010

Jeannie Janning
My commission expires 10/4/10

STATE OF NEVADA)
) ss.
COUNTY OF WASHOE)

On this 9th day of December, 2008, before me, a Notary Public, personally appeared **Robert M. Larkin,** personally known to me to be the **Chairman, Washoe County Board of Commissioners,** who acknowledged to me that he executed the foregoing document.

REBECCA J. AUDRAIN
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 98-5758-2 - Expires April 1, 2011

Rebecca J. Audrain
Notary Public

My Commission expires: 4/1/11

right, as if Grantor were the owner, to the extent that portions of the permits have not been committed for approved projects, to commence, maintain or intervene in any administrative or judicial proceeding affecting the rights.

9. The rights, duties and obligations contained within this Agreement may be assigned with written notice to another party. The rights, duties and obligations herein inure to, and the obligations set forth herein, are binding upon, the heir's successors and assigns of the parties.

10. This Agreement is effective indefinitely.

Dated this 9th day of December, 2008.

GRANTOR:		GRANTEE:	
STONEFIELD, INC.		WASHOE COUNTY	
BY:	[signature]	BY:	Robert M Larkin
NAME:	GARY NELSON	NAME:	Robert M. Larkin
TITLE:	V.P.	TITLE:	Chairman, Washoe County Board of Commissioners 12.09.08

No APN

Exhibit "A"

When recorded, return to:
Washoe County Dept. of Water Resources
4930 Energy Way
Reno, NV 89502-4106

WATER RIGHTS DEED

THIS INDENTURE, made and entered into this 9th day of December 2008, by and between **Stonefield, Inc., a Nevada Corporation,** hereinafter referred to as "GRANTOR," and **Washoe County, a political subdivision of the State of Nevada,** hereinafter referred to as "GRANTEE."

WITNESSETH:

That the said GRANTOR, in and for consideration of the sum of Ten Dollars ($10.00), lawful money of the United States of America, the receipt whereof is hereby acknowledged, does by these presents grant, bargain and sell unto said GRANTEE, and to its successors and assigns forever the following:

The total combined duty of 158.245 acre-feet, being a portion of the following Permits: 65957 (31.669 acre-feet), 65958 (31.669 acre-feet), 65959 (31.669 acre-feet), 65960 (31.569 acre-feet) and 65961 (31.669 acre-feet) together with the respective portion of each of the permits rate of diversion, as filed with the State of Nevada, Division of Water Resources.

To have and to hold the said water rights together with the tenements, hereditaments and appurtenances thereunto belonging or appertaining and the reversion and reversions, remainder and remainders, rents, issues and profits thereof unto the GRANTEE, its successors and assigns, forever.

GRANTOR:
STONEFIELD, INC.
A Nevada Corporation

By: [signature]
Gary M. Nelson, Vice-President

Date: 11/17/08

GRANTEE:
WASHOE COUNTY
a political subdivision of the State of Nevada

By: Robert M Larkin
Robert M. Larkin, Chairman
Board of County Commissioners

Date: 12.09.08

STATE OF NEVADA)
) ss.
COUNTY OF WASHOE)

On this 9th day of December, 2008, before me, a Notary Public, personally appeared **Robert M. Larkin**, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to this instrument and acknowledged that he executed the same in his capacity as Chairman of the Washoe County, Board of Commissioners.

REBECCA J. AUDRAIN
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 99-5758-2 - Expires April 1, 2011

Rebecca J. Audrain
Notary Public

My commission expires: 4/1/11

STATE OF NEVADA)
) ss.
COUNTY OF WASHOE)

On this 17th day of November, 2008, before me, a Notary Public, personally appeared **Gary M. Nelson**, personally known to me (or proved to me on the basis of satisfactory evidence) to be the person whose name is subscribed to this instrument and acknowledged that he executed the same in his capacity as Vice-President of Stonefield, Inc., a Nevada Corporation.

JEANNIE JANNING
Notary Public - State of Nevada
Appointment Recorded in Washoe County
No: 02-78119-2 - Expires October 4, 2010

Jeannie Janning
Notary Public

My commission expires: 10/4/10

TRUCKEE MEADOWS WATER
AUTHORITY
www.tmwa.com

Quality. Delivered.

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

September 8, 2016

Gary Nelson and Jeannie Janning, Trustees
Symbio Development, LLC
355 Boxington Way
Sparks, NV 89434

RE: Ascente Acknowledgement of Water Service
TMWA Work Order 16-5137

Dear Mr. Nelson & Ms. Janning:

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, annexation of the project into TMWA's service territory, 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. Additionally, unless otherwise agreed in writing by TMWA, this Acknowledgment and TMWA's ability to provide water service is subject to, and conditioned on, the Mt. Rose Water Treatment Plant being in operation prior to submittal of the final parcel map for the Project. 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

Keith Ristinen, P.E.
Principal Engineer

TRUCKEE MEADOWS WATER
AUTHORITY
www.tmwa.com

Quality. Delivered.

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

June 21, 2016

Symbio Development, LLC
6151 Lakeside Drive, Suite 1000
Reno, NV 89511

RE: Ascenté Community Information Meeting

This letter is provided as background information on drinking water issues for the Ascenté Community Information Meeting #1, scheduled for Saturday, June 25, 2016.

It is important to note that the Truckee Meadows Water Authority (TMWA) is a water purveyor, which is required to respond to developments approved by local governments. When, where and what type of growth occurs is solely within the land-use entitlement and planning functions of cities, counties and regional planning agencies. TMWA's water-supply planning is designed to facilitate delivery of safe and reliable water supplies, if and when land-use entitlements are granted. TMWA's integrated planning process ensures that long-term water resources, facility capacity and funding mechanisms are in place to meet current and future water supply and demand conditions.

TMWA took over the water system serving the Callahan Ranch area as of January 1, 2015. The water system was previously owned and operated by Washoe County. At TMWA, we recognized that we would need to implement programs to move treated surface water from the Truckee River and various creeks into the former Washoe County and STMGID systems due to their dependence upon groundwater and the continued decline in water levels aggravated by the ongoing drought. Please refer to "TMWA's Plan for Groundwater Sustainability on the Mt. Rose Fan" (copy attached) mailed to area residents in July of 2015.

Since taking over, TMWA has implemented new rules for water rights dedication to mitigate new groundwater pumping. The adopted rules, water rights dedication policies and Water Service Facility Charges for this area require developers to dedicate supplemental surface water supplies when dedicating groundwater for new service in the area. Supplemental surface water resources (Truckee River, Whites and Thomas Creeks) are a key component of the area's water resource management plan and are necessary to ensure a sustainable water supply for existing customers, domestic well owners and new development in the area.

Earlier this spring, TMWA completed construction of the Arrowcreek / Mt. Rose Conjunctive-Use Phase 1 Facilities as described in the Groundwater Sustainability Plan. These improvements are operational and have been delivering Truckee River water to the Callahan Ranch area as of about May 4, 2016. These improvements do not provide 100% of the water supply, but have allowed us to reduce pumping at several wells in the Arrowcreek and Mt. Rose water systems.

TMWA is also expanding its Aquifer Storage and Recovery (ASR) Program in the area. ASR occurs during the fall, winter and spring when water use in the community drops to approximately one-fourth of its peak summer usage, making Truckee River water available for recharge. ASR is the process of injecting treated surface water into the groundwater aquifer when the wells are not in use. The more water we can recharge and store during the off-peak season, the more water we will have available during the summer. It's like money in the bank.

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

Recently, as part of the ASR program, TMWA performed rehabilitation work (preventive maintenance) on a well referred to as Tessa East, off of Napoleon Drive. TMWA had a drilling contractor working on the well for several weeks, but we did not deepen the well. In addition, we made improvements at the westernmost of the two wells (Tessa West) which will allow us to recharge the well with treated surface water this coming fall and winter. TMWA also reduced the pumping rate at the two Tessa wells by about 40% to further reduce local impacts to nearby domestic wells.

Future plans to bring supplemental surface water resources to the area as described in the Groundwater Sustainability Plan include a new water main along Arrowcreek Parkway, and construction of a small drinking water treatment plant off of Whites Creek. By expanding our ASR Program and supplementing the local groundwater supplies with Truckee River and creek water in the near future, TMWA's goal is to actually pump less groundwater from the Mt. Rose and Galena fan aquifer than we do today.

In regard to the proposed Ascenté development, TMWA understands that Phase 1 will be less than 300 homes and that groundwater rights are proposed to be dedicated to serve the Phase 1 project. The new rules for water rights dedication will mitigate new groundwater pumping from the development, and the groundwater sustainability improvements which TMWA is implementing will allow TMWA to recharge the wells and supplement the local groundwater supplies with Truckee River and creek water. As a result, the project will have a net zero impact on the groundwater resources on an annual basis.

Lastly, TMWA's policy is that "growth pays for growth." In practice, that means the service plans developed for growth do not negatively impact existing water users, and where practical, result in improvements to the water system as a whole. To that end, TMWA will require the Ascenté improvements to integrate with the existing water system in the Callahan Ranch area, and will require Ascenté to participate in TMWA's groundwater stabilization efforts and fund their share of existing and future facilities as described in this letter.

Sincerely,

John P. Enloe, P.E.
Director, Natural Resources Planning and Management

TMWA's Plan for Groundwater Sustainability on the Mt. Rose Fan

Due to dependence upon groundwater and the continued decline in water levels aggravated by the ongoing drought, it is necessary to provide a supplemental source of supply for the water systems located on the upper Mt. Rose and Galena fan areas. These areas currently rely on groundwater wells for 100 percent of their water supply.

TMWA is implementing a $7.8 million groundwater sustainability / conjunctive use plan for the Mt. Rose and Galena fan areas. The plan includes three projects which will deliver limited amounts of treated surface water from the Truckee River to the area to replenish wells:

- Arrowcreek/Mt. Rose Conjunctive-Use Facilities, in service January 2016
- Expanded Conjunctive-Use Facilities/Aquifer Storage and Recovery Program, scheduled to be constructed in 2016-2017
- South Truckee Meadows General Improvement District (STMGID) Conjunctive-Use Facilities, scheduled to be constructed in 2017-2018

These facility improvements are included in TMWA's existing budget and will not affect rates.

Conjunctive use management maximizes use of surface water when it's available, thereby reducing groundwater pumping. This approach allows us to meet demands with surface water, and to rest and recharge specific wells when enough surface water is available. The more water we can recharge and store during the off-peak season, the more we will have available when river and creek flows are low. It's like money in the bank.

In order to provide for the long-term sustainability of the local groundwater aquifer, TMWA's plan also includes a small (8,800 square foot) water treatment plant off of Whites and Thomas Creeks. When adequate creek flows are available, a portion of the flow will be diverted to the water treatment plant, and sufficient flows will remain downstream in both creeks to maintain wildlife and habitat needs, as well as downstream irrigation requirements.

By supplementing the groundwater resource with water supplies from both the Truckee River and Thomas and Whites Creeks, TMWA's goal is to pump less groundwater from the Mt. Rose and Galena fan aquifer than we do today, even with additional development.

TMWA is a water purveyor required to respond to development approved by local governments, we do not set growth policy. Our role is to provide a reliable, high-quality water supply to homes and businesses within our service territory. TMWA's integrated planning process ensures the long-term water resources, facility capacity and funding mechanisms are in place to meet current and future water supply and demand conditions.

Project History / Timeline:

2002 Washoe County South Truckee Meadows Facility Plan - The County's Facility Plan recognized that, "The upper treatment plant is an integral component of the recommended water supply plan … Most importantly, it will provide recharge water and/or offset winter groundwater pumping in the upper Mt. Rose fan area."

July 20, 2011 - The Washoe County Board of County Commissioners approved its recommended program for mitigation of unreasonable adverse effects of municipal pumping on domestic wells in the Mt. Rose/Galena Fan area, and Washoe County Domestic Well Mitigation Policy.

August 26, 2014 - TMWA Domestic Well Mitigation Workshop

Residents voiced broad concerns relating to the long-term health of the groundwater aquifer, including:

- What commitments will TMWA make to prevent further impacts to domestic wells;
- How long it will take to bring surface water to the area;
- What is to prevent TMWA from pumping the wells and sending the water out of the area;
- General concerns about surface water quality compared to groundwater;
- Stabilizing water levels, resource sustainability;
- Concerns over past land development approvals
- Drought, water conservation;
- Lack of transparency.

October 15, 2014 - TMWA Board of Directors public meeting: TMWA adopts Mt. Rose / Galena Fan Domestic Well Mitigation Program, effective upon the closing date of the successful merger of Washoe County Community Service Water Utility and STMGID into TMWA.

April 15, 2015 - TMWA Board of Directors public meeting: Rule Change 1st Reading

May 21, 2015 - TMWA Board of Directors public meeting: Rule Change 2nd Reading

The newly adopted rules, water rights dedication policies and Water Service Facility Charges for this area require developers to dedicate supplemental surface water (creek) supplies when dedicating groundwater for new service in the area.

Project History / Timeline (continued):

July, 2015 - Letter on groundwater sustainability and conjunctive use projects sent to 8,000 area residents and businesses.

November 18, 2015 - TMWA Board of Directors public meeting: Water Treatment Plant Parcel Purchase Agreement

November 18, 2015 - Monte Vista Home Owners Association Meeting

December 15, 2015 – Mt. Rose Water Treatment Plant Special Use Permit Application filed with Washoe County

January 1, 2016 - Open House invitations (1,500 +/-) and Status Report letters (6,500 +/-) sent to area residents

January 11, 2016 – TMWA Mt. Rose Water Treatment Plant Open House (South Valleys Library)

South Truckee Meadows / Washoe Valley Citizen's Advisory Board - Thursday January 14, 2016, 6:00 p.m. at the South Valleys Library

District Forum hosted by Commissioner Lucey - Thursday January 21, 2016, 6:00 p.m. at the South Valleys Library

Washoe County Board of Adjustment - Thursday, February 4, 2016, 1:30 p.m. at the County Commission Chambers, 1001 E. 9th Street, Building A, 1st Floor, Reno.

The entire SUP application may be reviewed at:
https://www.washoecounty.us/csd/planning_and_development/applications/files-planning-development/comm_dist_two/sb15-012w.pdf

TRAFFIC IMPACT STUDY

ASCENTÉ
RENO • NEVADA

April 14, 2017

PREPARED FOR:

NNV1 Partners, LLC
6151 Lakeside Drive, Suite 1000
Reno, NV 89511

PREPARED BY:

TRAFFIC WORKS LLC

PROFESSIONAL ENGINEER-STATE OF NEVADA
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YOUR QUESTIONS ANSWERED QUICKLY

Why did you perform this study?

This Traffic Impact Study evaluates the potential traffic impacts associated with construction of the proposed Ascenté residential development and provides recommendations for traffic management.

What is the Ascenté project and how much traffic will it generate?

The proposed project consists of 225 single family units. The clustered high quality single-family homes will be surrounded by a significant amount of common open space. The project is anticipated to generate up to 2,143 daily trips, 169 AM peak hour trips, and 225 PM peak hour trips.

Are there significant traffic impacts to roadways adjacent to Ascenté?

There are no significant impacts. All of the studied local roadway segments will operate at acceptable level of service conditions (at LOS "C" or better) with addition of the Ascenté project's traffic and meet Washoe County standards. The project has been intentionally designed to minimize increased traffic on adjacent "Local" classification streets while maintaining County design standards for "Collector" classification streets.

Class	Segment	# Lanes	Existing		Plus Project		
			Daily Volume	LOS	Project Traffic	Daily Volume	LOS
Collector	Callahan Road	2	3,787	55% of C	800	4,587	67% of C
Collector	Fawn Lane	2	433	6% of C	1,343	1,776	26% of C
Local	Tannerwood Drive	2	514	8% of C	400	914	14% of C
Local	Goldenrod Drive	2	199	3% of C	400	599	9% of C
Local	Cherrywood Drive	2	168	3% of C	800	968	15% of C

All local streets will carry less than 1,000 ADT and Fawn Lane (which is a "collector" with driveways) will carry less than 2,000 ADT consistent with rural livability goals.

Are there any other traffic impacts?

The southbound approach (turning movements exiting the north leg from the Monte Vista development) at the Mt. Rose Highway/Callahan Road intersection, currently operates at LOS "E" during the PM peak hour, which already falls below the 2035 Regional Transportation plan thresholds. With the addition of the project generated traffic, the southbound approach will operate at LOS "F" during the PM peak hour. However, it should be understood that Ascenté does not physically add any traffic to the southbound approach (north leg), but does add traffic to the northbound approach, eastbound right-turn, and westbound left-turn movements which increases the delay time to the southbound approach turning movement. The Mt. Rose Highway/Callahan Road northbound, eastbound, and westbound approaches will operate at acceptable LOS conditions even with the addition of the Ascenté project traffic. It should be noted that the affected traffic volume on the southbound approach is less than 30 vehicles during both the AM and PM peak hours, which equates to less than one vehicle every two minutes. This condition (LOS “E/F” for a minor side-street approach, with less than 60 seconds average delay in this case) commonly exists throughout urban and suburban areas and is a manageable situation that does not justify a traffic signal, roundabout, or other major improvement that would disrupt traffic flow on Mt. Rose Highway. All other intersection approaches will operate at acceptable LOS conditions even with the addition of project traffic.

Are any traffic related improvements required?

None are required since acceptable traffic operations are maintained with the project traffic.

Are any traffic related improvements proposed?

To mitigate the project’s effects on the local street network and to help maintain rural livability for existing and future residents, the Ascenté project proposes the following improvements:

- Speed management and traffic calming features on Fawn Lane (two narrowings/crosswalks) – To be implemented before the start of Sierra Village construction.
- An equestrian/mountain bike/pedestrian path on Fawn Lane – Final plans to be submitted with the Sierra Village Final Map.
- An acceleration lane on Mt. Rose Highway at Fawn Lane – Final plans to be submitted with the Sierra Village Final Map.
- School bus waiting area at the Shawna Lane/Millie Lane intersection – Final plans to be submitted with the Donner Village Final Map.
- Move STOP signs at the Cherrywood Drive/Cedarwood Drive intersection for proactive distribution of project traffic between Goldenrod Drive and Tannerwood Drive.
- Install a STOP sign on the Goldenrod Drive/Cherrywood Drive intersection’s westbound approach for safety purposes.

What are the project’s traffic impact fees?

In addition to the voluntary improvements described above, the project will contribute approximately $982,238 in Regional Road Impact Fees for the offset of minor traffic impacts throughout the regional roadway network.

LIST OF FIGURES

LIST OF APPENDICES

INTRODUCTION

This report presents the findings of a Traffic Impact Study completed to assess the potential traffic impacts on local intersections and roadway segments associated with construction of the proposed Ascenté project. This traffic impact study has been prepared to document existing traffic conditions, quantify traffic volumes generated by the proposed project, identify potential impacts, document findings, and make recommendations to mitigate impacts, if any are found.

Study Area and Evaluated Scenarios

The project site is located south of Mt. Rose Highway and east of Callahan Road in Washoe County, NV. The study intersections and roadway segments were identified based on scoping correspondence with Washoe County staff. The project site location and the study intersections are shown in **Figure 1**.

The following intersections are included in this study:

- Mt. Rose Highway/Callahan Road
- Mt. Rose Highway/Fawn Lane
- Callahan Road/Tannerwood Drive
- Callahan Road/Goldenrod Drive

The following roadway segments are included in this study:

- Callahan Road south of Mt. Rose Highway
- Fawn Lane south of Mt. Rose Highway
- Tannerwood Drive east of Callahan Road
- Goldenrod Drive east of Callahan Road
- Cherrywood Drive south of Goldenrod Drive

This study includes analysis of the both the weekday AM and PM peak hours as these are the periods of time in which peak traffic will occur. The evaluated development scenarios are:

- Existing Conditions (no project)
- Existing Plus Project Conditions
- Future 10-year Background Plus Project Conditions

Analysis Methodology

Level of service (LOS) is a term commonly used by transportation practitioners to measure and describe the operational characteristics of intersections, roadway segments, and other facilities. This term equates seconds of delay per vehicle at intersections to letter grades "A" through "F" with "A" representing optimum conditions and "F" representing breakdown or over capacity flows. The complete methodology is established in the Highway Capacity Manual (HCM), 2010, published by the Transportation Research Board.

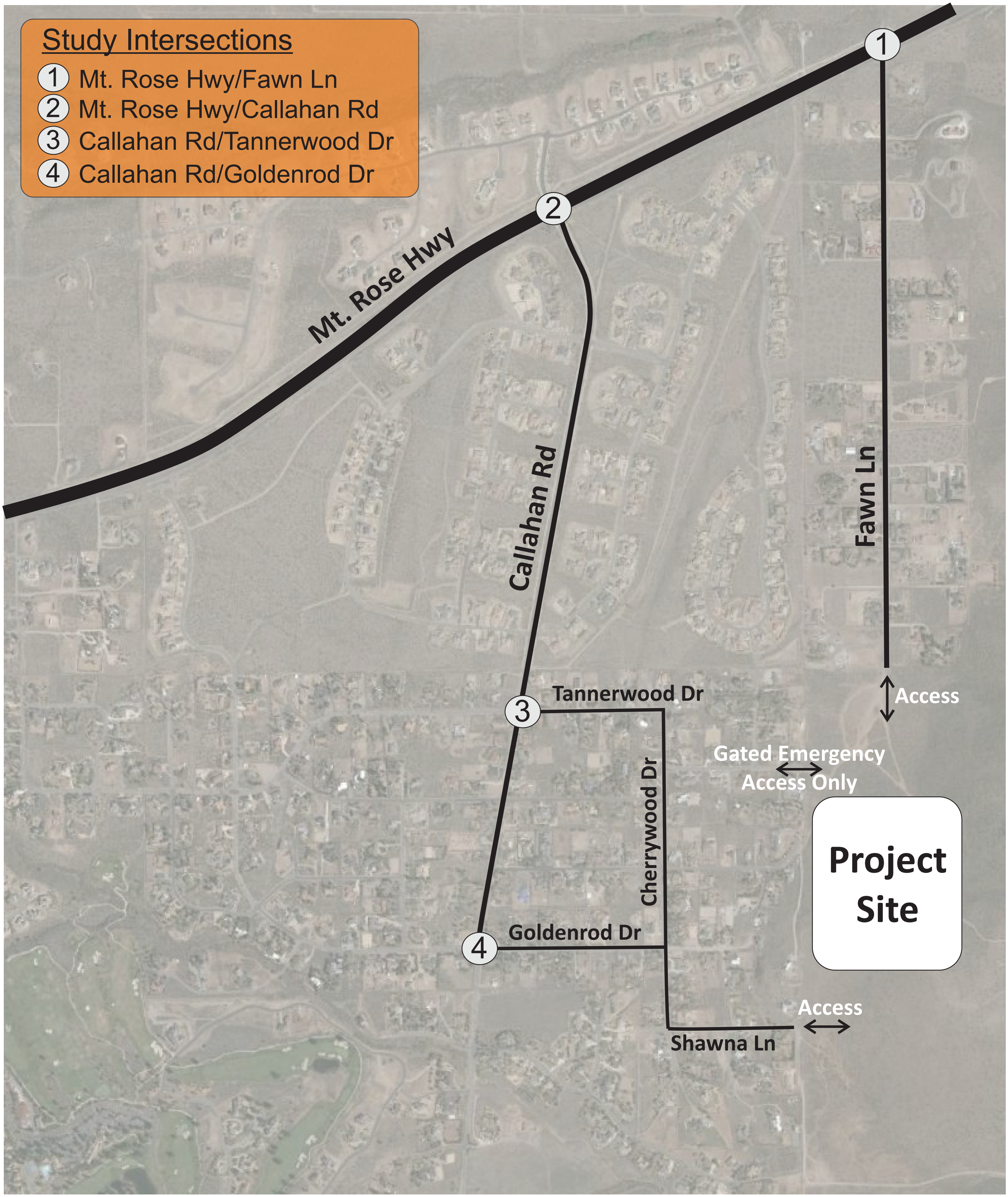

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Figure 1

Ascente
Traffic Impact Study
Study Area & Access Routes

Level of Service Definitions for Intersections

Table 1 presents the delay thresholds for each level of service grade at un-signalized and signalized intersections.

Table 1: Level of Service Definitions for Intersections

Level of Service	Brief Description	Un-signalized Intersections (average delay/vehicle in seconds)	Signalized Intersections (average delay/vehicle in seconds)
A	Free flow conditions.	< 10	< 10
B	Stable conditions with some affect from other vehicles.	10 to 15	10 to 20
C	Stable conditions with significant affect from other vehicles.	15 to 25	20 to 35
D	High density traffic conditions still with stable flow.	25 to 35	35 to 55
E	At or near capacity flows.	35 to 50	55 to 80
F	Over capacity conditions.	> 50	> 80

Source: Highway Capacity Manual (2010), Chapters 16 and 17

Level of service calculations were performed for the study intersections using the Vistro 5.0 software suite with analysis and results reported in accordance with HCM 2010 methodology.

Level of Service Definitions for Roadway Segments

Table 2 shows the level of service thresholds for roadway segments as established in the Washoe County *2035 Regional Transportation Plan* (2035 RTP). The projected daily traffic volumes were compared to the daily volume thresholds shown in **Table 2** to determine roadway segment level of service.

Level of Service Policy

The *2035 Regional Transportation Plan* (2035 RTP) establishes level of service criteria for roadway facilities within Washoe County, the City of Reno, and the City of Sparks. The current Level of Service policy is:

- "All regional roadway facilities projected to carry less than 27,000 ADT at the latest RTP horizon – LOS D or better."
- "All regional roadway facilities projected to carry 27,000 ADT or more at the latest RTP horizon – LOS E or better."
- "All intersections shall be designed to provide a level of service consistent with maintaining the policy level of service of the intersecting roadways".

According to the Nevada Department of Transportation's most current traffic data and Washoe County RTC's 2035 travel demand model data, the average daily traffic (ADT) volumes on the study roadways are anticipated to be less than 27,000 ADT. Hence, the level of service threshold specific to the study roadways and intersections is LOS "D".

Table 2: Average Daily Traffic LOS Thresholds by Facility Type for Roadway Planning

Facility Type	Maximum Service Flow Rate (daily for given service level)				
Number of Lanes	**LOS A**	**LOS B**	**LOS C**	**LOS D**	**LOS E**
Freeway					
4	≤ 28,600	42,700	63,500	80,000	90,200
6	≤ 38,300	61,200	91,100	114,000	135,300
8	51,100	81,500	121,400	153,200	180,400
10	63,800	101,900	151,800	191,500	225,500
Arterial-High Access Control					
2	n/a	9,400	17,300	19,200	20,300
4	n/a	20,400	36,100	38,400	40,600
6	n/a	31,600	54,700	57,600	60,900
8	n/a	42,500	73,200	76,800	81,300
Arterial-Moderate Access Control					
2	n/a	5,500	14,800	17,500	18,600
4	n/a	12,000	32,200	35,200	36,900
6	n/a	18,800	49,600	52,900	55,400
8	n/a	25,600	66,800	70,600	73,900
Arterial/Collector-Low Access Control					
2	n/a	n/a	6,900	13,400	15,100
4	n/a	n/a	15,700	28,400	30,200
6	n/a	n/a	24,800	43,100	45,400
8	n/a	n/a	34,000	57,600	60,600
Arterial/Collector-Ultra-Low Access Control					
2	n/a	n/a	6,500	13,300	14,200
4	n/a	n/a	15,300	27,300	28,600
6	n/a	n/a	24,100	41,200	43,000
8	n/a	n/a	33,300	55,200	57,400
Source: Washoe County 2035 RTP Table 3-4.					

EXISTING TRANSPORTATION FACILITIES

Roadway Facilities

A brief description of the primary roadways in the study area is provided below.

Mt. Rose Highway within the study area is a four-lane highway with two lanes in each direction and turn lanes at major intersections. It is classified as a "High Access Control Arterial" in the 2035 RTP. The posted speed limit is 55 mph in the study area.

Callahan Road and Fawn Lane are two-lane north-south roadways with one lane in each direction. Washoe County designates both Callahan Road and Fawn Lane as "Collector" roadways in the *Forest Area Plan*. These two roads are not classified in the 2035 RTP, but considering their purpose, the nature of the roadway usage, posted speed limits, and intersection spacing, they function as "Low Access Control Collectors" (LAC).

Tannerwood Drive, Goldenrod Drive, and Cherrywood Drive are two-lane local streets with one lane in each direction. Washoe County classifies these roadways as "Local" streets in the *Forest Area Plan*. These three roads are not classified in the 2035 RTP, but considering the function of the roadways, posted speed limits, and access spacing, they operate similar to "Ultra-Low Access Control Collectors" (ULAC).

Alternate Travel Mode Facilities

There is currently a concrete sidewalk on the west side of Callahan Road and a decomposed granite surface equestrian path on the east side of Callahan Road between Mt. Rose Highway and a location 325 feet north of Tannerwood Drive. From that point south there is an asphalt paved path on the west side of Callahan Road south to Goldenrod Drive and an asphalt paved shoulder along the west side of the roadway south from there to Cross Creek Lane. Dedicated bike lanes/wide shoulders are provided in both directions on Mt. Rose Highway.

EXISTING CONDITIONS

Traffic Volumes

Existing traffic volumes were determined by conducting new automated tube counts and new video counts at the study intersections. The counts were conducted on an average mid-week day in May 2016 with schools in session. The existing lane configurations and intersection controls at the study intersections are shown in **Figure 2**.

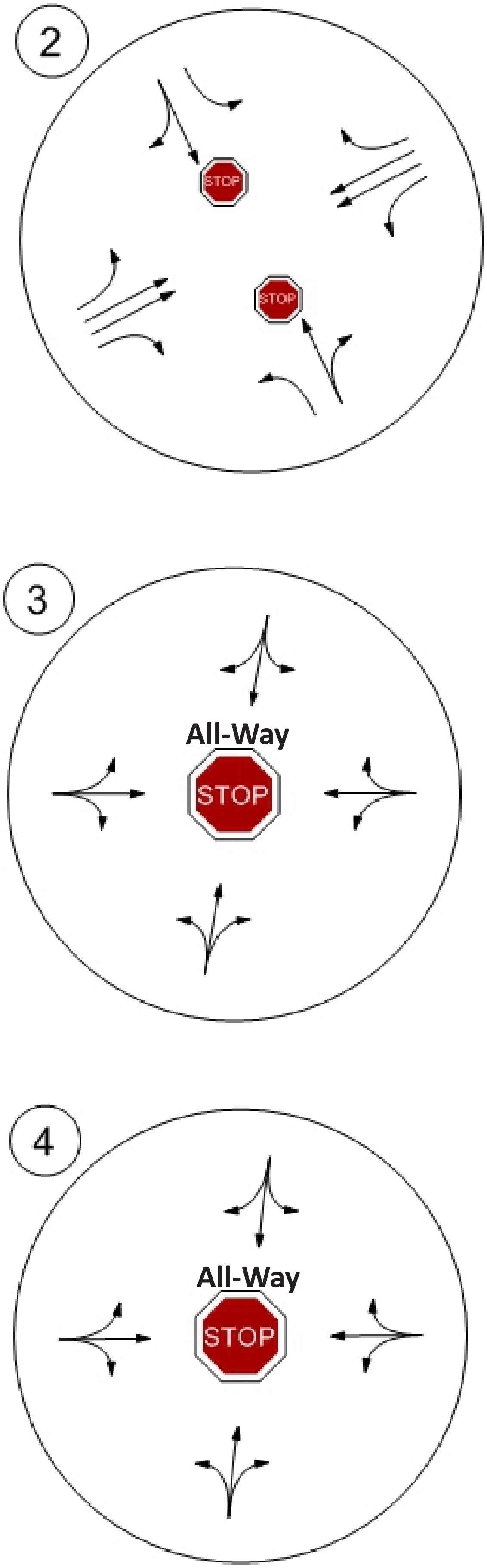


Figure 2

Ascente

Traffic Impact Study

Existing Lane Configurations

A seasonal adjustment factor was applied to all of the existing roadway measured volumes based on data available from NDOT's 2015 Automatic Traffic Recorder (ATR #7120) site on Mt. Rose Highway nearest the project site. 2015 data from the ATR #7120 count station is shown in **Exhibit A**.

ATR 0317120

SR-431 (MT ROSE HWY) 4.8 MI. W. OF US-395A

MONTHLY PERCENT		
MONTH	MADT	% OF AADT
JANUARY	10,600	98.1%
FEBRUARY	9,990	92.5%
MARCH	10,194	94.4%
APRIL	9,507	88.0%
MAY	9,792	90.7%
JUNE	12,187	112.8%
JULY	12,518	115.9%
AUGUST	12,813	118.6%
SEPTEMBER	11,287	104.5%
OCTOBER	10,094	93.4%
NOVEMBER	9,375	86.8%
DECEMBER	10,755	99.6%

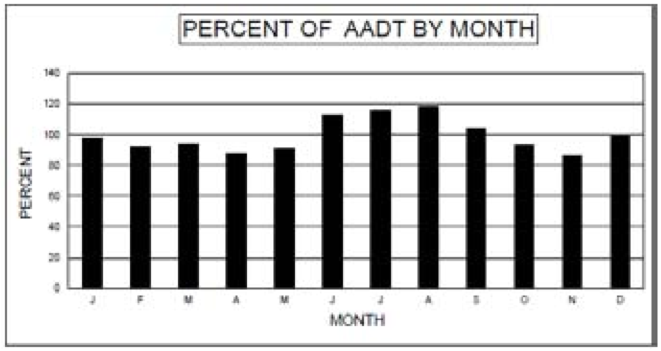


Exhibit A. ATR #0317120 Data

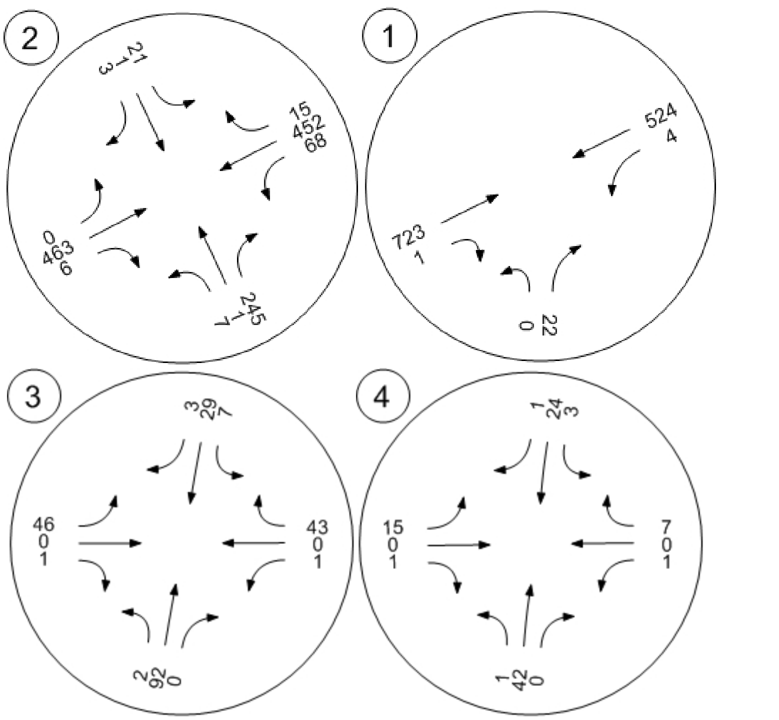
Source: NDOT's 2015 Annual Traffic Report

As shown in **Exhibit A**, the daily traffic volumes in May are typically 90.7% of the Annual Average Daily Traffic (AADT) volume on Mt. Rose Highway. To ensure a conservative analysis, the traffic volumes collected in May 2016 were appropriately increased by approximately 10 percent to compensate for May's lower Monthly Average Daily Traffic (MADT). The Existing Conditions and Existing Plus Project conditions analysis is based on these adjusted (factored up) traffic volumes. The adjusted existing AM and PM peak hour intersection traffic volumes are shown on **Figure 3**.

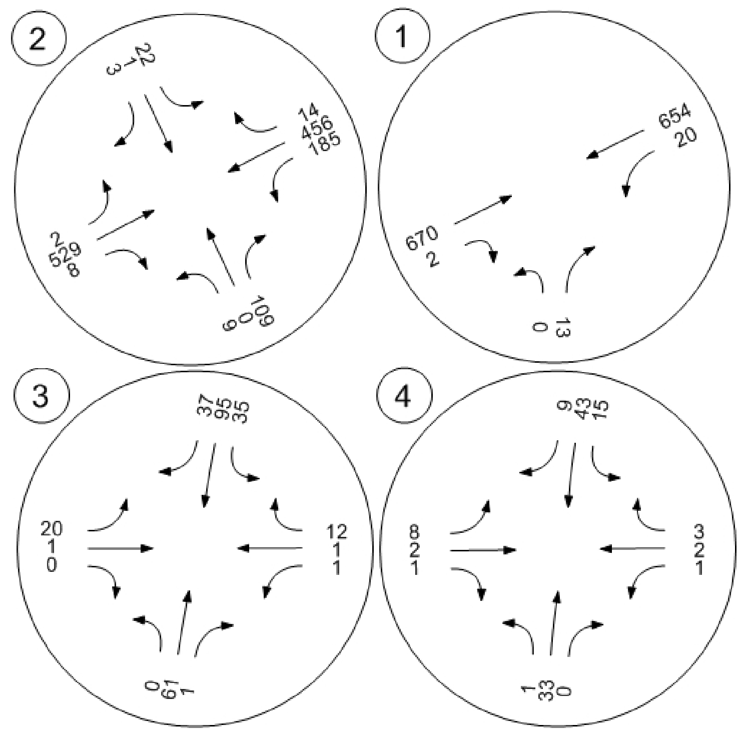
Intersection Level of Service

Level of service calculations were performed using the existing traffic volumes, lane configurations, and traffic controls. The results are presented in **Table 3** and the calculation sheets are provided in **Appendix A**, attached.

AM Peak



PM Peak



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Legend:

XXX - Daily Traffic Volume

NO SCALE

Figure 3

Asente
Traffic Impact Study
Existing Traffic Volumes

Table 3: Existing Conditions Intersection Level of Service Summary

Intersection	Intersection Control	AM Peak		PM Peak	
		LOS	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)
Mt. Rose Hwy/Callahan Rd	Side Street STOP				
Northbound Approach		B	12.66	B	12.80
Northbound Left		*C*	*21.30*	*E*	*36.60*
Northbound Through		*D*	*26.79*	*E*	*39.40*
Northbound Right		*B*	*12.37*	*B*	*10.92*
Southbound Approach		D	29.85	E	41.21
Southbound Left		*D*	*32.85*	*E*	*45.43*
Southbound Through		*C*	*24.01*	*E*	*38.30*
Southbound Right		*A*	*9.81*	*A*	*9.87*
Westbound Left		A	8.64	A	9.42
Weighted Avg of all Movements			3.52		3.24
Mt. Rose Hwy/Fawn Ln	Side Street STOP				
Northbound Approach		B	11.20	B	10.86
Westbound Left		A	9.25	A	9.28
Weighted Avg of all Movements			0.22		0.24
Callahan Rd/Tannerwood Dr	All-Way STOP				
Overall Intersection		A	7.70	A	7.90
Northbound Approach		A	7.97	A	7.57
Southbound Approach		A	7.59	A	8.08
Eastbound Approach		A	7.95	A	7.85
Westbound Approach		A	7.05	A	7.08
Callahan Rd/Goldenrod Dr	All-Way STOP				
Overall Intersection		A	7.30	A	7.40
Northbound Approach		A	7.33	A	7.30
Southbound Approach		A	7.25	A	7.45
Eastbound Approach		A	7.43	A	7.42
Westbound Approach		A	6.68	A	7.00

As shown in **Table 3**, the southbound approach from the Monte Vista development on the north side of Mt. Rose Highway/Callahan Road intersection currently operates at LOS “E” during the PM peak hour. All other intersections and approaches operate at acceptable LOS conditions.

Roadway Level of Service

The regional level of service policy is LOS “D”. All of the roadways studied are operating at only a small percentage of LOS “C” capacity. All the roadway segments have a significant amount of spare capacity remaining. **Table 4** summarizes the existing daily traffic volumes and roadway segment level of service.

Table 4: Existing Conditions Road Segment Level of Service Summary

Class	Segment	# Lanes	Existing	
			Daily Volume	LOS
LAC	Callahan Road	2	3,787	55% of LOS C
LAC	Fawn Lane	2	433*	6% of LOS C
ULAC	Tannerwood Drive	2	514	8% of LOS C
ULAC	Goldenrod Drive	2	199	3% of LOS C
ULAC	Cherrywood Drive	2	168	3% of C

* New daily traffic volumes on Fawn Lane were collected in October 2016 and were found to be lower than the volumes estimated in the previous Ascenté traffic report. The data was collected for three consecutive typical mid-week days with good weather and schools in regular session. The highest daily volume of the three days was chosen for analysis. The Fawn Lane daily volume reported in previous traffic impact study was a conservatively estimated value rather than a true field measured value due to damaged equipment.

Based on the 2035 RTP volume thresholds (see **Table 2**), all of the study roadway segments currently operate at LOS "C" or better with plenty of capacity for additional traffic. Goldenrod Drive and Tannerwood Drive currently carry less than 10% of the LOS "C" capacity. Fawn Lane operates at 11% of the LOS "C" capacity. Callahan Road carries 55% of the LOS "C" capacity.

PROJECT GENERATED TRAFFIC

Project Description

The proposed Ascenté project consists of 281 acres with 225 large lot, high quality, and clustered single-family homes. The project location is shown in **Figure 1** and the current development plan is shown in **Figure 4**. The project is divided into the following four development areas:

- Sierra Village – 65 units
- Tioga Village – 59 units
- Whitney Village – 17 units
- Donner Village – 84 units

Trip Generation

Trip generation rates for the proposed project were obtained from the Trip Generation Manual, 9th Edition, published by the Institute of Transportation Engineers. **Table 5** provides the Daily, AM peak hour, and PM peak hour trip generation calculation details for the proposed project.

Table 5: Trip Generation Estimates

Village	Size	Weekday			AM Peak			PM Peak		
		Total	Entry	Exit	Total	Entry	Exit	Total	Entry	Exit
Sierra Village	65 Dwelling Units	619	310	309	49	12	37	65	41	24
Tioga Village	59 Dwelling Units	562	281	281	44	11	33	59	37	22
Whitney Village	17 Dwelling Units	162	81	81	13	3	10	17	11	6
Donner Village	84 Dwelling Units	800	400	400	63	16	47	84	53	31
Total (225 Units)		2,143	1,072	1,071	169	42	127	225	142	83

As shown in **Table 5**, the proposed project is anticipated to generate up to 2,143 daily trips, 169 AM peak hour trips, and 225 PM peak hour trips.

Project Access

Access to the project will be provided via Fawn Lane and Shawna Lane. Washoe County has designated Fawn Lane as a Collector, and Shawna Lane as a Local Street. Fawn Lane is the primary access for the majority of the development (Sierra Village, Tioga Village, and Whitney Village). Shawna Lane is the primary access for Donner Village. Traffic from Donner Village will use Shawna Lane as the connection to Goldenrod Drive and Tannerwood Drive to get to Callahan Road and reach Mt. Rose Highway. The access points and their connections are shown on **Figure 4**.

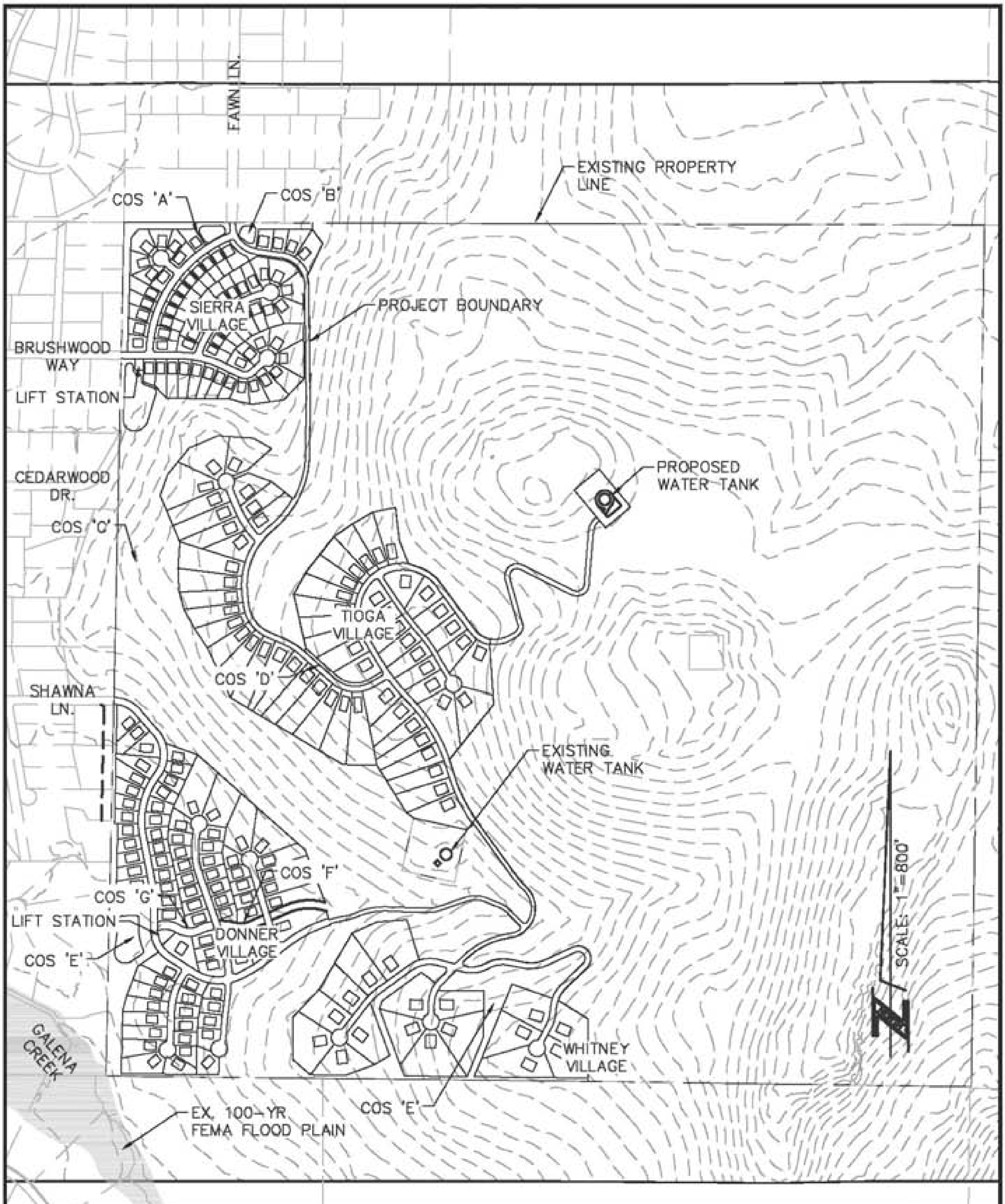
Trip Distribution and Assignment

Project generated traffic was distributed to the road network based on the location of the villages, the relative locations of major activity centers, and access connection points to regional roadways.

The following trip distribution percentages were used for distributing the project traffic regionally:

- 90% to/from the east via Mt. Rose Highway
- 10% to/from the west via Mt. Rose Highway

It is anticipated that all of the project traffic from the Sierra Village, Tioga Village, and Whitney Village areas will use Fawn Lane to access Mt. Rose Highway, as the Fawn Lane route clearly provides lower travel times, shorter distances, and greater convenience compared to using Shawna Lane to Callahan Road. All of the Donner Village traffic is anticipated to use Shawna Lane and Callahan Road to access Mt. Rose Highway, as it provides a more convenient access compared to a longer circuitous route to Fawn Lane. In order to provide a conservative analysis, the Donner Village traffic was distributed equally between Goldenrod Drive and Tannerwood Drive, although some of the project traffic could be expected to use Cedarwood Drive and Wildwood Drive. Proposed traffic management improvements will positively disperse project traffic through the neighborhood west of the project site. Project generated trips were assigned to the adjacent roadway system based on the distributions outlined above. The project trip assignment is shown on **Figure 5**.



LUMOS & ASSOCIATES
9222 PROTOTYPE DRIVE
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NNV1 Partners, LLC

ASCENTÉ
SITE PLAN

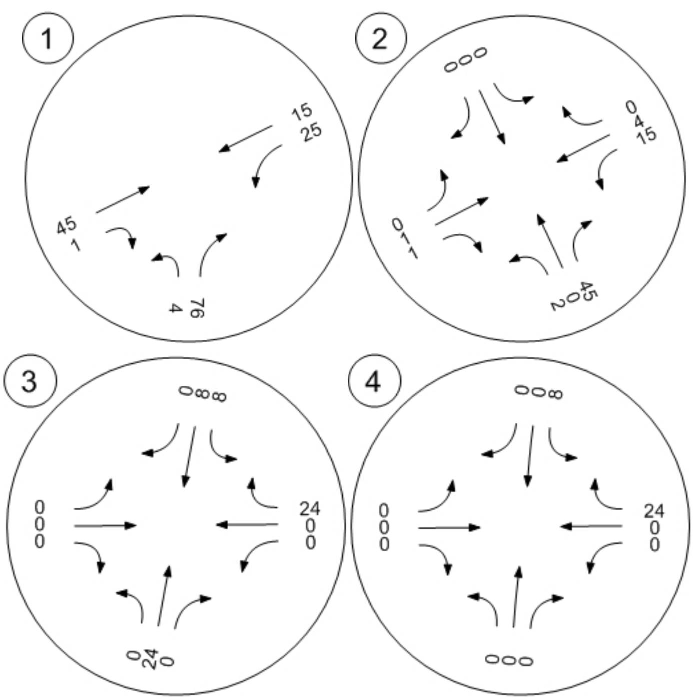
WASHOE COUNTY | NEVADA

Date: APRIL 12, 2017
Scale: 1"=800'
Job No: 9019.000

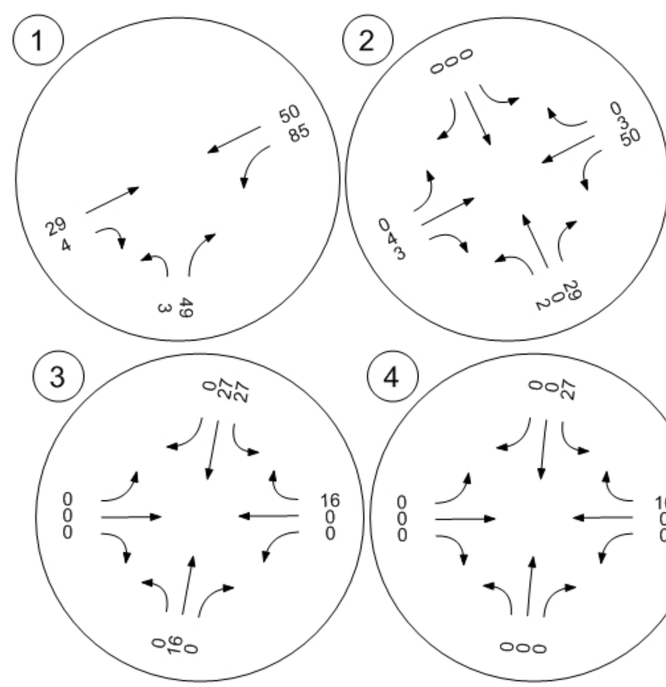
TRAFFIC WORKS

Figure 4
Asente
Traffic Impact Study
Site Plan

AM Peak



PM Peak



NO SCALE

Figure 5

Asente
Traffic Impact Study
Project Trips

EXISTING PLUS PROJECT CONDITIONS

Traffic Volumes

Existing Plus Project traffic volumes were developed by adding the project generated trips (**Figure 5**) to the existing traffic volumes (**Figure 3**) and are shown on **Figure 6**. The "Plus Project" condition Peak Hour Factors (PHF) and travel patterns were assumed to remain the same as were observed under existing conditions.

Intersection Level of Service Analysis

Table 6 presents the level of service analysis summary for the "Plus Project" scenario assuming the existing intersection configurations. Detailed calculation sheets are provided in **Appendix B**, attached.

As shown in **Table 6**, under the Existing Plus Project conditions, all the intersections and approaches operate at acceptable LOS conditions except the southbound approach (north leg) from the Monte Vista development on the north side of the Mt. Rose Highway/Callahan Road intersection.

With the addition of the project generated traffic, the southbound approach from the Monte Vista development on the north side of the Mt. Rose Highway/Callahan Road is anticipated to operate at LOS "F" during the PM peak hour. It should be noted that the southbound movement currently operates at LOS "E" during the PM peak hour without the addition of project traffic. During the AM peak hour, the southbound approach will operate at LOS "E" with an average delay of 35.39 seconds per vehicle, which is only 0.39 seconds (less than half a second) over the LOS "D" threshold.

It should be recognized the proposed project does not add any traffic to the southbound approach (north leg). The project adds traffic only to the northbound approach, eastbound right-turn, and westbound left-turn movements. All these approaches operate at acceptable LOS conditions with the addition of Ascenté project traffic. It should also be noted that the current traffic volume on the southbound approach is less than 30 vehicles during both the AM and PM peak hours, which equates to less than one vehicle every two minutes.

Traffic engineering practitioners recognize that LOS "E/F" conditions for the side street approach, during the peak hour(s), do not necessarily indicate an intersection failure or the need for mitigation. Context of the volumes and intersection location are important in these cases. This condition (LOS "E/F" for a minor side-street approach) commonly exists throughout the urban and suburban areas and is acceptable in most cases so long as a proposed project does not directly add traffic volumes to the LOS "E/F" approach. No mitigations are recommended at the Callahan Road/Mt. Rose Highway intersection due to the following considerations:

- The Ascenté project does not add any traffic to the southbound approach
- All the northbound, eastbound and westbound approaches used by the project traffic operate at acceptable LOS conditions

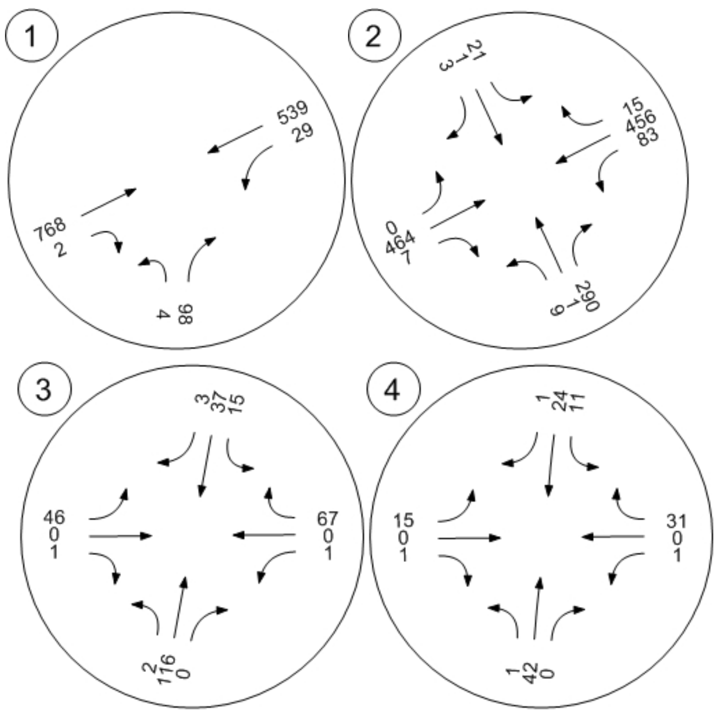
- The southbound approach from Monte Vista has less than 30 vehicles during both the AM and PM peak hours
- The southbound approach operates at LOS “E” in the PM peak hour, even without the project traffic, due to existing through volumes on Mt. Rose Highway
- The eastbound and westbound movements on Mt. Rose Highway operate at LOS “A” (no delay), and the weighted average delay of all movements at the intersection is very low
- A traffic signal or roundabout is not justified or appropriate at this location

All the approaches at the Callahan Road/Tannerwood Drive and Callahan Road/Goldenrod Drive intersections will experience an increase in average delay of less than 1 second per vehicle and continue to function at LOS “A”. The Fawn Lane/Mt. Rose Highway intersection will function at acceptable levels of service with the Ascenté project.

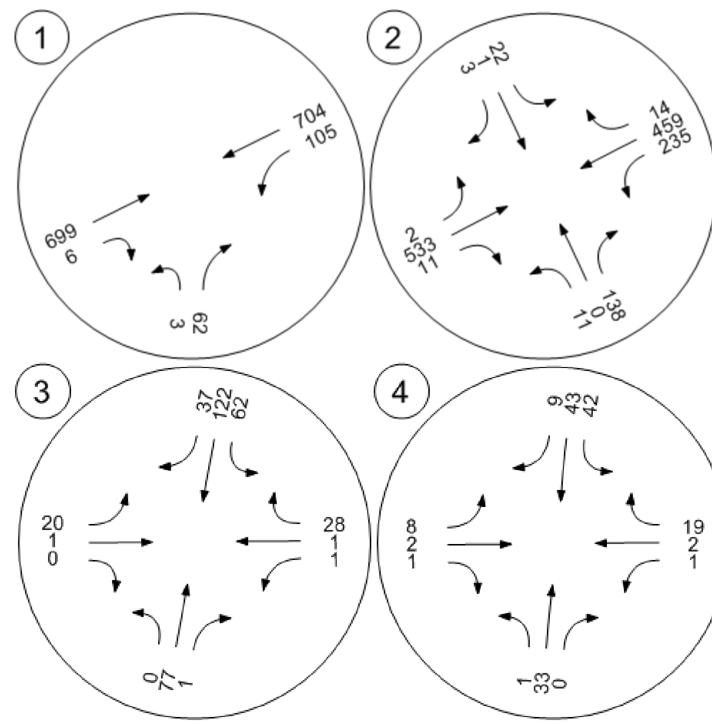
Table 6: Existing Plus Project Intersection Level of Service Summary

Intersection	Intersection Control	Plus Prj AM Peak		Plus Prj PM Peak	
		LOS	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)
Mt. Rose Hwy/Callahan Rd	Side Street STOP				
Northbound Approach		B	13.53	B	13.78
Northbound Left		*C*	*22.80*	*E*	*46.87*
Northbound Through		*D*	*28.92*	*E*	*48.11*
Northbound Right		*B*	*13.18*	*B*	*11.25*
Southbound Approach		E	35.39	F	56.87
Southbound Left		*E*	*39.33*	*F*	*63.42*
Southbound Through		*D*	*25.36*	*E*	*46.85*
Southbound Right		*A*	*9.83*	*A*	*9.94*
Westbound Left		A	8.71	A	9.75
Weighted Avg of all Movements			4.19		4.08
Mt. Rose Hwy/Fawn Ln	Side Street STOP				
Northbound Approach		B	13.05	B	13.07
Westbound Left		A	9.57	A	9.99
Weighted Avg of all Movements			1.11		1.20
Callahan Rd/Tannerwood Dr	All-Way STOP				
Overall Intersection		A	7.99	A	8.39
Northbound Approach		A	8.35	A	7.82
Southbound Approach		A	7.89	A	8.77
Eastbound Approach		A	8.15	A	8.07
Westbound Approach		A	7.35	A	7.32
Callahan Rd/Goldenrod Dr	All-Way STOP				
Overall Intersection		A	7.27	A	7.59
Northbound Approach		A	7.42	A	7.39
Southbound Approach		A	7.42	A	7.82
Eastbound Approach		A	7.49	A	7.53
Westbound Approach		A	6.77	A	6.94

AM Peak



PM Peak



TRAFFIC WORKS

Legend:

XXX - Daily Traffic Volume

N

NO SCALE

Figure 6

Asente

Traffic Impact Study

Existing Plus Project Traffic Volumes

Roadway Level of Service

Table 7 summarizes the "Existing Plus Project" conditions daily volumes and roadway segment level of service.

Table 7: Existing Plus Project Conditions Road Segment Level of Service Summary

Class	Segment	# Lanes	Existing		Plus Project		
			Daily Volume	LOS	Project Traffic	Daily Volume	LOS
LAC	Callahan Road	2	3,787	55% of C	800	4,587	67% of C
LAC	Fawn Lane	2	433	6% of C	1,343	1,776	26% of C
ULAC	Tannerwood Drive	2	514	8% of C	400	914	14% of C
ULAC	Goldenrod Drive	2	199	3% of C	400	599	9% of C
ULAC	Cherrywood Drive	2	168	3% of C	800	968	15% of C

As shown in **Table 7**, all the study roadways will continue to operate well within acceptable LOS standards with the addition of project traffic. Both Tannerwood Drive and Goldenrod Drive will carry less than 1,000 trips per day, even with the addition of project traffic. Similarly, Wildwood Drive and Cedarwood Drive are also anticipated to carry less than 1,000 trips per day with the addition of project traffic. Fawn Lane is anticipated to carry less than 2,000 trips per day, even with the addition of project traffic.

PROPOSED OFF-SITE IMPROVEMENTS TO FAWN LANE

Fawn Lane is the primary access for the Ascenté project and will receive about 63% of the total project trips. Fawn Lane is designated by Washoe County as a Collector and has plenty of capacity remaining even after adding the Ascenté project traffic. Up to 7,300 ADT is the County threshold for Collectors without direct driveway access, and up to 4,000 ADT is a common threshold used for Collectors with direct driveways access. Even with the addition of project traffic, Fawn Lane is anticipated to carry less than 2,000 ADT.

Although Fawn Lane operates at acceptable LOS conditions and is within the Washoe County's collector thresholds, additional consideration has been given to Fawn Lane and the developer is proposing roadway improvements to help maintain Fawn Lane's rural livability for existing and future residents. The following improvements to Fawn Lane are proposed:

Speed Management Features on Fawn Lane

Traffic Calming measures are proposed on Fawn Lane in order to manage travel speeds. The benefit for pedestrians, bicyclists, and local residents is that vehicles would travel at speeds that are safer and more compatible with walking, bicycling, and equestrians. Slower traffic reduces the severity of accidents, reduces noise, and generally improves the livability of residential streets. Selective narrowing of an existing residential street is the most effective method for reducing vehicle speeds and calming traffic.

The project proposes to construct crosswalks and narrowings at two locations on Fawn Lane between Mt. Rose Highway and the project site. This traffic calming improvement is proposed to be implemented before the Sierra Village construction begins in order to manage the construction traffic. The preliminary traffic calming concept is shown in **Figure 7** and the two locations are shown in **Figure 8**.

Equestrian Trail/Pedestrian Path

The project proposes to construct an equestrian trail/pedestrian path on Fawn Lane as shown in **Figure 8**. The trail will serve a wide range of users, including equestrians, hikers, and mountain bikers. The final equestrian trail plans will be submitted with the Sierra Village Final Map.

Acceleration Lane onto Mt. Rose Highway

The project proposes to construct an acceleration lane onto Mt. Rose Highway to create a safer northbound right turning movement from Fawn Lane. An acceleration lane is an auxiliary speed-change lane that allows vehicles to accelerate to appropriate speeds before entering the through-traffic lanes on Mt. Rose Highway. A preliminary layout of the acceleration lane is shown in **Figure 9**. The final acceleration lane improvement plan will be submitted with the Sierra Village Final Map.

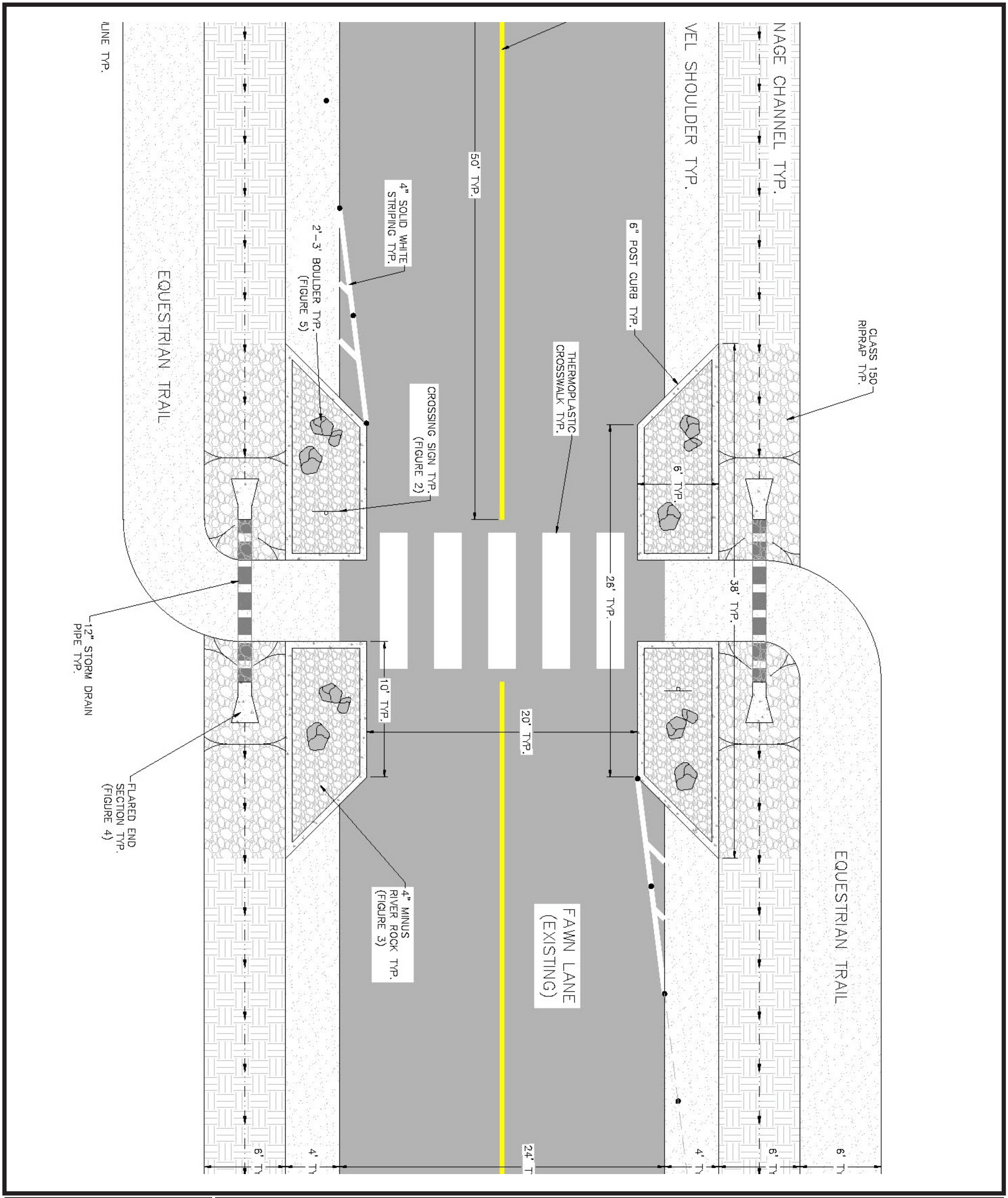
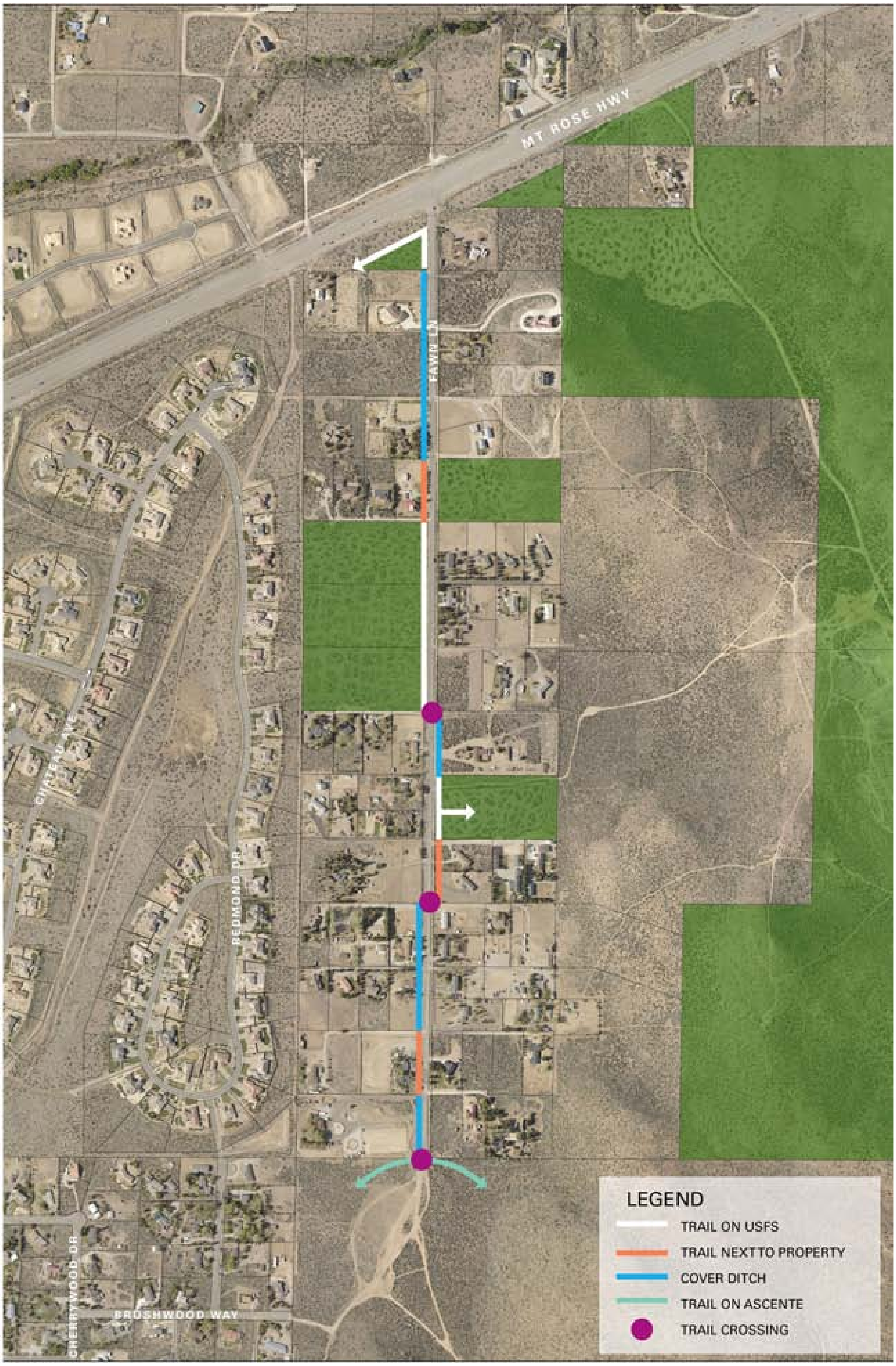


Figure 7

Asente

Traffic Impact Study

Traffic Calming & Crosswalk Concept



TRAFFIC WORKS

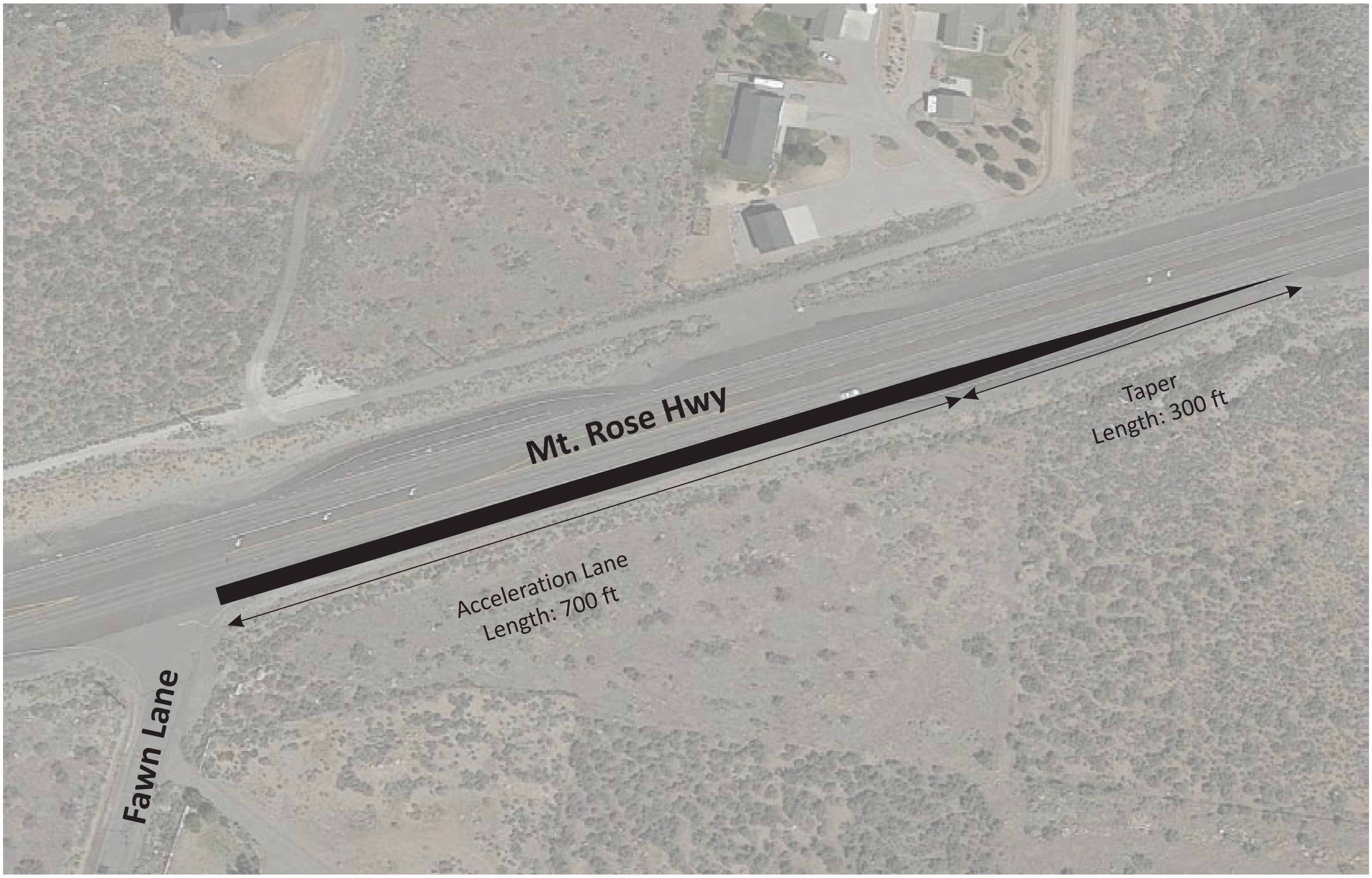
NO SCALE

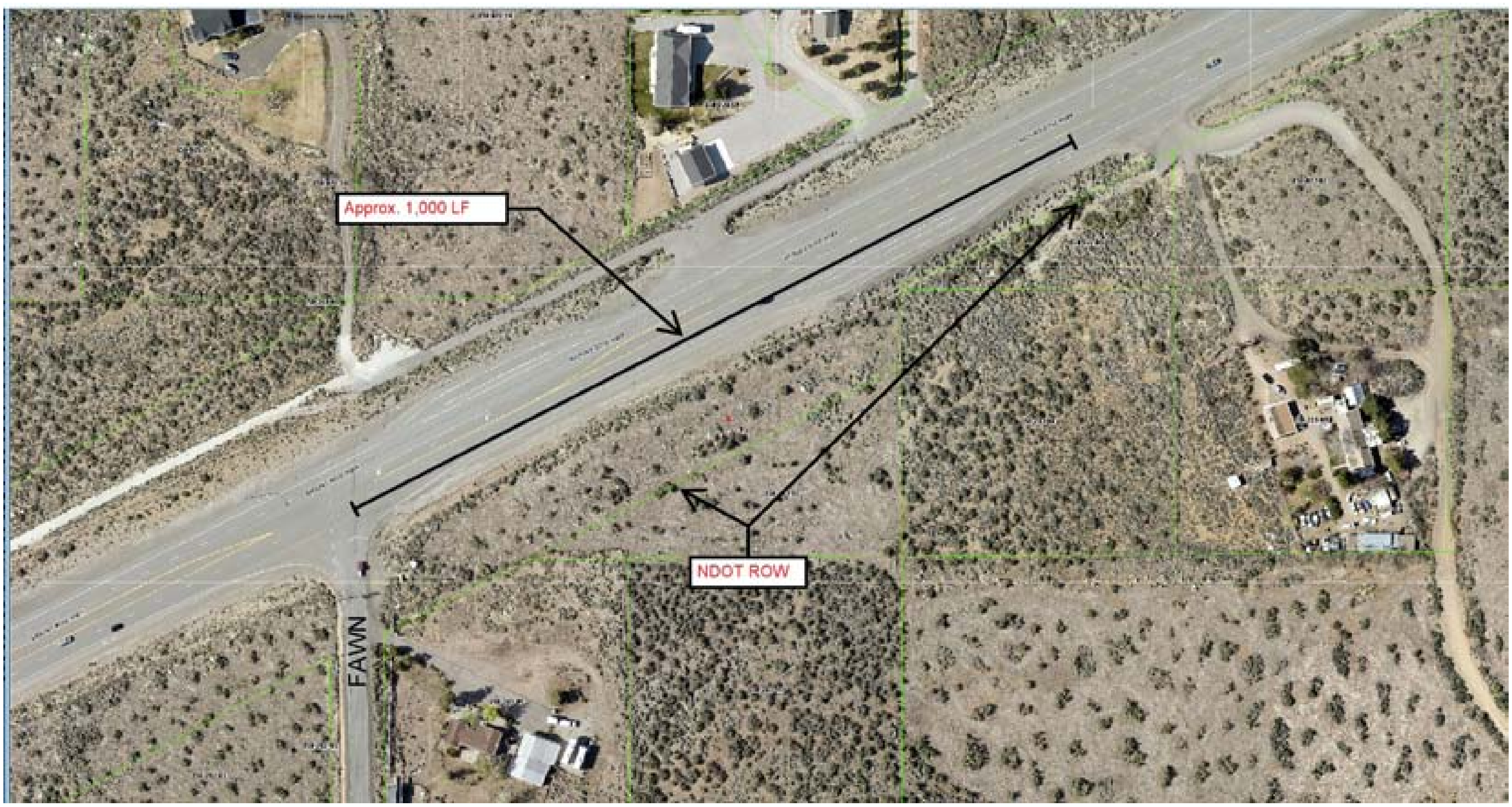
Figure 8

Asente

Traffic Impact Study

Proposed Trail on Fawn Lane





TRAFFIC WORKS

NO SCALE

Figure 9

Asente
Traffic Impact Study
Proposed Acceleration Lane

OTHER IMPROVEMENTS

School Bus Stop

While the streets west of the Shawna Lane connection are all anticipated to have only minor traffic increases, and not exceed 1,000 ADT, it may be beneficial to provide a school bus waiting area in the existing neighborhood. The project proposes to construct a school bus stop at the Shawna Lane/Millie Lane intersection as shown in **Figure 10**. The final school bus stop plans will be submitted with the Donner Village Final Map.

Travel Pattern Management

As shown on **Figure 11**, the project proposes to change the STOP sign locations at the Cherrywood Drive/Cedarwood Drive intersection. This intersection currently operates with side-street STOP control, with traffic on Cedarwood Drive stopping for traffic on Cherrywood Drive. The project recommends moving the STOP signs to the Cherrywood Drive approaches instead. This improvement will cause an equitable distribution of project traffic between Goldenrod Drive and Tannerwood Drive without overloading Goldenrod Drive. The final plans for this improvement will be submitted with the Donner Village Final Map.

ROADWAY DESIGN STANDARDS & CRITERIA

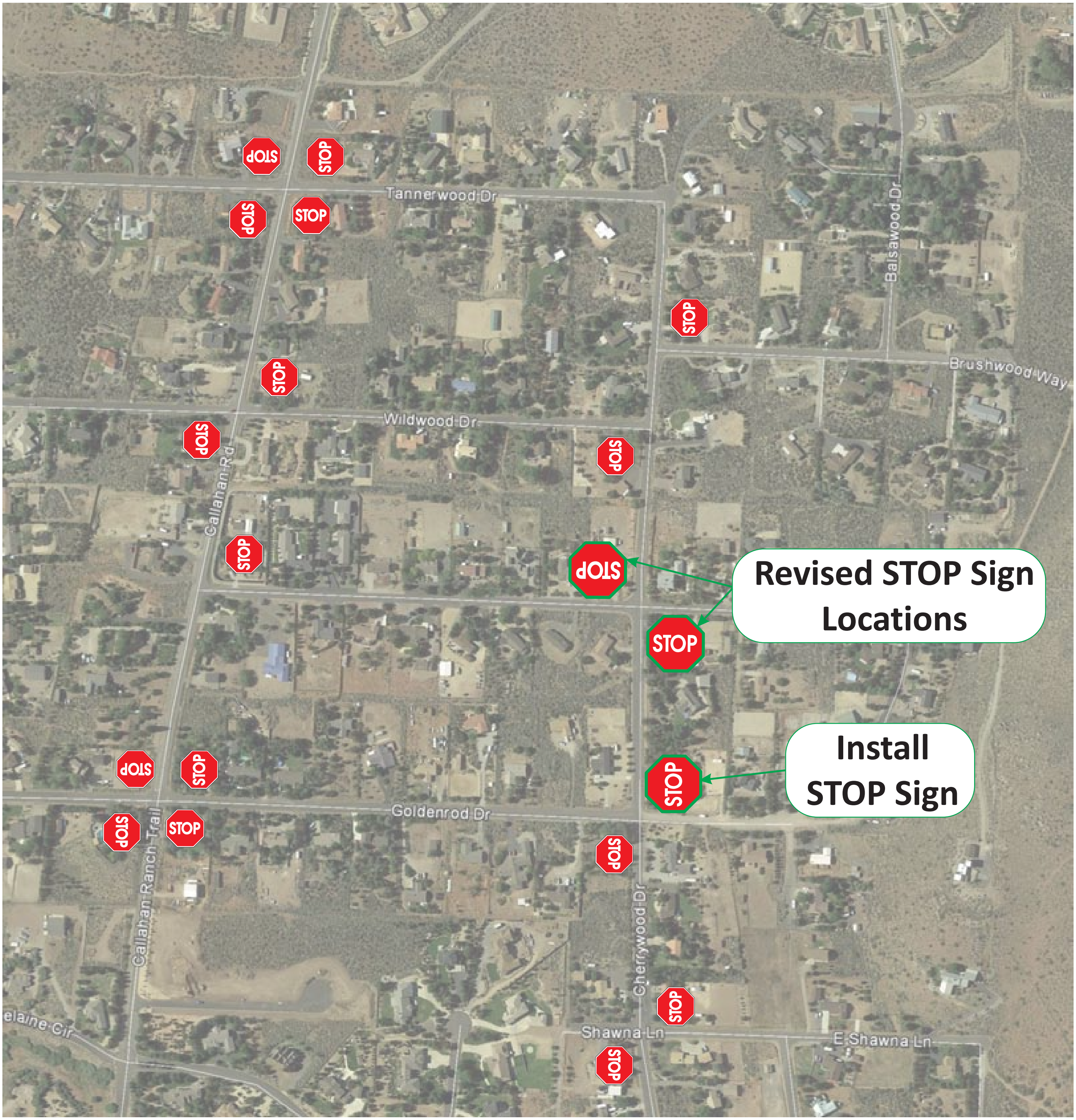
The design criteria for new roadways in Washoe County are typically guided by the "Roadway Sections" details which are part of the Standard Details for Public Works Construction. The primary purpose of Roadway Sections A through D is to dictate the Right-of-Way dedication and new pavement widths that are to be provided in new construction based on projected traffic volumes. Specifically, roadways projected to carry less than 1,000 ADT can be constructed as "local" streets, those with more than 1,000 daily trips (up to 7,300 daily trips) are to have the widths and configuration of a 2-lane Collector roadway, and residential driveways are not to be planned on new roadways projected to carry more than 2,000 ADT in the 10-year horizon.

Washoe County's standard details are somewhat dated (last updated in 2005) and do not reflect current best practices in street design or livability goals. Extra wide streets, which the standard details create, promote higher travel speeds and diminish the walking, cycling, and livable neighborhood characteristics that have become increasingly valued in the last decade. For this reason, Washoe County staff continue to re-evaluate the standard street sections and will likely over time continue moving toward "complete street" concepts that are narrower and pedestrian friendly scale rather than auto-centric.

Roadway design within Ascenté will be guided by the Tentative Map street cross-sections which will place emphasis on design criteria that appropriately manage travel speeds.

Figure 10

Asente
Traffic Impact Study
Proposed Bus Stop Location



NO SCALE

Figure 11

Asente
Traffic Impact Study
Proposed Travel Pattern Management

FUTURE 10-YEAR ANALYSIS

To assist in longer-term planning of the Mt. Rose Highway corridor intersections, future 10-year horizon conditions were evaluated at the Callahan Road/Mt. Rose Hwy and Fawn Lane/Mt. Rose Hwy intersections. The Ascenté generated traffic volumes were added to 10-year background traffic levels to assess the Future 10-Year Background Plus Project scenario. Based on NDOT's database of historical volumes over the last 10 years, traffic volumes have remained essentially the same. The nine year period between 2005 and 2014 indicates a growth rate of approximately 0.4 percent annually. The reported 2015 volume was lower than 2006 (13,000 versus 14,900). Based on this data, an annual growth rate of 0.4% was applied for the next ten year period which represents additional new traffic from potential new growth in the Mt. Rose area that may affect the subject study intersections. **Table 8** provides the Future 10-Year Background Plus Project intersection analysis summary and detailed calculations are provided in **Appendix C**.

Table 8: Future 10-Year Background Plus Project Intersection Level of Service Summary

Intersection	Intersection Control	Plus Prj AM Peak		Plus Prj PM Peak	
		LOS	Avg Delay (sec/veh)	LOS	Avg Delay (sec/veh)
Mt. Rose Hwy/Callahan Rd	Side Street STOP				
Northbound Approach		B	13.96	B	14.18
Northbound Left		*C*	*24.03*	*F*	*51.35*
Northbound Through		*D*	*30.71*	*F*	*52.38*
Northbound Right		*B*	*13.59*	*B*	*11.42*
Southbound Approach		E	39.56	F	65.30
Southbound Left		*E*	*43.99*	*F*	*72.80*
Southbound Through		*D*	*26.77*	*F*	*50.97*
Southbound Right		*A*	*9.91*	*B*	*10.05*
Westbound Left		A	8.79	A	9.92
Weighted Avg of all Movements			4.34		1.28
Mt. Rose Hwy/Fawn Ln	Side Street STOP				
Northbound Approach		B	13.34	B	13.38
Westbound Left		A	9.70	B	10.15
Weighted Avg of all Movements			1.11		1.19

As shown in **Table 8**, the Callahan Road/Mt. Rose Highway intersection northbound approach continues to operate at LOS "B" even though the individual northbound left-turn movement degrades to LOS "F" over a 10-year horizon. Looking closer at the number of vehicles affected by this degradation, the new left turn volume affects only 11 vehicles during the PM peak hour or one vehicle every 5.5 minutes. The southbound left and through movements will continue to operate at LOS "F". As discussed in the previous sections, this is an acceptable condition and does not warrant any new improvements. A new traffic signal, roundabout, or any other major improvement is not justified at the Mt. Rose Highway study intersections in the future 10-year horizon.

CONCLUSIONS & RECOMMENDATIONS

The following is a list of our key findings and recommendations:

Traffic Volumes: Existing traffic volumes were determined by conducting new automated tube counts and new video counts at the study intersections/roadways on an average mid-week day in May 2016 with schools in session. A seasonal adjustment factor was applied to these existing volumes based on data available from NDOT's 2015 Automatic Traffic Recorder (ATR #7120) site on Mt. Rose Highway. The daily traffic volumes in May are 90.7% of the Annual Average Daily Traffic (AADT). Hence, the traffic volumes collected in May 2016 were appropriately increased by about 10% to compensate for May's slightly lower than average traffic compared to the full year average.

Project Trips: The proposed Ascenté project is anticipated to generate up to 2,143 daily trips, 169 AM peak hour trips, and 225 PM peak hour trips.

Project Access: Access to the project will be provided via Fawn Lane and Shawna Lane. Washoe County has designated Fawn Lane as a Collector, and Shawna Lane as a Local Street. Fawn Lane is the primary access for the majority of the development (Sierra Village, Tioga Village, and Whitney Village). Shawna Lane is the primary access for Donner Village. Traffic from Donner Village will use Shawna Lane as the connection to Goldenrod Drive and Tannerwood Drive to get to Callahan Road and reach Mt. Rose Highway. The access points and their connections are shown on **Figure 4**.

Existing Roadway Level of Service: All the study roadway segments currently operate at acceptable LOS conditions.

Existing Intersection Level of Service: The southbound approach (north leg) at the Mt. Rose Highway/Callahan Road intersection currently operates at LOS "E" in the PM peak hour. All other intersections and approaches operate at acceptable LOS conditions.

Existing Plus Project Roadway Level of Service: All the study roadway segments will operate at acceptable level of service conditions (at LOS "C" or better) with addition of the Ascenté project's traffic and meet Washoe County standards. All local streets will carry less than 1,000 ADT and Fawn Lane (which is a "collector" with driveways) will carry less than 2,000 ADT consistent with rural livability goals.

Existing Plus Project Intersection Level of Service: All the study intersections and approaches operate at acceptable level of service conditions except the southbound approach (north leg) at the Mt. Rose Highway/Callahan Road intersection. The delay on the minor side-street is a manageable condition and improvements are not warranted. All other intersection approaches will operate at acceptable LOS conditions with the addition of the project traffic.

Future 10-Year Background Plus Project Analysis: The Callahan Road/Mt. Rose Hwy and Fawn Lane/Mt. Rose Hwy intersections are anticipated to operate at the same levels of service in the Future 10-year Background Plus Project horizon as in the Existing Plus Project scenario. The only difference is that the northbound left-turn movement at Callahan Road onto Mt. Rose Highway just crosses over the threshold from LOS E to LOS F in the future 10-year timeframe. The northbound left-turn traffic volume at this location is anticipated to be only 11 vehicles during the critical PM peak hour. There is no indication that traffic signals, roundabouts, or other major improvements would be warranted or otherwise justified at the Mt. Rose Hwy study intersections in the future 10-year horizon.

Proposed Improvements: To mitigate the project's effects on the local street network and to help maintain rural livability for existing and future residents, the Ascenté project proposes the following improvements:

- Speed management and traffic calming features on Fawn Lane (two narrowings/crosswalks) – To be implemented before the start of Sierra Village construction.
- An equestrian/mountain bike/pedestrian path on Fawn Lane – Final plans to be submitted with the Sierra Village Final Map.
- An acceleration lane on Mt. Rose Highway at Fawn Lane – Final plans to be submitted with the Sierra Village Final Map.
- School bus waiting area at the Shawna Lane/Millie Lane intersection – Final plans to be submitted with the Donner Village Final Map.
- Move STOP signs at the Cherrywood Drive/Cedarwood Drive intersection for proactive distribution of project traffic between Goldenrod Drive and Tannerwood Drive.
- Install a STOP sign on the Goldenrod Drive/Cherrywood Drive intersection's westbound approach for safety purposes.

Regional Road Impact Fees: The project's contribution of standard Regional Road Impact Fees in the amount of approximately $982,238 will mitigate minor project effects throughout the regional roadway network.

Appendix A

Existing Conditions LOS Calculations

Intersection Level Of Service Report
Intersection 1: Mt Rose Hwy/Fawn Ln

Control Type:	Two-way stop	Delay (sec / veh):	21.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Fawn Ln		Mt Rose Hwy		Mt Rose Hwy	
Approach	Northbound		Northeastbound		Southwestbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	165.00	100.00
Speed [mph]	30.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Fawn Ln		Mt Rose Hwy		Mt Rose Hwy	
Base Volume Input [veh/h]	0	22	723	1	4	524
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	22	723	1	4	524
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	6	188	0	1	136
Total Analysis Volume [veh/h]	0	23	753	1	4	546
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.04	0.01	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	21.11	11.02	0.00	0.00	9.25	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.12	0.12	0.00	0.00	0.01	0.00
95th-Percentile Queue Length [ft]	2.88	2.88	0.00	0.00	0.35	0.00
d_A, Approach Delay [s/veh]	11.02		0.00		0.07	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.22					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 2: Mt Rose Hwy/Callahan Rd

Control Type:	Two-way stop	Delay (sec / veh):	32.9
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.146

Intersection Setup

Name	Mt Rose Hwy			Mt Rose Hwy			Callahan Rd			Callahan Rd		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	175.00	100.00	70.00	162.00	100.00	300.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Mt Rose Hwy			Mt Rose Hwy			Callahan Rd			Callahan Rd		
Base Volume Input [veh/h]	0	463	6	68	452	15	7	1	245	21	1	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	463	6	68	452	15	7	1	245	21	1	3
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	123	2	18	120	4	2	0	65	6	0	1
Total Analysis Volume [veh/h]	0	493	6	72	481	16	7	1	261	22	1	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	2	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.07	0.00	0.00	0.03	0.01	0.35	0.15	0.01	0.00
d_M, Delay for Movement [s/veh]	8.39	0.00	0.00	8.64	0.00	0.00	21.30	26.79	12.37	32.85	24.01	9.81
Movement LOS	A	A	A	A	A	A	C	D	B	D	C	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.22	0.00	0.00	0.09	1.59	1.59	0.50	0.03	0.03
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	5.45	0.00	0.00	2.37	39.63	39.63	12.40	0.70	0.70
d_A, Approach Delay [s/veh]	0.00			1.09			12.66			29.85		
Approach LOS	A			A			B			D		
d_I, Intersection Delay [s/veh]	3.52											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 3: Callahan Rd/Tannerwood Rd

Control Type:	All-way stop	Delay (sec / veh):	7.7
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

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

Volumes

Name	Callahan Rd			Callahan Rd			Tannerwood Rd			Tannerwood Rd		
Base Volume Input [veh/h]	2	92	0	7	29	3	46	0	1	1	0	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	92	0	7	29	3	46	0	1	1	0	43
Peak Hour Factor	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	30	0	2	9	1	15	0	0	0	0	14
Total Analysis Volume [veh/h]	3	119	0	9	38	4	60	0	1	1	0	56
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.50	0.19	0.25	0.19
95th-Percentile Queue Length [ft]	12.57	4.87	6.28	4.80
Approach Delay [s/veh]	7.97	7.59	7.95	7.05
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	7.72			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 4: Callahan Rd/Goldenrod Dr

Control Type:	All-way stop	Delay (sec / veh):	7.3
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

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

Volumes

Name	Callahan Rd			Callahan Rd			Goldenrod Dr			Goldenrod Dr		
Base Volume Input [veh/h]	1	42	0	3	24	1	15	0	1	1	0	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	42	0	3	24	1	15	0	1	1	0	7
Peak Hour Factor	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	14	0	1	8	0	5	0	0	0	0	2
Total Analysis Volume [veh/h]	1	58	0	4	33	1	21	0	1	1	0	10
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.21	0.13	0.08	0.03
95th-Percentile Queue Length [ft]	5.31	3.36	2.03	0.84
Approach Delay [s/veh]	7.33	7.25	7.43	6.68
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	7.27			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 1: Mt Rose Hwy/Fawn Ln

Control Type:	Two-way stop	Delay (sec / veh):	24.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Fawn Ln		Mt Rose Hwy		Mt Rose Hwy	
Approach	Northbound		Northeastbound		Southwestbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	165.00	100.00
Speed [mph]	30.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Fawn Ln		Mt Rose Hwy		Mt Rose Hwy	
Base Volume Input [veh/h]	0	13	670	2	20	654
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	13	670	2	20	654
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	4	184	1	5	180
Total Analysis Volume [veh/h]	0	14	736	2	22	719
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.02	0.01	0.00	0.03	0.01
d_M, Delay for Movement [s/veh]	24.14	10.86	0.00	0.00	9.28	0.00
Movement LOS	C	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.07	0.07	0.00	0.00	0.08	0.00
95th-Percentile Queue Length [ft]	1.71	1.71	0.00	0.00	1.96	0.00
d_A, Approach Delay [s/veh]	10.86		0.00		0.28	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.24					
Intersection LOS	C					

Intersection Level Of Service Report
Intersection 2: Mt Rose Hwy/Callahan Rd

Control Type:	Two-way stop	Delay (sec / veh):	45.4
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.206

Intersection Setup

Name	Mt Rose Hwy			Mt Rose Hwy			Callahan Rd			Callahan Rd		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	0	0	0	0	0	0
Pocket Length [ft]	175.00	100.00	70.00	162.00	100.00	300.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	50.00			50.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Mt Rose Hwy			Mt Rose Hwy			Callahan Rd			Callahan Rd		
Base Volume Input [veh/h]	2	529	8	185	456	14	9	0	109	22	1	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	529	8	185	456	14	9	0	109	22	1	3
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	138	2	48	119	4	2	0	28	6	0	1
Total Analysis Volume [veh/h]	2	551	8	193	475	15	9	0	114	23	1	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	2	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.19	0.00	0.00	0.07	0.00	0.16	0.21	0.01	0.00
d_M, Delay for Movement [s/veh]	8.37	0.00	0.00	9.42	0.00	0.00	36.60	39.40	10.92	45.43	38.30	9.87
Movement LOS	A	A	A	A	A	A	E	E	B	E	E	A
95th-Percentile Queue Length [veh]	0.01	0.00	0.00	0.71	0.00	0.00	0.23	0.56	0.56	0.73	0.04	0.04
95th-Percentile Queue Length [ft]	0.14	0.00	0.00	17.64	0.00	0.00	5.83	13.96	13.96	18.26	1.00	1.00
d_A, Approach Delay [s/veh]	0.03			2.66			12.80			41.21		
Approach LOS	A			A			B			E		
d_I, Intersection Delay [s/veh]	3.24											
Intersection LOS	E											

Intersection Level Of Service Report

Intersection 3: Callahan Rd/Tannerwood Rd

Control Type:	All-way stop	Delay (sec / veh):	7.9
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

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

Volumes

Name	Callahan Rd			Callahan Rd			Tannerwood Rd			Tannerwood Rd		
Base Volume Input [veh/h]	0	61	1	35	95	37	20	1	0	1	1	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	61	1	35	95	37	20	1	0	1	1	12
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	17	0	10	27	11	6	0	0	0	0	3
Total Analysis Volume [veh/h]	0	69	1	40	108	42	23	1	0	1	1	14
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.27	0.80	0.10	0.05
95th-Percentile Queue Length [ft]	6.65	19.94	2.42	1.36
Approach Delay [s/veh]	7.57	8.08	7.85	7.08
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	7.89			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 4: Callahan Rd/Goldenrod Dr

Control Type:	All-way stop	Delay (sec / veh):	7.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

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

Volumes

Name	Callahan Rd			Callahan Rd			Goldenrod Dr			Goldenrod Dr		
Base Volume Input [veh/h]	1	33	0	15	43	9	8	2	1	1	2	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	33	0	15	43	9	8	2	1	1	2	3
Peak Hour Factor	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	11	0	5	15	3	3	1	0	0	1	1
Total Analysis Volume [veh/h]	1	45	0	21	59	12	11	3	1	1	3	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.16	0.34	0.06	0.03
95th-Percentile Queue Length [ft]	4.11	8.50	1.38	0.67
Approach Delay [s/veh]	7.30	7.45	7.42	7.00
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	7.38			
Intersection LOS	A			

Appendix B

Existing Plus Project Conditions LOS Calculations

Intersection Level Of Service Report
Intersection 1: Mt Rose Hwy/Fawn Ln

Control Type:	Two-way stop	Delay (sec / veh):	25.8
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.021

Intersection Setup

Name	Fawn Ln		Mt Rose Hwy		Mt Rose Hwy	
Approach	Northbound		Northeastbound		Southwestbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	165.00	100.00
Speed [mph]	30.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Fawn Ln		Mt Rose Hwy		Mt Rose Hwy	
Base Volume Input [veh/h]	0	22	723	1	4	524
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	76	45	1	25	15
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	98	768	2	29	539
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	26	200	1	8	140
Total Analysis Volume [veh/h]	4	102	800	2	30	561
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.17	0.01	0.00	0.04	0.01
d_M, Delay for Movement [s/veh]	25.80	12.55	0.00	0.00	9.57	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.70	0.70	0.00	0.00	0.11	0.00
95th-Percentile Queue Length [ft]	17.57	17.57	0.00	0.00	2.85	0.00
d_A, Approach Delay [s/veh]	13.05		0.00		0.49	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.11					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 2: Mt Rose Hwy/Callahan Rd

Control Type:	Two-way stop	Delay (sec / veh):	39.3
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.174

Intersection Setup

Name	Mt Rose Hwy			Mt Rose Hwy			Callahan Rd			Callahan Rd		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	175.00	100.00	70.00	162.00	100.00	300.00	150.00	100.00	100.00	90.00	100.00	100.00
Speed [mph]	50.00			50.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Mt Rose Hwy			Mt Rose Hwy			Callahan Rd			Callahan Rd		
Base Volume Input [veh/h]	0	463	6	68	452	15	7	1	245	21	1	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	1	15	4	0	2	0	45	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	464	7	83	456	15	9	1	290	21	1	3
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	123	2	22	121	4	2	0	77	6	0	1
Total Analysis Volume [veh/h]	0	494	7	88	485	16	10	1	309	22	1	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	2	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.08	0.00	0.00	0.05	0.01	0.41	0.17	0.01	0.00
d_M, Delay for Movement [s/veh]	8.40	0.00	0.00	8.71	0.00	0.00	22.80	28.92	13.18	39.33	25.36	9.83
Movement LOS	A	A	A	A	A	A	C	D	B	E	D	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.27	0.00	0.00	0.15	2.06	2.06	0.60	0.03	0.03
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	6.78	0.00	0.00	3.69	51.47	51.47	15.08	0.73	0.73
d_A, Approach Delay [s/veh]	0.00			1.30			13.53			35.39		
Approach LOS	A			A			B			E		
d_I, Intersection Delay [s/veh]	4.19											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 3: Callahan Rd/Tannerwood Dr

Control Type:	All-way stop	Delay (sec / veh):	8.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.186

Intersection Setup

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

Volumes

Name	Callahan Rd			Callahan Rd			Tannerwood Dr			Tannerwood Dr		
Base Volume Input [veh/h]	2	92	0	7	29	3	46	0	1	1	0	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	0	8	8	0	0	0	0	0	0	24
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	116	0	15	37	3	46	0	1	1	0	67
Peak Hour Factor	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	38	0	5	12	1	15	0	0	0	0	22
Total Analysis Volume [veh/h]	3	151	0	19	48	4	60	0	1	1	0	87
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	827	808	760	915
Degree of Utilization, x	0.19	0.09	0.08	0.10

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.68	0.29	0.26	0.32
95th-Percentile Queue Length [ft]	17.02	7.21	6.52	7.96
Approach Delay [s/veh]	8.35	7.89	8.15	7.35
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	7.99			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 4: Callahan Rd/Goldenrod Dr

Control Type:	All-way stop	Delay (sec / veh):	7.3
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.067

Intersection Setup

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

Volumes

Name	Callahan Rd			Callahan Rd			Goldenrod Dr			Goldenrod Dr		
Base Volume Input [veh/h]	1	42	0	3	24	1	15	0	1	1	0	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	8	0	0	0	0	0	0	0	24
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	42	0	11	24	1	15	0	1	1	0	31
Peak Hour Factor	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	14	0	4	8	0	5	0	0	0	0	11
Total Analysis Volume [veh/h]	1	58	0	15	33	1	21	0	1	1	0	42
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	874	863	824	997
Degree of Utilization, x	0.07	0.06	0.03	0.04

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.22	0.18	0.08	0.14
95th-Percentile Queue Length [ft]	5.42	4.51	2.06	3.38
Approach Delay [s/veh]	7.42	7.42	7.49	6.77
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	7.27			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 1: Mt Rose Hwy/Fawn Ln

Control Type:	Two-way stop	Delay (sec / veh):	37.3
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.026

Intersection Setup

Name	Fawn Ln		Mt Rose Hwy		Mt Rose Hwy	
Approach	Northbound		Northeastbound		Southwestbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	165.00	100.00
Speed [mph]	30.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Fawn Ln		Mt Rose Hwy		Mt Rose Hwy	
Base Volume Input [veh/h]	0	13	670	2	20	654
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	49	29	4	85	50
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	62	699	6	105	704
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	17	192	2	29	193
Total Analysis Volume [veh/h]	3	68	768	7	115	774
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.11	0.01	0.00	0.14	0.01
d_M, Delay for Movement [s/veh]	37.33	12.00	0.00	0.00	9.99	0.00
Movement LOS	E	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.47	0.47	0.00	0.00	0.48	0.00
95th-Percentile Queue Length [ft]	11.84	11.84	0.00	0.00	11.89	0.00
d_A, Approach Delay [s/veh]	13.07		0.00		1.29	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.20					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 2: Mt Rose Hwy/Callahan Rd

Control Type:	Two-way stop	Delay (sec / veh):	63.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.274

Intersection Setup

Name	Mt Rose Hwy			Mt Rose Hwy			Callahan Rd			Callahan Rd		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	175.00	100.00	70.00	162.00	100.00	300.00	150.00	100.00	100.00	90.00	100.00	100.00
Speed [mph]	50.00			50.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Mt Rose Hwy			Mt Rose Hwy			Callahan Rd			Callahan Rd		
Base Volume Input [veh/h]	2	529	8	185	456	14	9	0	109	22	1	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	3	50	3	0	2	0	29	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	533	11	235	459	14	11	0	138	22	1	3
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	139	3	61	120	4	3	0	36	6	0	1
Total Analysis Volume [veh/h]	2	555	11	245	478	15	11	0	144	23	1	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	2	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.24	0.00	0.00	0.11	0.00	0.20	0.27	0.01	0.00
d_M, Delay for Movement [s/veh]	8.38	0.00	0.00	9.75	0.00	0.00	46.87	48.11	11.25	63.42	46.85	9.94
Movement LOS	A	A	A	A	A	A	E	E	B	F	E	A
95th-Percentile Queue Length [veh]	0.01	0.00	0.00	0.96	0.00	0.00	0.37	0.74	0.74	1.00	0.05	0.05
95th-Percentile Queue Length [ft]	0.14	0.00	0.00	24.03	0.00	0.00	9.29	18.56	18.56	25.05	1.18	1.18
d_A, Approach Delay [s/veh]	0.03			3.24			13.78			56.87		
Approach LOS	A			A			B			F		
d_I, Intersection Delay [s/veh]	4.08											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 3: Callahan Rd/Tannerwood Dr

Control Type:	All-way stop	Delay (sec / veh):	8.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.287

Intersection Setup

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

Volumes

Name	Callahan Rd			Callahan Rd			Tannerwood Dr			Tannerwood Dr		
Base Volume Input [veh/h]	0	61	1	35	95	37	20	1	0	1	1	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	16	0	27	27	0	0	0	0	0	0	16
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	77	1	62	122	37	20	1	0	1	1	28
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	22	0	18	35	11	6	0	0	0	0	8
Total Analysis Volume [veh/h]	0	88	1	70	139	42	23	1	0	1	1	32
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	835	874	734	868
Degree of Utilization, x	0.11	0.29	0.03	0.04

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.36	1.19	0.10	0.12
95th-Percentile Queue Length [ft]	8.91	29.76	2.53	3.05
Approach Delay [s/veh]	7.82	8.77	8.07	7.32
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	8.39			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 4: Callahan Rd/Goldenrod Dr

Control Type:	All-way stop	Delay (sec / veh):	7.6
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.147

Intersection Setup

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

Volumes

Name	Callahan Rd			Callahan Rd			Goldenrod Dr			Goldenrod Dr		
Base Volume Input [veh/h]	1	33	0	15	43	9	8	2	1	1	2	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	27	0	0	0	0	0	0	0	16
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	33	0	42	43	9	8	2	1	1	2	19
Peak Hour Factor	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	11	0	14	15	3	3	1	0	0	1	7
Total Analysis Volume [veh/h]	1	45	0	58	59	12	11	3	1	1	3	26
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	866	876	809	943
Degree of Utilization, x	0.05	0.15	0.02	0.03

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.17	0.51	0.06	0.10
95th-Percentile Queue Length [ft]	4.20	12.87	1.42	2.46
Approach Delay [s/veh]	7.39	7.82	7.53	6.94
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	7.59			
Intersection LOS	A			

Appendix C

Future 10-Year Background Plus Project Conditions LOS

Calculations

Intersection Level Of Service Report
Intersection 1: Mt Rose Hwy/Fawn Ln

Control Type:	Two-way stop	Delay (sec / veh):	27.2
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.023

Intersection Setup

Name	Fawn Ln		Mt Rose Hwy		Mt Rose Hwy	
Approach	Northbound		Northeastbound		Southwestbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	165.00	100.00
Speed [mph]	30.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Fawn Ln		Mt Rose Hwy		Mt Rose Hwy	
Base Volume Input [veh/h]	0	22	723	1	4	524
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	4	76	45	1	25	15
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	99	797	2	29	560
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	26	208	1	8	146
Total Analysis Volume [veh/h]	4	103	830	2	30	583
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.18	0.01	0.00	0.04	0.01
d_M, Delay for Movement [s/veh]	27.15	12.80	0.00	0.00	9.70	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh]	0.73	0.73	0.00	0.00	0.12	0.00
95th-Percentile Queue Length [ft]	18.35	18.35	0.00	0.00	2.93	0.00
d_A, Approach Delay [s/veh]	13.34		0.00		0.47	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.11					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 2: Mt Rose Hwy/Callahan Rd

Control Type:	Two-way stop	Delay (sec / veh):	44.0
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.200

Intersection Setup

Name	Mt Rose Hwy			Mt Rose Hwy			Callahan Rd			Callahan Rd		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	175.00	100.00	70.00	162.00	100.00	300.00	150.00	100.00	100.00	90.00	100.00	100.00
Speed [mph]	50.00			50.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Mt Rose Hwy			Mt Rose Hwy			Callahan Rd			Callahan Rd		
Base Volume Input [veh/h]	0	463	6	68	452	15	7	1	245	21	1	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	1	1	15	4	0	2	0	45	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	483	7	86	474	16	9	1	300	22	1	3
Peak Hour Factor	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	128	2	23	126	4	2	0	80	6	0	1
Total Analysis Volume [veh/h]	0	514	7	91	504	17	10	1	319	23	1	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	2	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.09	0.01	0.00	0.05	0.01	0.43	0.20	0.01	0.00
d_M, Delay for Movement [s/veh]	8.46	0.00	0.00	8.79	0.00	0.00	24.03	30.71	13.59	43.99	26.77	9.91
Movement LOS	A	A	A	A	A	A	C	D	B	E	D	A
95th-Percentile Queue Length [veh]	0.00	0.00	0.00	0.29	0.00	0.00	0.16	2.22	2.22	0.71	0.03	0.03
95th-Percentile Queue Length [ft]	0.00	0.00	0.00	7.16	0.00	0.00	3.94	55.59	55.59	17.67	0.76	0.76
d_A, Approach Delay [s/veh]	0.00			1.31			13.96			39.56		
Approach LOS	A			A			B			E		
d_I, Intersection Delay [s/veh]	4.34											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 3: Callahan Rd/Tannerwood Dr

Control Type:	All-way stop	Delay (sec / veh):	8.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.193

Intersection Setup

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

Volumes

Name	Callahan Rd			Callahan Rd			Tannerwood Dr			Tannerwood Dr		
Base Volume Input [veh/h]	2	92	0	7	29	3	46	0	1	1	0	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	24	0	8	8	0	0	0	0	0	0	24
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	120	0	15	38	3	48	0	1	1	0	69
Peak Hour Factor	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700	0.7700
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	39	0	5	12	1	16	0	0	0	0	22
Total Analysis Volume [veh/h]	3	156	0	19	49	4	62	0	1	1	0	90
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	825	804	757	911
Degree of Utilization, x	0.19	0.09	0.08	0.10

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.71	0.29	0.27	0.33
95th-Percentile Queue Length [ft]	17.77	7.35	6.78	8.30
Approach Delay [s/veh]	8.41	7.92	8.18	7.39
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	8.04			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 4: Callahan Rd/Goldenrod Dr

Control Type:	All-way stop	Delay (sec / veh):	7.3
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.070

Intersection Setup

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

Volumes

Name	Callahan Rd			Callahan Rd			Goldenrod Dr			Goldenrod Dr		
Base Volume Input [veh/h]	1	42	0	3	24	1	15	0	1	1	0	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	8	0	0	0	0	0	0	0	24
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	44	0	11	25	1	16	0	1	1	0	31
Peak Hour Factor	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	15	0	4	9	0	5	0	0	0	0	11
Total Analysis Volume [veh/h]	1	60	0	15	34	1	22	0	1	1	0	42
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	874	862	822	995
Degree of Utilization, x	0.07	0.06	0.03	0.04

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.22	0.18	0.09	0.14
95th-Percentile Queue Length [ft]	5.62	4.61	2.16	3.38
Approach Delay [s/veh]	7.43	7.43	7.51	6.78
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	7.28			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 1: Mt Rose Hwy/Fawn Ln

Control Type:	Two-way stop	Delay (sec / veh):	39.9
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.028

Intersection Setup

Name	Fawn Ln		Mt Rose Hwy		Mt Rose Hwy	
Approach	Northbound		Northeastbound		Southwestbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	1	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	165.00	100.00
Speed [mph]	30.00		50.00		50.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Fawn Ln		Mt Rose Hwy		Mt Rose Hwy	
Base Volume Input [veh/h]	0	13	670	2	20	654
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	3	49	29	4	85	50
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	63	726	6	106	730
Peak Hour Factor	0.9100	0.9100	0.9100	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	17	199	2	29	201
Total Analysis Volume [veh/h]	3	69	798	7	116	802
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

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

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.12	0.01	0.00	0.14	0.01
d_M, Delay for Movement [s/veh]	39.88	12.23	0.00	0.00	10.15	0.00
Movement LOS	E	B	A	A	B	A
95th-Percentile Queue Length [veh]	0.50	0.50	0.00	0.00	0.49	0.00
95th-Percentile Queue Length [ft]	12.46	12.46	0.00	0.00	12.37	0.00
d_A, Approach Delay [s/veh]	13.38		0.00		1.28	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.19					
Intersection LOS	E					

Intersection Level Of Service Report
Intersection 2: Mt Rose Hwy/Callahan Rd

Control Type:	Two-way stop	Delay (sec / veh):	72.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.316

Intersection Setup

Name	Mt Rose Hwy			Mt Rose Hwy			Callahan Rd			Callahan Rd		
Approach	Northeastbound			Southwestbound			Northwestbound			Southeastbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	175.00	100.00	70.00	162.00	100.00	300.00	150.00	100.00	100.00	90.00	100.00	100.00
Speed [mph]	50.00			50.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Mt Rose Hwy			Mt Rose Hwy			Callahan Rd			Callahan Rd		
Base Volume Input [veh/h]	2	529	8	185	456	14	9	0	109	22	1	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	4	3	50	3	0	2	0	29	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	554	11	242	477	15	11	0	142	23	1	3
Peak Hour Factor	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	144	3	63	124	4	3	0	37	6	0	1
Total Analysis Volume [veh/h]	2	577	11	252	497	16	11	0	148	24	1	3
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Free	Free	Stop	Stop
Flared Lane			No	No
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance			No	No
Number of Storage Spaces in Median	0	0	2	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.26	0.00	0.00	0.12	0.00	0.21	0.32	0.01	0.00
d_M, Delay for Movement [s/veh]	8.44	0.00	0.00	9.92	0.00	0.00	51.35	52.38	11.42	72.80	50.97	10.05
Movement LOS	A	A	A	A	A	A	F	F	B	F	F	B
95th-Percentile Queue Length [veh]	0.01	0.00	0.00	1.02	0.00	0.00	0.41	0.78	0.78	1.17	0.05	0.05
95th-Percentile Queue Length [ft]	0.14	0.00	0.00	25.56	0.00	0.00	10.21	19.60	19.60	29.30	1.27	1.27
d_A, Approach Delay [s/veh]	0.03			3.27			14.18			65.30		
Approach LOS	A			A			B			F		
d_I, Intersection Delay [s/veh]	4.28											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 3: Callahan Rd/Tannerwood Dr

Control Type:	All-way stop	Delay (sec / veh):	8.5
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.296

Intersection Setup

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

Volumes

Name	Callahan Rd			Callahan Rd			Tannerwood Dr			Tannerwood Dr		
Base Volume Input [veh/h]	0	61	1	35	95	37	20	1	0	1	1	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	16	0	27	27	0	0	0	0	0	0	16
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	79	1	63	126	38	21	1	0	1	1	28
Peak Hour Factor	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	22	0	18	36	11	6	0	0	0	0	8
Total Analysis Volume [veh/h]	0	90	1	72	143	43	24	1	0	1	1	32
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	833	873	730	863
Degree of Utilization, x	0.11	0.30	0.03	0.04

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.37	1.24	0.11	0.12
95th-Percentile Queue Length [ft]	9.16	30.97	2.66	3.07
Approach Delay [s/veh]	7.85	8.85	8.10	7.34
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	8.45			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 4: Callahan Rd/Goldenrod Dr

Control Type:	All-way stop	Delay (sec / veh):	7.6
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.152

Intersection Setup

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

Volumes

Name	Callahan Rd			Callahan Rd			Goldenrod Dr			Goldenrod Dr		
Base Volume Input [veh/h]	1	33	0	15	43	9	8	2	1	1	2	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04	1.04
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	27	0	0	0	0	0	0	0	16
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	34	0	43	45	9	8	2	1	1	2	19
Peak Hour Factor	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300	0.7300
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	12	0	15	15	3	3	1	0	0	1	7
Total Analysis Volume [veh/h]	1	47	0	59	62	12	11	3	1	1	3	26
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Lanes

Capacity per Entry Lane [veh/h]	865	876	806	941
Degree of Utilization, x	0.06	0.15	0.02	0.03

Movement, Approach, & Intersection Results

95th-Percentile Queue Length [veh]	0.18	0.53	0.06	0.10
95th-Percentile Queue Length [ft]	4.40	13.35	1.42	2.47
Approach Delay [s/veh]	7.41	7.84	7.55	6.95
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	7.61			
Intersection LOS	A			

A Class II Cultural Resource Survey for the proposed Ascenté Development, Callahan Ranch APN 045-252-14 and APN 045-252-15, Reno, Nevada for Symbio Development, LLC

Project Number: 2016-117

Submitted to:

NNV1 Partners, LLC
6151 Lakeside Drive, Suite 1000
Reno, Nevada 89511

Prepared by:

Michael Drews
Great Basin Consulting Group, LLC.
200 Winters Drive
Carson City, Nevada 89703

August 15, 2016

Great Basin Consulting Group

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CULTURAL RESOURCES INVENTORY REPORT

ADMINISTRATIVE INFORMATION

Project Number: 2016-117 **Date of Field Operations:** August 8, 2016

Organization/Field Personnel: Michael Drews (Project Archaeologist)

Project Name and Description

A Class II Cultural Resource Survey for the proposed Ascenté Development, Callahan Ranch APN 045-252-14 (59.067 Acres) and 045-252-15 (572.465 Acres), Reno, Nevada. NNV1 Partners, LLC intends to develop 631.53 acres of land within Section 1; T.17N. R.19E. near the end of Fawn Lane in southwestern Washoe County in two phases. Phase 1 will consist of development along the west side of the parcel on flat alluvial slopes within the northwest and southwest corners of the parcel, and along a sloping bench atop a ridge between those two areas. Clustered large lots will be developed within portions of Phase 1, and Phase 2. A significant portion of the parcel will be conserved as open space.

In order to address questions in the Community Services Department Tentative Subdivision Map Application, information regarding previous cultural resources inventory and known sites is required. Nevada SHPO was contacted prior to the search to inquire if a search of NVCRIS by a consulting archaeologist would be sufficient to address the above question. SHPO concurred that a search of NVCRIS by a qualified archaeologist would be sufficient.

County: Washoe

Legal Description: Section 1, T.17N. R.19E.

Ownership: APN 045-252-14 (NNV1 Partners, LLC)

APN 045-252-15 (CWH 2011 Irrevocable Trust)

Project Area: 632 acres / 257 hectares (Phase 1: 285+/- acres; Phase 2: 347+/- acres)

Map Reference: Mount Rose NE, NV, USGS 7.5 Minute Series 1982

Inventory Date(s): August 8, 2016

Inventory Type: Class II Intuitive

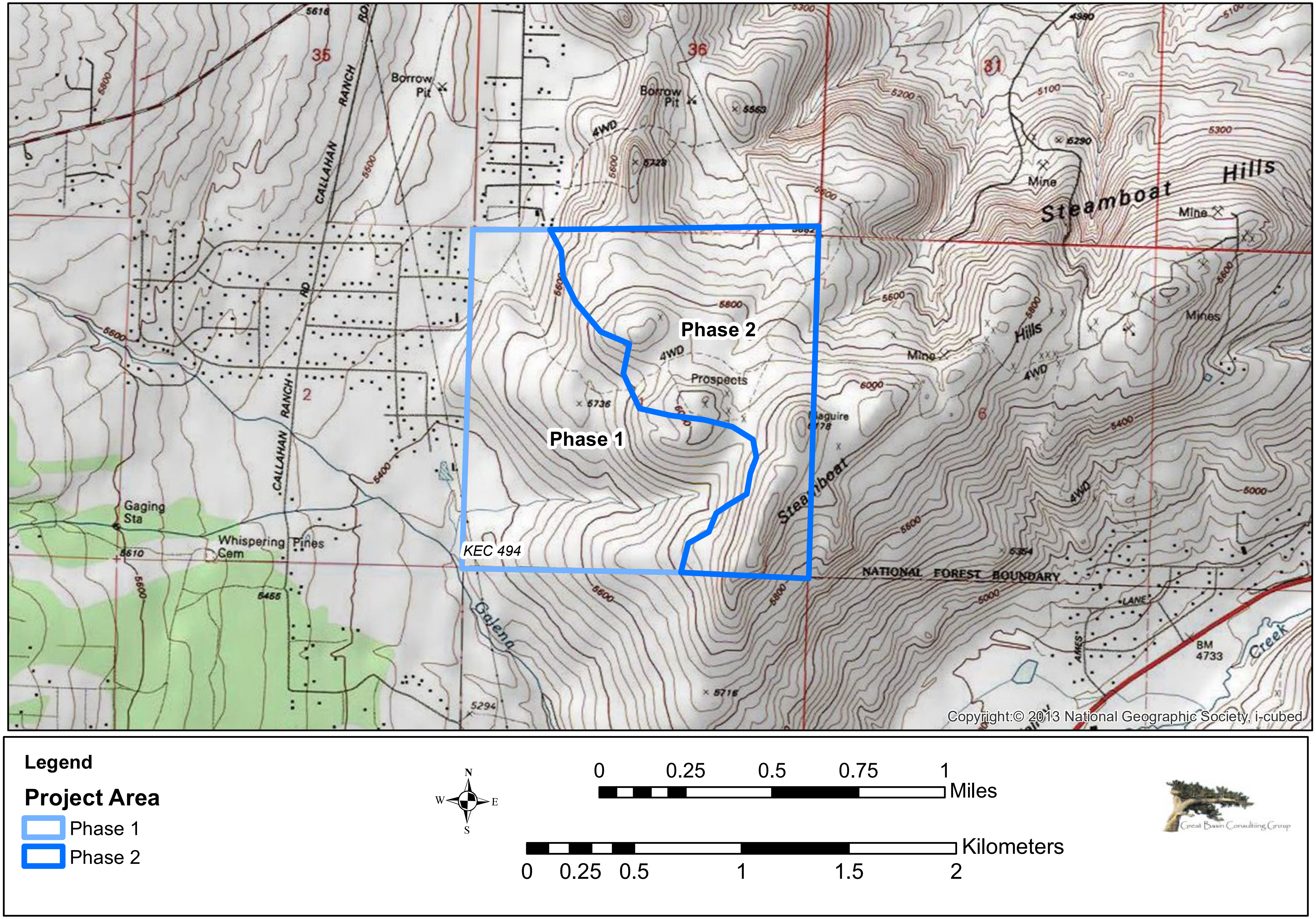
PURPOSE

The purpose of this survey was to conduct a record search of previously recorded sites and inventories and conduct a Class II intuitive survey within the project area in order to assess the likelihood of encountering significant cultural resources within areas of proposed development. Reconnaissance level surveys are less intensive than those required to fully meet Federal requirements under Section 106 of the National Historic Preservation Act of 1966. Class II inventories are statistically based sample surveys designed to aid in characterizing the probable density, diversity, and distribution of cultural properties in the area, to develop and test predictive models, and to answer appropriate research questions. Within individual sample units, survey aims, methods, and intensity are the same as those applied in Class III survey. Class II survey may be conducted in several phases, using different sample designs, to improve statistical reliability. A predictive model for cultural resource sensitivity was completed for the Humboldt-Toiyabe National Forest in 2004. (Drews 2004). The model predicts a moderate risk of encountering significant cultural resources over most of the project area, with highest site e sensitivity within the southwest corner of the project parcel.

ENVIRONMENTAL CONTEXT

The project area is situated near the southwest pediment of the Steamboat Hills at the south end of the Truckee Meadows (Map 1). The developed area of Galena and Callahan Ranch are located just west of the project area. Fawn Lane terminates at the north end of the parcel, Brushwood Way, Cedarwood Drive, Goldenrod Dr. and Shawna Way terminate along the western boundary that is partially formed by Patti Way. The historic Galena townsite is approximately 0.75 miles west of the parcel's southwest corner. Elevations within the project parcel range between 5400 and 6000 feet. The area is characterized by steep slopes, large sloping benches, and broad, relatively flat ridge-tops. The northwest and southwest corners consist of gentle slopes that coalesce with the alluvial plain bisected by Galena Creek. Single family homes on 1+ acre parcels characterize most of the area west of the project parcel (Figure 1).

Simmons (2005) in a cultural resources inventory report covering the southwest corner of the project parcel (previously known as Matera Ridge) describes, in great detail, the environmental and cultural setting for the project area. To summarize, geologically, the project area is characterized by the presence of the Miocene-age Kate Peak Formation consisting of volcanic



Map 1. Project Area.

Project Area from Phase 1 Ridgetop, View Southwest

Northwest Corner of Phase 1 Project Area, View Northwest

Figure 1. Project Area Overview

flows, flow, tuff and mud flow breccia, agglomerate, volcanic conglomerate, and associated intrusives. Rocks include andesite and rhylodactite. Late Pleistocene glacial deposits, including both morainal and fluvial-glacial outwash extend east into the project area from Mount Rose and the Carson Range.

Nineteen different soils are mapped within the project area (Map 2, Table 1). Most are variants of sandy loam with bedrock or restrictive layers less than 2 feet below surface (Soil Conservation Service 2016). Bedrock along the ridgetops within Phase 1 of the project area lies between 4 and 14 inches below the rocky surface. Alluvial deposits in the northwest and southwest corners of the project area are considerably thicker, but relatively old, pre-Pleistocene clays occur at depths within 12 inches of the surface. The possibility of buried and temporally stratified cultural deposits is not likely on rocky slopes and ridges that dominate the project area. Buried cultural materials may occur within alluvium that characterizes the northwest and southwest corners of the project area, but those cultural deposits are likely the result of bioturbation and natural processes rather than long tern cultural stratification.

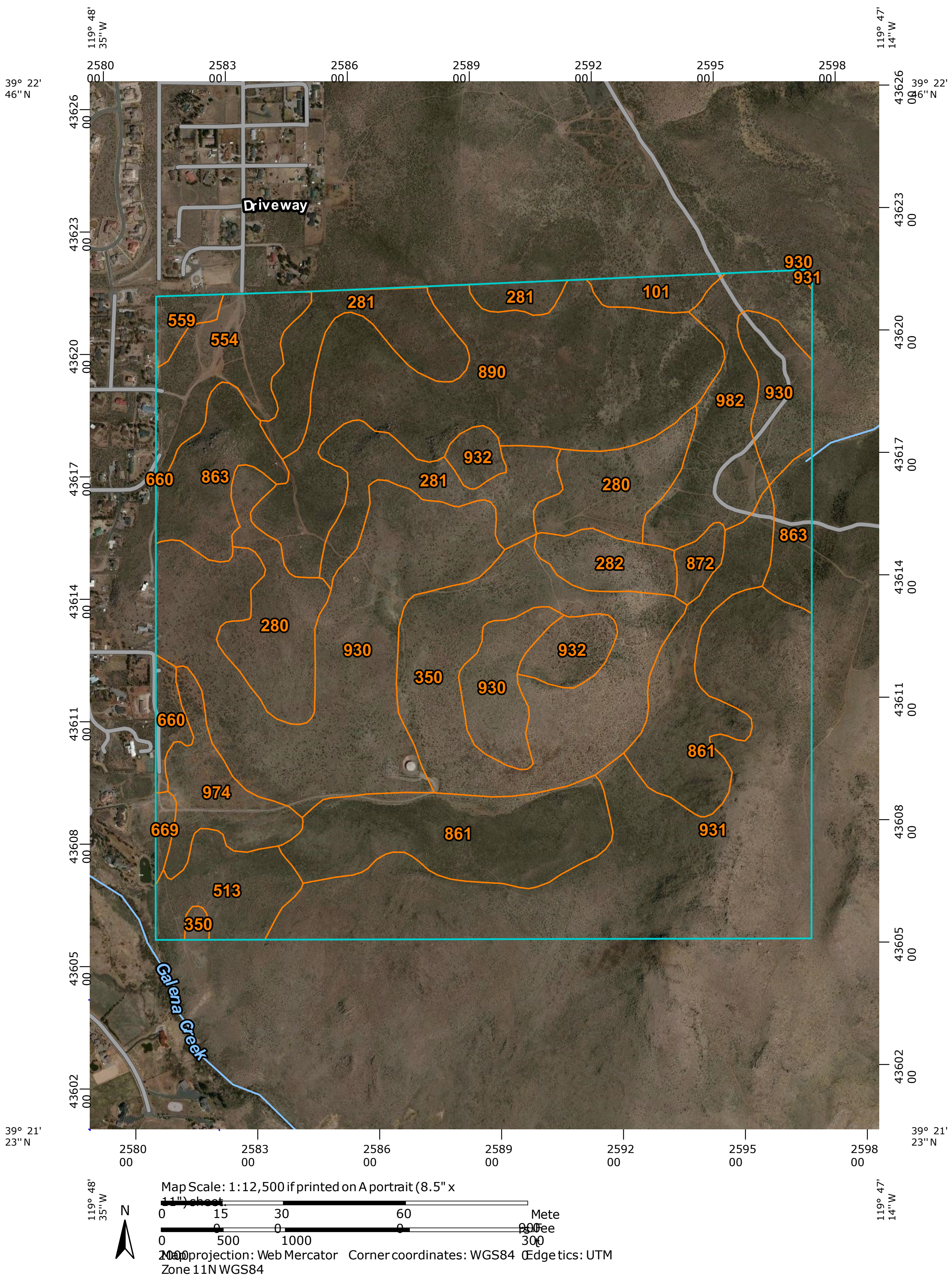
The vegetation community within the project area is a typical Great Basin mixed scrub association, dominated by sagebrush, bitterbrush, desert peach and rabbitbrush. Native plants of cultural importance within the project area include Great Basin wild rye, rice grass, along with wild onions, sego lily, balsam root, bitterroot and biscuit root.

A wide range of fauna may have historically inhabited the project area. The Steamboat Hills may have sustained populations of pronghorn and bighorn sheep. Mule deer inhabit the area and likely followed Galena Creek to access summer and winter ranges.

HISTORIC CONTEXT

Prehistory

Simmons and Kautz (2006), Zeier et al. (2002) and Elston et al. (1994) provide a general prehistoric context for the project area. It is briefly summarized here. The paleoclimate sequence beginning around 10,000 B.P. consists of cyclical warming and drying periods interspersed by wetter regimes. Adaptations to changing climatic regimes resulted in varied exploitation and settlement strategies. Table 2 presents an adaptive chronology for the South



Map 2. Custom Soil Resource Report Soil Map NRCS August 2016

Table 1. Custom Soil Resource Report

Map Unit Legend

Washoe County, Nevada, South Part (NV628)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
101	Aquinas sandy loam, 4 to 8 percent slopes	5.6	0.9%
280	Wedekind gravelly loam, 8 to 15 percent slopes	37.2	5.8%
281	Wedekind gravelly loam, 15 to 30 percent slopes	43.9	6.8%
282	Wedekind gravelly sandy loam, 30 to 50 percent slopes	10.2	1.6%
350	Mizel very gravelly coarse sandy loam, 15 to 50 percent slopes	57.2	8.9%
513	Settlemeyer-Notus complex	16.2	2.5%
554	Leviathan very stony sandy loam, 2 to 8 percent slopes	20.6	3.2%
559	Leviathan extremely stony sandy loam, 2 to 8 percent slopes	4.0	0.6%
660	Oest very bouldery sandy loam, 2 to 8 percent slopes	4.2	0.7%
669	Oest gravelly sandy loam, 0 to 2 percent slopes	1.9	0.3%
861	Reywat extremely stony loam, 15 to 30 percent slopes	63.9	9.9%
863	Reywat-Rock outcrop complex, 15 to 50 percent slopes	26.6	4.1%
872	Xman very stony sandy loam, 8 to 15 percent slopes	3.8	0.6%
890	Indiano gravelly loam, warm, 15 to 30 percent slopes	83.0	12.9%
930	Old Camp stony sandy loam, 15 to 30 percent slopes	103.1	16.0%
931	Old Camp-Rock outcrop complex, 15 to 50 percent slopes	104.6	16.3%
932	Old Camp stony sandy loam, 8 to 15 percent slopes	11.4	1.8%
974	Aladshi gravelly sandy loam, 4 to 8 percent slopes	16.4	2.6%
982	Koontz stony loam, 15 to 30 percent slopes	29.0	4.5%
Totals for Area of Interest		**642.8**	**100.0%**

Truckee Meadows after Simons and Kautz (2006:12, Table 2.1) and Elston et al. (1994:11, Table 3).

Table 2. Summary of Prehistoric Chronology in the South Truckee Meadows (after Simons and Kautz 2006; Table 2.1).

Adaptation	**Phase**	**Age (Yrs. B.P.)**	**Diagnostic Interpretations**
Late Archaic	Late Kings Beach	150-700	Desert Series points, reduced residential mobility
	Early Kings Beach	700-1400	Rosegate Series points, maximum population
Middle Archaic	Late Martis	1300-3000	Martis/Elko Series points, people live at ecological "sweet spots", Martis emphasis on basalt
	Early Martis	3000-5000	Contracting stem Martis and Steamboat Series points
Early Archaic	Spooner	4000-8000	Stemmed and large side-notched points are rare locally, Split stem forms show up late.
Pre-Archaic	Tahoe Reach	Pre-7000	Low population densities, concomitant lack of archaeological visibility (not defined)

Ethnographically, the Washo employed a seasonal round as a resource procurement strategy. Resources were exploited seasonally as they became available. The strategy resulted in distinctive settlement patterns and habitation types. Major habitation centers were located on valley floors; winter camp sites in the lower elevation valleys and summer camps in the higher valleys of the Sierra Nevada and Carson Range. The larger campsites provided a central locus for forays over the larger landscape. Satellite logistic base camps would sustain small groups during extended exploration and gathering cycles. Tiley (2007) provides a synthesis of ethnographic information in the vicinity of Steamboat Hot Springs. Zeier and Elston (1992: Table 2) provide a matrix of site types and archaeological manifestations produced by a seasonal round (Table 3.).

History

Simmons (2005) provides a detailed overview of the regional history. The town of Galena, located just west of the project area, was founded in 1860 as a silver mining camp. Reduction of ore was difficult, and the economic focus to lumbering with the discovery of the Comstock Lode and a need for building materials. At its peak, between 1862 and 1864, Galena sustained a dozen saw mills, sash and door factories, and a number of shingle mills. Many of the Galena Mills were water powered.

Table 3. A Comparison of Anticipated Behavioral Patterns at Winter Villages and Logistical Camps (Zeier and Elston 1992: Table 2).

Variable	Winter Village	Logistical Camp
Length of Occupation	Several months; perhaps occupied by some year around.	Several days to weeks.
Composition of Occupying Group	One or more family units; more likely to include children, women, and elders.	Varies, depending on season and type of resource sought. Options include all male, all female, mixed adult, or family units.
Size of Occupying Group	Variable, depending on the number of houses present. Could range between about 15 and 50.	Also variable, but probably within a narrower range determine by the anticipated subsistence activity; probably seldom exceeded 25.
Residence Type	At least one *galis dangal*[1] type structure per family unit; a *gadu*[2] may also be present.	Residential structures may well not be present; if present, they will be few and will be *gadu* rather than *galis dangal*.
Facilities	Most features present will be residence related; houses, work stations, storage facilities.	The types of facilities present will be determined, in large part, by the subsistence activities undertaken.
Debris Patterning	Pronounced, due to the length of occupancy and number of people present. Greater emphasis on secondary deposition of debris due to site maintenance.	Not pronounced, due to shorter length of occupancy, and the expedient nature of that occupation. Little secondary deposition due to limited emphasis on site maintenance.

[1] Permanent house (Price 1980:54)
[2] Temporary summer/fall shelter, constructed of limbs covered with brush (Price 1962:31).

The town had approximately 250-300 inhabitants, mostly Italians, and is described as a thriving community. The town included a barber shop, meat market, grocery store, boarding houses, a school and six saloons. Commerce besides wood-related industry included potato farming, charcoal production and “mountain ranches”. Fire swept through town in 1865, and another fire in 1867, along with depletion of timberlands from logging resulted the town’s abandonment and reversion to an agricultural economy. The Callahan Ranch was founded on March 6, 1885 by Matthew Callahan who purchased 80 acres in Section 12, T.17N. R.19E. from Sarah Greiner. The ranch grew a variety of fruits, grains, and vegetables. Water was supplied by ditches along Galena Creek. The Callahan’s raised chickens, ducks, sheep, and cattle, but the dairy herd was the ranch’s prime activity. The family’s holdings expanded in 1920 with the purchase of Section 3, but by the 1930s, the dairy herd had been replaced by beef cattle. Active ranching was discontinued during the 1950s, and by the late 1980s, much of Callahan Ranch had been developed.

NATIONAL REGISTER CONSIDERATIONS

Significance

The National Register of Historic Places Criteria for Eligibility state that properties must be at least 50 years old, remained fairly unaltered, and meets one or more of the following National Register Criteria for Significance.

- **A) Event:** Property is associated with events that have made a significant contribution to the broad patterns of our history.
- **B) Person:** Property is associated with the lives of persons significant in our past.
- **C) Design/Construction:** Property embodies the distinctive characteristics of a type, period, or method of construction or represents the work of a master, or possesses high artistic values, or represents a significant and distinguishable entity whose components lack individual distinction.
- **D) Information Potential:** Property has yielded, or is likely to yield, information important in prehistory or history.

To be considered eligible under Criterion A, a property must be associated with events that are important within a defined context. Several distinct cultural periods are described in the cultural overview above. A prehistoric site that exemplifies an adaptive trend associated with a distinctive cultural period might be considered eligible under Criterion A. An ethnographic period site that is an outstanding example of changing lifeways and Native adaptation might also be considered as significant. Likewise, an historic period site that is considered eligible should represent an important contribution to an event within the associated context.

Criterion B applies to properties associated with individuals whose specific contributions to history can be identified and documented. As such, Criterion B usually applies to ethnohistoric and historic period sites because prehistoric sites generally lack associations with known individuals.

Properties that are significant for their physical design or construction are considered eligible under Criterion C. To be eligible a property must embody distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic value; or represent a significant and distinguishable entity within a larger “district”. Prehistoric site types that meet Criterion C are generally distinctive site types that reflect elements of community design, or contribute to larger districts as key elements within a regional land use context.

Criterion D pertains to a site's ability to address important research questions regarding human history.

Integrity

In order to be listed in the National Register of Historic Places (NRHP), a property must not only demonstrate its significance under the National Register Criteria, but it also must have integrity to convey such significance. Site integrity, or the extent to which potential information is preserved in contexts that are sufficiently intact, represents another consideration for NRHP eligibility. The evaluation of integrity must always be grounded in an understanding of a resource's physical features and how they relate to its significance. To retain integrity, a resource will possess at least several of the several aspects of integrity including location, design, setting, materials, workmanship, feeling, and association.

1) **Location:** The place where the historic property was constructed or the place where the historic event occurred.

2) **Design:** The combination of elements that create the form, plan, space, structure, and style of a property.

3) **Setting:** The physical environment of a historic property.

4) **Materials:** The physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.

5) **Workmanship:** The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.

6) **Feeling:** A property's expression of the aesthetic or historic sense of a particular period of time.

7) **Association:** The direct link between an important historic event or person and a historic property.

For a site to be considered eligible for this project it must meet one or more of the National Register Criteria, retain integrity to convey its significance, and contribute meaningful data to the research themes outlined in the context. Isolated artifacts, isolated or unassociated features that do not have data potential, and sites less than 50 years old are categorically considered not eligible to the National Register. Sites that lack depositional, temporal or structural physical context that are adequately recorded in the field may satisfy the data needs of pertinent research questions outlined in the historic context. Those sites may no longer meet the National Register significance under Criterion D.

CONSULTATIONS

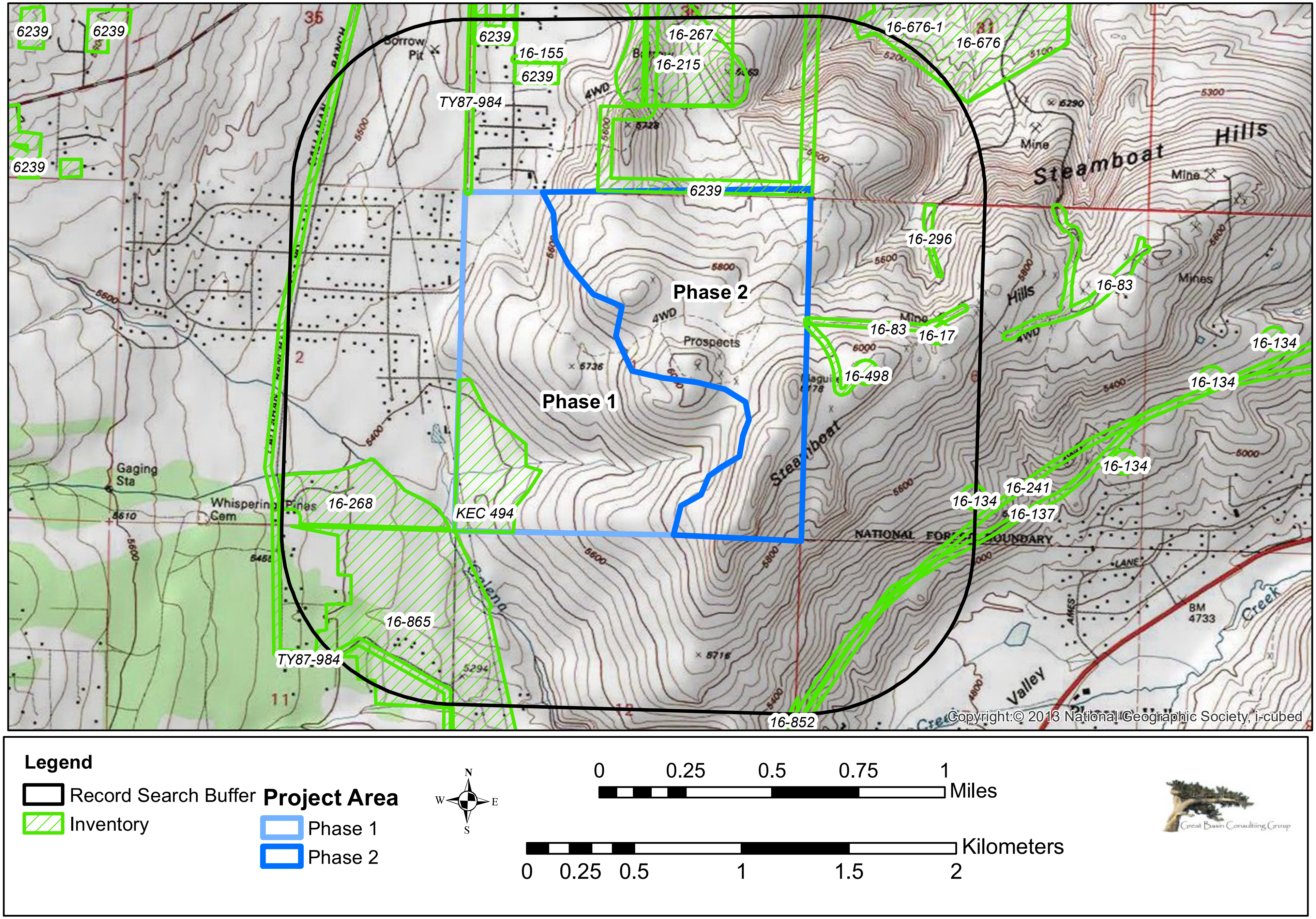
In order to identify known sites and previous inventories, a search of the Nevada Cultural Resource Information System (NVCRIS) maintained by the Nevada State Historic Preservation Office (SHPO) was conducted within a ½ mile buffer surrounding *APN 045-252-14,15*. In addition to the SHPO data, GLO maps, and other older maps available electronically through the Keck Earth Sciences and Mining Research Information Center at the University of Nevada, Reno were also reviewed.

Nineteen previous archaeological inventories have been conducted within the record search area (Map 3, Table 4). One project, KEC No. 494 (Simons 2005) comprises a Cultural Resource Inventory of a 49-acre area within the southwest corner of the project area. It was formerly known as Matera Ridge. No other cultural resource inventory has been conducted within the 632-acre project area.

Within the nineteen previous inventories, twenty-eight archaeological sites have been recorded (Table 5). Most of these sites consist of isolated artifacts, small lithic scatters or historic dumps. Two prehistoric sites and two historic site located outside of the project area are considered eligible to the National Register of Historic Places.

Five archaeological sites were recorded in the southwest corner of the project area during the Matera Ridge inventory (Simmons 2005). They consist of small lithic scatters containing limited quantities of waste debris from creating or maintaining stone tools. None of these are considered eligible for inclusion to the National Register of Historic Places.

One large site (26WA2410**)** was recorded in the vicinity of the mining prospects on the hilltop in the center of the project area. No record of that site exists in SHPO files.



Map 3. Cultural Resource Inventories withtin 1/2 Mile of Project Area.

Table 4. Cultural Resource Inventories within 1/2 mile of Project Area

Report Number	**SHPO Undertaking**	**Lead Agency**	**Agency Report Number**	**Title**	**Author**	**Year**
16-498		USFS HT Carson	TY-90-593	USFS Cultural Resource Summary Report: Steamboat Hills Communication Site	Todd, C.	1990
16-17		BLM Carson City	3-44	Archaeological Survey: Steamboat Springs Geothermal Prospect: Phillips Petroleum Company NOI NV-030-24	Dunbar, H	1978
16-155		BLM Carson City	3-222	Cultural Resources Report: R/W N-18733 Pomfret Estates, Inc. (MT. Rose): Cr Report #: 3-222(N) (from NADB)	Hatoff, Brian W.	1978
16-83		BLM Carson City	3-224	Cultural Resources Report: Phillips Petroleum: Geothermal Access Improvements, Steamboat Hills: Cr Report #: 3-224(P) (from NADB)	Hatoff, Brian W.	1978
16-241		BLM Carson City	3-880	Archaeological Site Evaluations Along the S Alignment from the I-580 Connection in Reno to Winters Ranch in Washoe Valley (from NADB)	Matranga, Peter Jr.	1983
16-137		BLM Carson City	3-737	Cultural Resources Report: Archaeological Reconnaissance of the Proposed Alternative Route Aspsd3C for US 395, Ea 70964 (from NADB)	Stearns, S. and P. Debunch	1981
16-865				Cultural Resources Inventory of the Galena Canyon Project	Harmon, R. et al	1996
16-296		BLM Carson City	3-1024	BLM Cultural Resources Report: Haul Road, Eagle Valley	Harte, J.	1985
16-208		BLM Carson City	3-502	Cultural Resources Report: Washoe County R & PP, N-25255: Cr Report #: 3-502(N) (from NADB)	Botti, Nancy	1980
16-268				Archaeological Investigation of the Old Galena Townsite Subdivision Parcel, Washoe County, Nevada (from NADB)	Kuffner, Carmen S.	1984

Table 4. Cultural Resource Inventories within 1/2 mile of Project Area

Report Number	**SHPO Undertaking**	**Lead Agency**	**Agency Report Number**	**Title**	**Author**	**Year**
16-676				A Class III Cultural Resource Inventory of the Galena Terrace Subdivision, Washoe County, Nevada	Johnson, J.	1994
16-852		BLM Carson City	3-1912	State Route 431-Winters Ranch	Drews, Michael P.	1998
16-267				Cultural Resources Report: Archaeological Survey of Material Pit Wa31-1 South of the MT. Rose Highway (Sr 431), Washoe County, Nevada. (W.O. 20727)	James, Steven R.	1984
16-215				Cultural Resources Report: MT. Rose Materials Pit: Cr Report #: 3-538(P)	Botti, Nancy	1980
16-676-1				An Addendum to a Class III Cultural Resource Inventory of the Galena Terrace Subdivision, Washoe County, Nevada	McNees, L. et al	1994
6239	2011-1375	USFS	R2010041701994	Mount Rose Fuels Reduciton	Carpenter, Mary and Joe Garrotto	2010
16-134		BLM Carson City	3-666	Cultural Resources Report: US 395S Material and Testing Division, Drill Hole Sites, E.A. 70964 (from NADB)	Steinberg, L.	1981
TY87-984		USFS HT Carson	TY87-984	Class III Cultural Resources Inventory Along the Proposed AT&T Fiber Optic Facility Corridor Across Northern Nevada	Hemphill, Martha L.	1987
*KEC No.494		Washoe County		A Cultural Resources Inventory of the Matera Ridge Subdivision, Washoe County Nevada	Simons, Dwight	2005

*Highlighted entries are within project area

Table 5. Archaeological Sites within 1/2 mile of Project Area

Site Number	Agency Number	Other Number	Age	Type	Description	National Register Evaluation
WA2022			Unknown	Site	No Site Record	Unknown
WA2031	31-2646		Prehistoric	Site	Isolate	Ineligible
WA2069	31-2684		Prehistoric	Site	Small Site	Ineligible
WA2070	31-2685		Prehistoric	Site	Isolate; flake and utilized flake	Ineligible
WA2077	31-2691		Prehistoric	Site	Small site	Ineligible
WA2078	31-2692		Prehistoric	Site	Small site	Ineligible
WA2079	31-2693		Prehistoric	Site	Small site	Ineligible
WA2080	31-2694		Prehistoric	Site	Small site	Ineligible
WA2081	31-2695		Prehistoric	Site	Small site	Ineligible
WA2086	31-2700		Prehistoric	Site	Open site	Unevaluated
WA2409	AR-27-03-49		Prehistoric	Site	Lithic scatter	Ineligible
WA2410	AR-27-03-50		Unknown	Site	No Site Record	Unknown
WA2455	TY-3635		Prehistoric	Site	Basalt quarry	Eligible
WA3043	3-1092		Prehistoric	Site	Small lithic scatter	Ineligible
WA3254			Prehistoric	Site	Lithic Scatter, groundstone	Ineligible
WA3255			Historic	Site	Historic Dugout, Bedrock Mortar	Eligible
WA5815	3-1456		Historic	Site	V&T Railroad	Eligible
WA6116	TY-3634		Historic	Site	Can dump	Ineligible
WA6118	TY-3637		Historic	Site	Dump	Ineligible
WA6120	TY-3639		Historic	Site	Road and dump	Ineligible
WA6209			Prehistoric	Site	Lithic scatter, groundstone	Eligible
*WA7963		KEC-494-1	Prehistoric	Site	Small lithic scatter	Ineligible
*WA7964		KEC-494-2	Prehistoric	Site	Small lithic scatter	Ineligible
*WA7965		KEC-494-3	Prehistoric	Site	Small lithic scatter	Ineligible
*WA7966		KEC-494-4	Prehistoric	Site	Small lithic scatter	Ineligible
*WA7967		KEC-494-5	Prehistoric	Site	Small lithic scatter	Ineligible
WA9064	04170108648	JT3	Prehistoric/Historic	Site	Quarry	Unevaluated
WA9066	04170108650	JT5	Prehistoric/Historic	Site	Lithic scatter; cairns	Unevaluated

*WA1234 within Project Area

A predictive model for cultural resource sensitivity was completed for the Humboldt-Toiyabe National Forest in 2004. (Drews 2004). The model indicates that the most sensitive areas for encountering prehistoric sites occurs on slopes between 0 and 5 degrees, and within 500 meters of a spring, perennial water source, or an intermittent stream. The southwest corner of the project area, where the Matera Ridge sites are located, meets that criteria. Flatter ridge tops and the alluvium in the northwest corner of the project area meet the slope criteria, but are too distant from a water source. They are considered moderately sensitive to prehistoric site location.

Historic maps, including the 1865 GLO plat of T17N, R19E depict no historic features within Section 1. The Galena Townsite and several roads are shown extending into Galena and Section 2 from the southeast and northeast.

EXPECTATIONS

Of the 28 sites within the ½ mile record search buffer, four (14%) are considered eligible to the National Register of Historic Places, five (18%) are unevaluated, and nineteen (68%) are not considered eligible to the National Register of Historic Places. All of the ineligible sites are small scatters of waste from stone tool production. They are scattered throughout high and moderate sensitivity zones. The two significant prehistoric sites consist quarry for basalt toolstone atop the Steamboat Hills north of the project area, and a prehistoric campsite along Galena Creek. The Virginia and Truckee Railroad grade lies along the edge of Pleasant Valley east of the project area, and a small historic dugout and bedrock mortar were located near the Galena Townsite.

The record search, and results of previous inventories, suggest that small lithic scatters or isolated artifacts are scattered on relatively flat slopes in the vicinity of the project area. Most significant sites are located along or near reliable water courses. Steep slopes comprise most of the project area. Prehistoric archaeological sites are not likely to occur on steeper slopes, but may be along ridgelines or alluvium in the northwest and southwest corners of the project parcel.

FIELD METHODS

A development plan for Phase 2 has yet to be conceptualized, so cultural resources inventory was confined to the Phase 1 project area. Sloping benches atop of flat ridge tops within Phase 1 and alluvium in the northwest corner of the parcel was inventoried by a pedestrian survey at 30m transect spacing (Map 4). Since the southwest corner was previously inventoried in 2005 and located sites did not meet National Register eligibility criteria, inventory was not conducted in that area. Any cultural resources identified were mapped using a Ashtec Mobile Mapper GPS receiver. The rover files were differentially corrected then converted to GIS shapefiles. All files were projected to NAD83, UTM Zone 11.

FINDINGS

One basalt biface tip was located during the inventory (Table 6). It was found midway along a northwest trending ridge west of the marked 5736 summit. No other artifacts were in association with the biface.

Table 6. Isolates within Project Area.

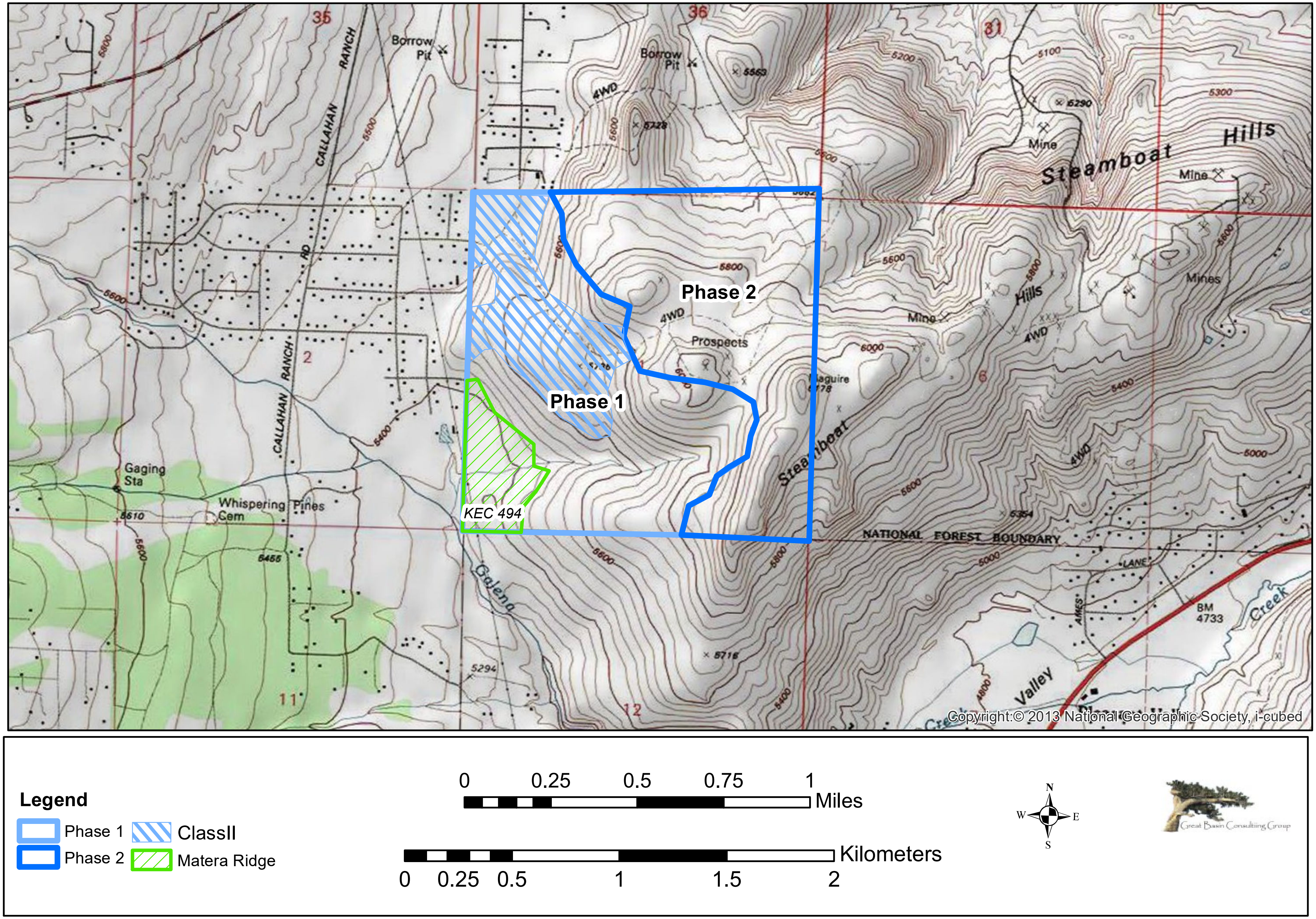
Isolate Number	Description	UTM (NAD1983, Zone 11)
1	Basalt biface tip	258345.7 mE 4361399.2mN

DETERMINATION OF EFFECT

One isolated biface tip was the only cultural resources located within inventoried portions of the project area. Isolated artifacts do not meet National Register significance criteria. Five sites were previously recorded during an inventory for the proposed Matera Ridge development in 2005 (Simmons 2005). None of those meet National Register significance criteria. As a result, we recommend a finding of No Historic Properties Affected as defined in 36 CFR 800.4 for Phase 1 of the proposed Ascenté Development, Callahan Ranch, APN 045-252-14 and APN 045-252-15 .

RECCOMMENDATIONS

No cultural resources eligible to the National Register of Historic Places are located within Phase 1 of the Ascenté Development, Callahan Ranch, APN 045-252-14,15. A Class II intuitive inventory was confined to the Phase I1 project area, and at least one known site is located within the proposed Phase 2 boundary. Prior to Phase 2 development, a similar cultural resources inventory of gentle slopes and ridgetops should be conducted within that area to identify any additional sites or isolated artifacts, and the mapped boundary of 26WA2410 within Phase 2 should be visited so that the site can be recorded and evaluated



Map 4. Class II Intuitive Inventory Area and Previous Matera Ridge Inventory.

for eligibility to the National Register of Historic Places.

The techniques and methods used during this investigation were such that areas most likely to contain cultural materials that would be visible to surface examination have been identified. Based upon soil descriptions, a subsurface component is unlikely. If, however, additional prehistoric or historic resources are subsequently discovered, the Nevada SHPO should be notified and activities in the area should cease until those resources can be evaluated.

SUMMARY

On August 8, 2016, Michael Drews from Great Basin Consulting Group, LLC. conducted a Class II intuitive inventory of the proposed Ascenté Development, Callahan Ranch APN 045-252-14, and 0445-252-15, Reno, Nevada. NNV1 Partners LLC intends to develop 631.53 acres of land within Section 1; T.17N. R.19E. near the end of Fawn Lane in southwestern Washoe County in two phases. Phase 1 will consist of development along the west side of the parcel on flat alluvial slopes within the northwest and southwest corners of the parcel, and along a sloping bench atop a ridge between those two areas. Clustered large lots will be developed within portions of Phase 1, and Phase 2. A significant portion of the parcel will be conserved as open space.

The purpose of this survey was to conduct a record search of previously recorded sites and inventories and conduct a Class II intuitive survey within Phase 1 of the project area in order to assess the likelihood of encountering significant cultural resources within areas of proposed development. Five previously recorded sites lie within the project area. None were considered eligible to the National Register of Historic Places. One isolated artifact was located within Phase 1. Isolated artifacts do not meet the National Register of Historic Places significance criteria. The inventory resulted in a finding of No Historic Properties Affected as defined in 36 CFR 800.4. Further Class II inventory is recommended for Phase 2, any sites uncovered during construction of Phase 1 should be reported to Nevada SHPO so that they can be evaluated.

REFERENCES CITED

Drews, Michael P.

2004 *In The Black Prehistoric Cultural Resources Probability Model. Volume 1. GIS Data and Prehistoric Probability Models*. Contract Number 53-0261-08, Task Order 12. Prepared for U.S. Forest Service, Humboldt-Toiyabe National Forest, Sparks.

Elston, Robert G.

1986 Prehistory of the Western Area. In *Handbook of North American Indians, Vol. 11: Great Basin*, edited by Warren L. d'Azevedo, pp. 135-148. Smithsonian Institution, Washington.

Elston, Robert G., S. Stornetta, D.P. Dugas, and P. Mires

1994 *Beyond the Blue Roof: Archaeological Survey on Mount Rose Fan and Northern Steamboat Hills.* Intermountain Research, Silver City, Nevada

Hummel, N.A. (Compiler)

1888 *General History and resources of Washoe County, Nevada*. Nevada Educational Association. Reprinted by Sagebrush Press, Verdi, Nevada (1969)

Simmons, Dwight

2005 *A Cultural Resources Inventory of the Toll Road Project, South Truckee Meadows, Washoe County, Nevada.* BLM Report CRR 3-2284. Ms. On file Bureau of Land Management, Carson City Field Office, Carson City, Nevada.

Simons Dwight C. and Robert R. Kautz

2006 *A Cultural Resources Inventory of the Matera Ridge Subdivision, Washoe County, Nevada* Submitted to Don Young ACIP, Department of Development Review, Washoe County.

Soil Survey Staff

2016 National Soil Survey Characterization Data, Soil Survey Laboratory, National Soil Survey Center USDA-NRC. Accessed August 8, 2016. Lincoln, Nebraska.

Stearns, Steven and T. Hal Turner

1985 *Archaeological Investigations of* 26DO326 *in Carson Valley, Nevada.* State of Nevada Department of Transportation Cultural Resources Section, Carson City, Nevada.

Tiley, Shelly

2007 *A Synthesis of Ethnographic Information on the Steamboat Vicinity*. Submitted to Carson City field Office, Bureau of Land Management, Carson City, Nevada CRR 3-2368-1.

Thompson, Thomas H., and Albert A. West
1881 *History of Nevada 1881*. Howell-North, Berkeley, CA.

USDA Soil Conservation Service
1983 Soil Survey of Washoe County, South Half. United States Department of Agriculture, Soil Conservation Service

Zeier, Charles, Ronald Reno, Robert Elston, Penny Rucks, Eric Ingbar and Mike Drews
2002 *A Historic Context and Cultural Resource Sensitivity Framework for the Pine Nut Mountains, West Central Nevada*. Submitted to Carson City Field Office, Bureau of Land Management, Carson City, Nevada

Zeier, Charles and Robert Elston
1992 *Changes in Washoe Land Use Patterns. A Study of Three Archaeological Sites in Diamond Valley, Alpine County, California.* Monographs in World Archaeology, No. 5 Prehistory Press Madison, Wisconsin

http://wcgisweb.washoecounty.us

2006 Washoe County Geographic Information Systems. Map Warehouse; Parcel Maps.

GEOTECHNICAL RESEARCH REPORT
for

ASCENTÉ TENTATIVE MAP

Reno, Nevada

Prepared for:

NNV1 Partners, LLC
6151 Lakeside Drive, Suite 1000
Reno, Nevada 89511

Prepared by:

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April 12, 2017

JN: 9019.000

LUMOS & ASSOCIATES

April 12, 2017

NNV1 Partners, LLC
6151 Lakeside Drive, Suite 1000
Reno, Nevada 89511

RE: Executive Summary
Geotechnical Research Report for Ascenté Tentative Map
Reno, Nevada

Lumos and Associates (Lumos) has completed its Geotechnical Research Report for the above mentioned project. Generally, the soil conditions over a majority of the site consist of clayey sands and gravels with a shallow depth to bedrock (sometimes 18 inches or less). The shallow depth to bedrock can mean that heavy equipment, possibly blasting, will be needed to grade the site. The slopes on site, over approximately 80% of the site, have an inclination of between 15-50%. Some of the site soils, which may be encountered during grading, are potentially expansive and are potentially susceptible to frost heave and/or shrinkage and swell. These conditions are not uncommon in northwestern Nevada and can be mitigated. The depth to groundwater is approximately between 10 and 20 feet below grade along the southwest portion of the site, and therefore, should not affect the stability of site soils, but may be encountered during utility construction. The remaining portions of the site have higher elevations; therefore, the ground water depths are anticipated to exceed 20 feet below grade. A field exploration sampling and testing program should be completed to verify these mapped conditions.

Potentially active faults (movement within the last 1.6 million to 11,700 years) are mapped within 1,000 feet of the site. The nearest active fault (movement within the last 11,700 years) is approximately 1 mile west of the site. These seismic conditions are not uncommon in the northwestern Nevada area.

The mapped geotechnical/geological conditions of this site are not uncommon to northwestern Nevada and can be mitigated utilizing conventional engineering and construction practices in the area.

Please contact our office with any questions concerning this matter at 775-883-7077.

Sincerely,

PROFESSIONAL ENGINEER - STATE OF NEVADA
MITCHELL T. BURNS
Exp: 12-31-18
CIVIL
No. 15001

4/12/17

Mitch Burns, P.E., C.E.M.
Materials Engineering Manager
Lumos & Associates, Inc.

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GEOTECHNICAL RESEARCH REPORT

ASCENTÉ TENTATIVE MAP

Reno, Nevada

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GEOTECHNICAL RESEARCH REPORT

for

ASCENTÉ TENTATIVE MAP

Reno, Nevada

INTRODUCTION

Submitted herewith are the results of Lumos and Associates, Inc. (Lumos) geotechnical research report for the Ascenté Tentative Map property located in Reno, Nevada. The target property consists of one parcel located south of the Mt. Rose Highway, specifically at the end of Fawn Lane extending to the south and east in Reno, Nevada. The parcel is identified by the Washoe County Assessor's Office as Assessor Parcel Number (APN) 045-252-11. The proposed project is located on the west half of the parcel. The entire area is approximately 635.28 acres in size and the proposed area to be developed will consist of approximately 241 acres. The property is currently undeveloped. However, within the property limit there are two separate APN's one of which is 045-252-03, which is approximately one (1) acre in size and is owned by AT&T Communications of Nevada and the other is 045-252-10, which is approximately 2.5 in size acres and is owned by Truckee Meadows Water Authority. APN 045-252-10 has been developed and is in use as a water storage tank.

The purpose of our investigation was to research the general soil conditions and to identify any adverse geologic, soil, or groundwater table conditions. The current scope of work did not include soil sampling, a fault study or any soil and/or groundwater contamination at the site. A Phase 1 Environmental Site Assessment has been provided in a separate report.

It is possible that subsurface discontinuities are concealed. Such discontinuities are beyond the evaluation of the Engineer at this time. No guarantee of the consistency of site geology and soil conditions is implied or intended.

GEOLOGIC SETTING

The proposed project is located along in the southwest portion of the Truckee Meadows on the eastern flank of the Sierra Nevada Mountains. The Truckee Meadows is bounded on the west by the tall granite peaks of the Sierra Nevada Mountains. Younger volcanic rocks confine the Truckee Meadows on the north and south. Faults separate the Truckee Meadows from the surrounding mountains, which is typical of the Basin and Range geomorphic province. Sediments have filled the Truckee Meadows from a number of tributaries and ancestral lakes during the Quaternary period (2 million years to the present). The dominant sediment source has been, and continues to be, the Truckee River and its ancestral counterparts. Stream deposits were particularly voluminous during the past 2 million years after glacial periods. Since the end of the last glacial periods, some 10,000 years ago, arid erosional forces combined with faulting have been the predominant processes to shape the region. These processes have created large alluvial fans that surround the Truckee Meadows basin.

The surface geology of the project area has been mapped by Tabor and Ellen, (1975). The mapping indicates numerous soil types underlie the site. The Kate Peak Formation (Tkf), made up of hornblende-pyroxene andesite flows with minor breccia underlies the site. Alluvial fan consisting of (Qfb) pebbly to bouldery sand in steep-sided fans underlie the site. The Steamboat Hills Rhyolite (Qsh) and associated deposits that consist of white, glassy to strongly devitrified biotite rhyolite in pumiceous dome and overlying rubble from the Pleistocene age along with (Qsg) made up of coarse-grained angular granule conglomerate of rhyolite pumice and metamorphic rock underlie the site. Glacial outwash 2 (Qgo2) similar to (Qgo4) which is partly sorted sand, silt and boulders deposited by glacial outwash stream, except granitic boulders partly to thoroughly rotten where buried, underlie the site.

In general, according to the Soil Survey of Washoe County, Nevada, South Part (1979) the site has moderate to slow permeability. This was evident when driving the site as there were numerous areas along the dirt roads that had standing water from a storm a week prior. The water table is at its closest proximity to the surface along the southwest portion of the site, and is between 10 and 20 feet below existing grade. The majority of the site, according to the Washoe City Folio Hydrologic Map (F. Eugene Rush, 1975), has a ground water depth to be deeper than 20 feet below existing grades. Bedrock is generally located at a depth of approximately 18 inches or less below existing ground surface. The soils are also characterized as having moderate to high risk of corrosion to uncoated steel and low to moderate risk of corrosion toward concrete.

According to the Flood Insurance Rate Map of the area, the site is located in "Zone X", areas determined to be located outside the 0.2% annual chance flood plain.

SEISMIC CONSIDERATIONS

Reno, similar to many areas in Nevada, is located near active faults that are capable of producing significant earthquakes. In addition, a number of faults are located approximately 1,000 feet from the site (Mt. Rose Quadrangle Earthquake Hazard Map, 1983). The faults are mid to late Pleistocene age faults, which are considered potentially active, having their last movement within the last 100,000 years. The same mapping indicates the nearest active faults of Holocene age (<11,700 years) to be located approximately one (1) mile west of the site. The maximum credible earthquake (MCE) for the vicinity of the project is estimated at 7.5 in moment magnitude, which is associated with the Mount Rose fault zone.

Additionally we reviewed the Preliminary Revised Geological Maps of the Reno Urban Area, Nevada published in 2011 by Ramelli, Henry, and Walker (Fig 7.) Ramelli, etal. shows a north/south trending possible concealed fault between the Tsd and Qol2 soils. The glacial fill masks the actual fault location and it is likely located some distance westerly of the Tsd and Qol2 surface interface. We recommend a site investigation by trenching be conducted to prove or disprove the possible concealed fault location in the project area. The investigation should occur prior to final map.

2012 IBC Design: The mapped maximum considered earthquake spectral response acceleration at short periods (S_S) is 2.332g corresponding to a 0.2 second spectral response acceleration at five percent (5%) of critical damping and for a Site Class B (IBC Figure 1613.3.1(1)). The mapped maximum considered earthquake spectral response acceleration at a 1-second period (S_1) is 0.814g corresponding to a 1.0 second spectral response acceleration at five percent (5%) of critical damping and for a Site Class B (IBC Figure 1613.3.1(2). At this time, the soil conditions are not known in sufficient detail to a depth of 100 feet, thus, a Site Class D may be assumed per the IBC. These spectral response accelerations are adjusted for site class effects because Site Class D is assumed instead of Site Class B. The site coefficient for spectral response accelerations adjustment at short periods (F_a) is 1.00 (IBC Table 1613.3.3(1)).

The site class effect for spectral response acceleration adjustment at 1-second periods (F_v) is 1.50 (IBC Table 1613.3.3(2)). The maximum considered earthquake spectral response acceleration parameter for short period (S_{MS}) is 2.332g and for 1-second period (S_{M1}) is 1.222g. This corresponds to design spectral response acceleration parameters of 1.555g for short period (S_{DS}) and of 0.814g for 1-second period (S_{D1}).

It is emphasized that the above values are the minimum requirements intended to maintain public safety during strong ground shaking. These minimum requirements are meant to safeguard against loss of life and major structural failures. However, they are not intended to prevent damage or insure the functionality of the structure during and/or after a large seismic event.

In conclusion, seismic concerns for this site are not unlike other sites in the Reno area. However, due to the proximity of the site to a number of faults that are considered active, as noted above, strong seismic shaking should be anticipated during the life of any structures.

SITE CONDITIONS

Our scope of work included a site reconnaissance and map studies. During the site reconnaissance, the Geotechnician drove the site to note site conditions. At the time of our reconnaissance, the site was undeveloped. The only development on site was for a separate APN and was a water tank with an associated base rock road. The undeveloped portions of the site were generally vegetated with brush, and grasses. There were numerous dirt roads throughout the site.

There are numerous houses along the northwest and west borders to the property. Along with a power pole line heading east/west bisecting the site and going to the radio tower to the east of the site.

SLOPE STABILITY AND EROSION CONTROL

In general the slopes of the undisturbed areas appear to be stable, however, there may be a need to have the areas, in which slopes were excavated by mechanical means, stabilized against erosion. Further testing and/or observation would be needed to make a determination of slope stability on an individual basis. The majority of the site has steep terrain with a very shallow depth to bedrock. According to the Washoe City Folio Slope Map (U.S. Geological Survey, 1974), approximately 80% of the site has slope inclinations between 15-50%.

References

Bonham, H. F. Jr., Rogers, David K., 1983, Mt. Rose NE Quadrangle Geologic Map, Nevada Bureau of Mines and Geology, Reno, NV

National Flood Insurance Program (NFIP), Flood Insurance Rate Map (FIRM), Washoe County, Nevada and Incorporated Areas Map Number 32031C3331G

Ramelli, Alan R., Henry, Christopher D., and Walker, Jerome P., 2011, Preliminary Revised Geological Maps of the Reno Urban Areas, NV (Fig 7)

Rush, Eugene F., 1975, Washoe City Folio Hydrologic Map, Nevada Bureau of Mines and Geology, Reno, NV

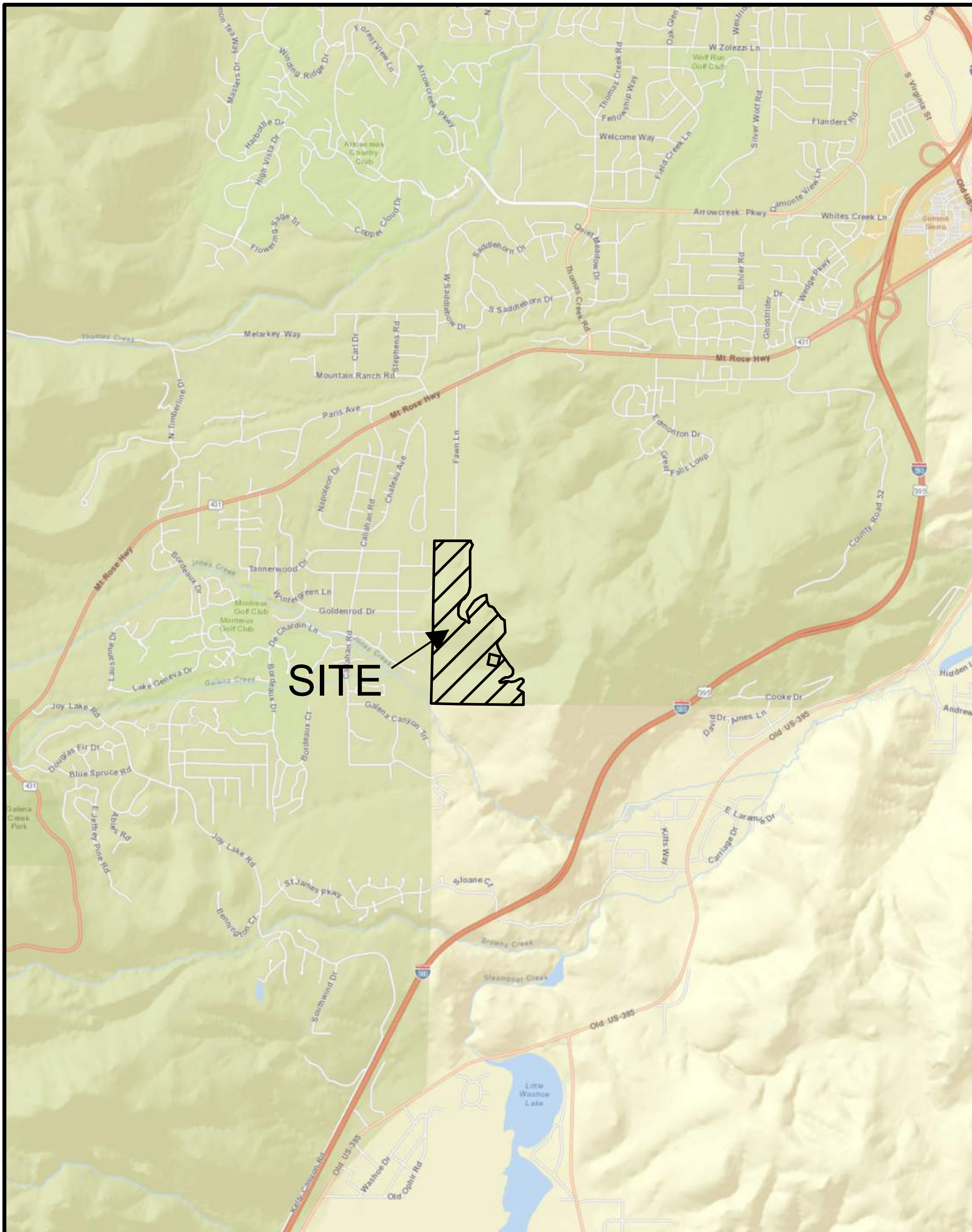
Szecsody, Gail Cordy, 1983, Mt. Rose NE Quadrangle Earthquake Hazard Map, Nevada Bureau of Mines and Geology, Reno, NV (Fig 5.)

Tabor, R. W., Ellen, S., 1975, Washoe City Folio Geologic Map, Nevada Bureau of Mines and Geology, Reno, NV

Tabor, R. W., Ellen, S., Clark, M. M., 1978, Washoe City Folio Geologic Hazards Map, Nevada Bureau of Mines and Geology, Reno, NV

United States Department of Agriculture, Soil Conservation Service, 1979, Soil Survey of Washoe County, Nevada, South Part

USGS 2012 Website, www.eqdesign.cr.usgs.gov



Lumos and Associates

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Carson City, NV 89706
(775) 883-7077
Fax: (775) 883-7114
imorrison@lumosinc.com

Ascenté Tentative Map

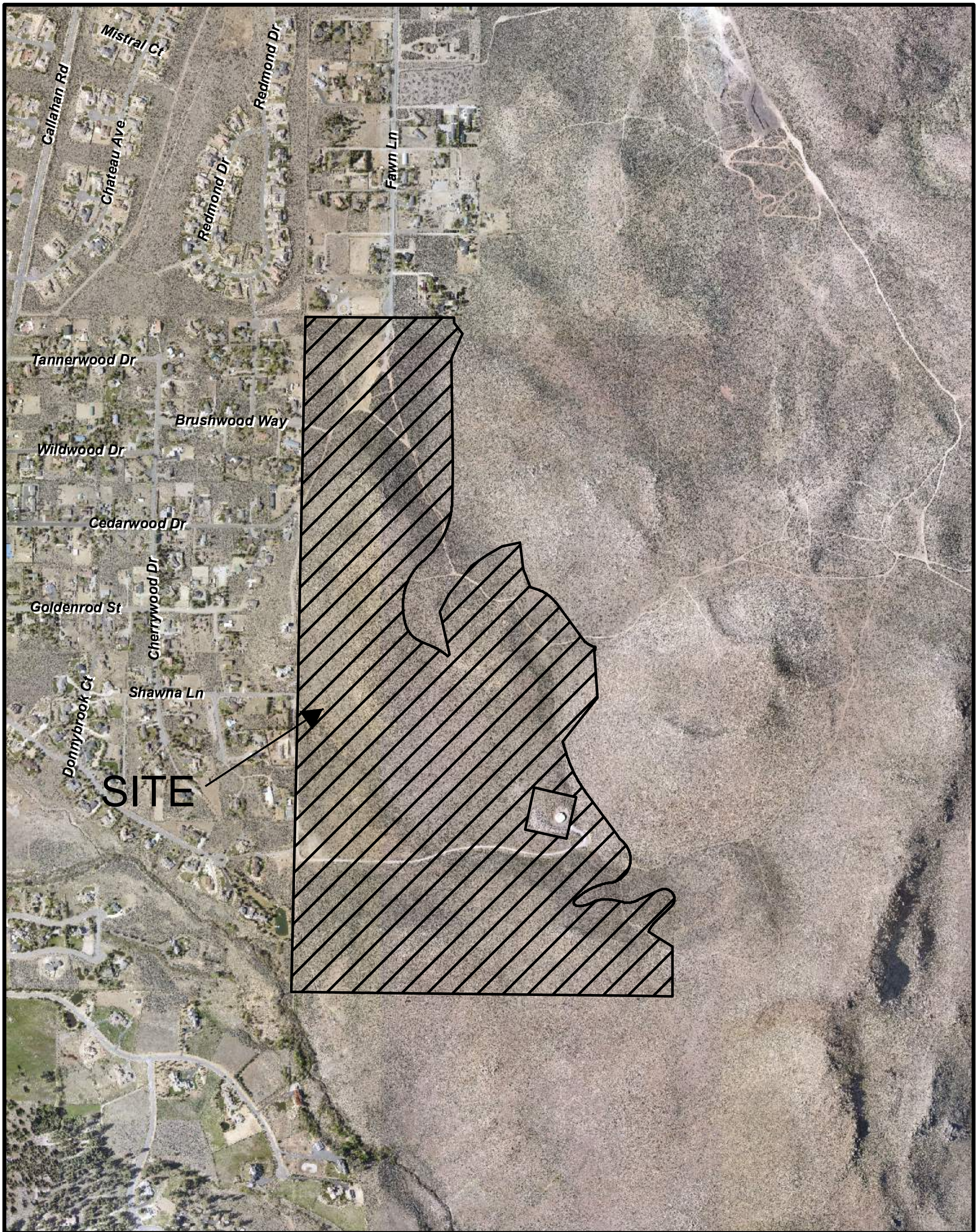
VICINITY MAP

Job Number: 9019.000

Date: April 2017

PLATE

1



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Ascenté Tentative Map

SITE MAP

Job Number: 9019.000

Date: April 2017

PLATE

2

MODIFIED MERCALLI INTENSITY SCALE

INTENSITY	EFFECTS
I	Not felt except by a very few under especially favorable circumstances.
II	Felt only by a few persons at rest, especially on upper floors of buildings. Delicately suspended objects may swing.
III	Felt quite noticeable indoors, especially on upper floors of buildings, but many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibration like passing of truck. Duration estimated.
IV	During the day felt indoors by many, outdoors by few. At night some awaken. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building; standing motor cars rock noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows, etc., broken; a few instances of cracked plaster; unstable objects overturned. Disturbance of trees, poles, and other tall objects sometimes noticed. Pendulum clocks may stop.
VI	Felt by all; many frightened and run outdoors. Some heavy furniture moved; a few instances of fallen plaster or damaged chimneys. Damage slight.
VII	Everybody runs outdoors. Damage negligible in buildings of good design and construction; slight to moderate in well- built ordinary structures; considerable in poorly built or badly designed structures; some chimneys broken. Noticed by persons driving motor cars.
VIII	Damage slight in specially designed structures; considerable in ordinary substantial buildings with partial collapse; great in poorly built structures. Panel walls thrown out of frame structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned. Sand and mud ejected in small amounts. Changes in well water. Disturbs persons driving motor cars.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb; great in substantial buildings, with partial collapse. Buildings shifted off foundations. Ground cracked conspicuously. Underground pipes broken.
X	Some well-built wooden structures destroyed; most masonry and frame structures with foundations destroyed; ground badly cracked. Rails bent. Landslides considerable from river banks and steep slopes. Shifted sand and mud. Water splashed (sloped) over banks.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Broad fissures in ground. Underground pipe lines completely out of service. Earth slumps and land slips in soft ground. Rails bent greatly.
XII	Damage total. Waves seen on ground surfaces. Lines of sight and level distorted. Objects thrown upward into the air.

From Wood and Newman, 1931, by U.S. Geological Survey, 1974, Earthquake Information Bulletin, v. 6, no. 5, p. 28

Richter Magnitude	Intensity (maximum expected Modified Mercalli)
3.0 - 3.9	II - III
4.0 - 4.9	IV - V
5.0 - 5.9	VI - VII
6.0 - 6.9	VII - VIII
7.0 - 7.9	IX - X
8.0 - 8.9	XI - XII

LUMOS_MODIFIED MERCALLI SCALE 9019.000 ASCENTE TENTATIVE MAP.GPJ US_LAB.GDT 5/27/16

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bsexton@lumosinc.com

Ascente Tentative Map

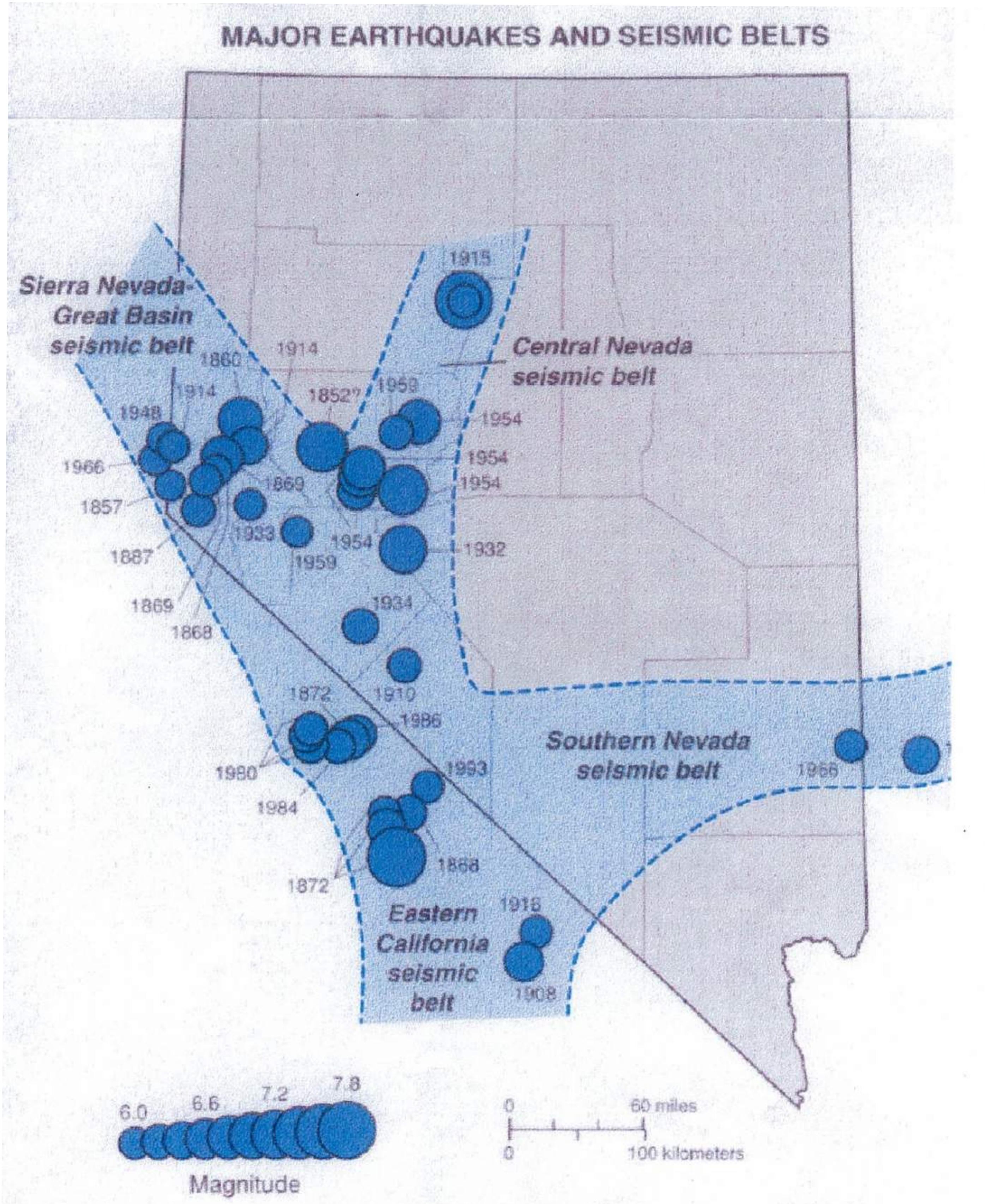
MODIFIED MERCALLI SCALE

Job Number: 9019.000

Date: May 2016

PLATE

3



LUMOS_MAJOR EARTHQUAKES / SEISMIC BELTS 9019.000 ASCENTE TENTATIVE MAP.GPJ US_LAB.GDT 5/27/16

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Ascente Tentative Map

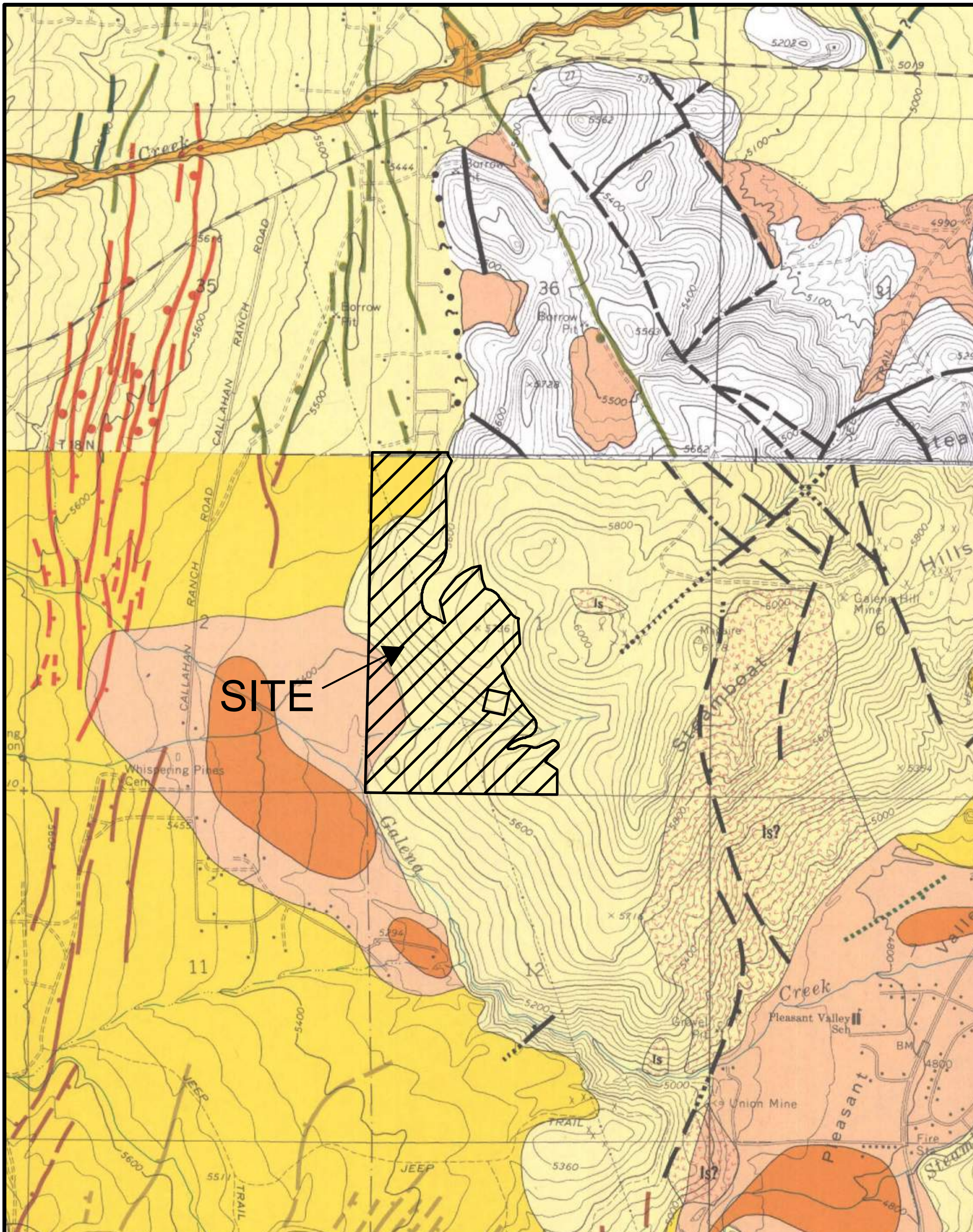
MAJOR EARTHQUAKES/ SEISMIC BELTS

Job Number: 9019.000

Date: May 2016

PLATE

4



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Ascenté Tentative Map

FAULT MAP

Job Number: 9019.000

Date: April 2017

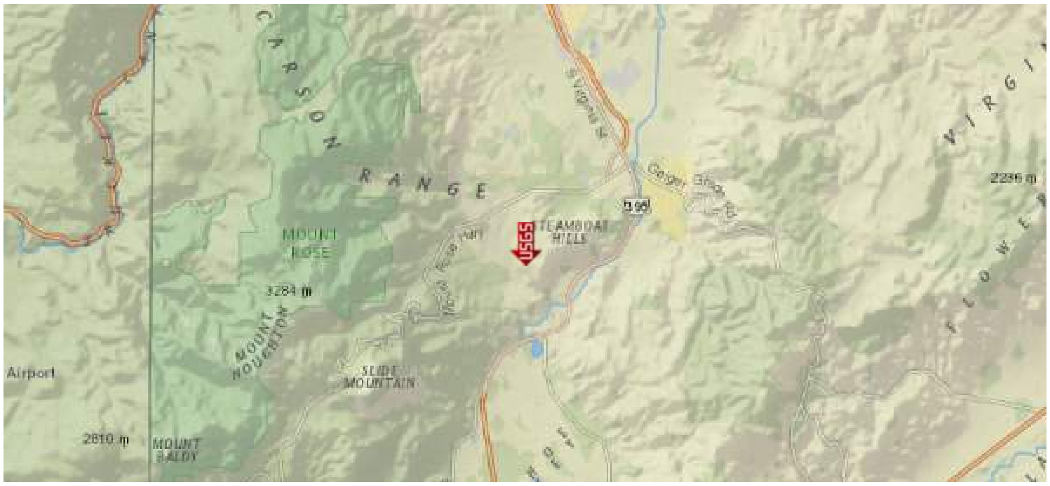
PLATE

5

USGS Design Maps Summary Report

User–Specified Input

Report Title	Ascente Tentative Map Sat May 28, 2016 02:11:01 UTC
Building Code Reference Document	2012 International Building Code (which utilizes USGS hazard data available in 2008)
Site Coordinates	39.3701°N, 119.8021°W
Site Soil Classification	Site Class D – "Stiff Soil"
Risk Category	I/II/III

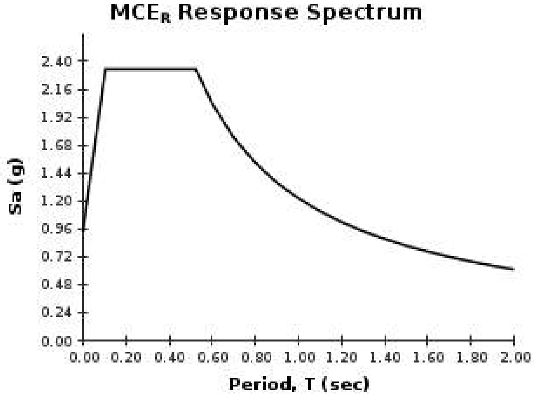


USGS–Provided Output

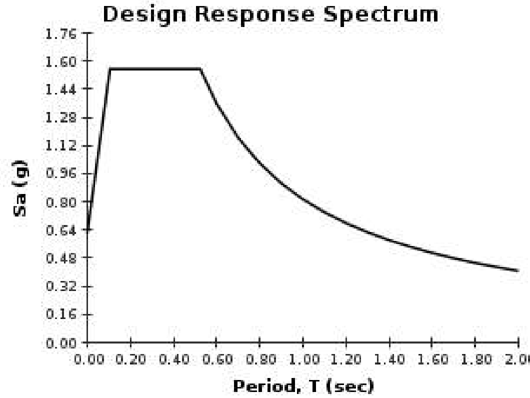
S_S =	2.332 g	S_{MS} =	2.332 g	S_{DS} =	1.555 g
S_1 =	0.814 g	S_{M1} =	1.222 g	S_{D1} =	0.814 g

For information on how the SS and S1 values above have been calculated from probabilistic (risk-targeted) and deterministic ground motions in the direction of maximum horizontal response, please return to the application and select the "2009 NEHRP" building code reference document.

MCE_R Response Spectrum



Design Response Spectrum



LUMOS_DESIGN RESPONSE SPECTRUM 9019.000 ASCENTE TENTATIVE MAP.GPJ US_LAB.GDT 5/27/16

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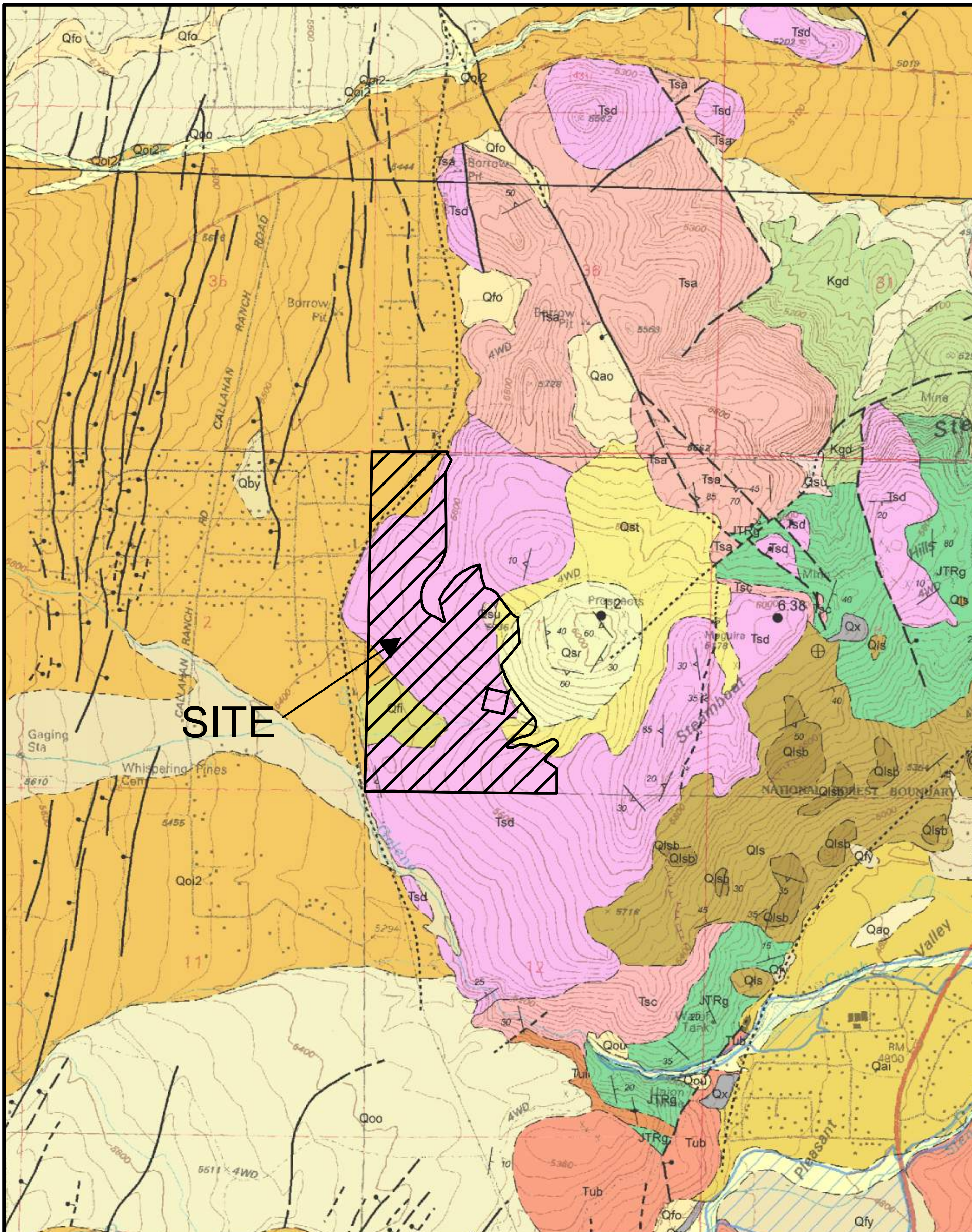
Ascente Tentative Map

DESIGN RESPONSE SPECTRUM

Job Number: 9019.000 Date: May 2016

PLATE 6



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Ascenté Tentative Map

PRELIMINARY REVISED GEOLOGIC MAP OF THE RENO URBAN AREA, NEVADA

PLATE

7

Job Number: 9019.000

Date: April 2017

NNV1 PARTNERS, LLC.

ASCENTÉ TENTATIVE MAP

APN: 045-252-14 AND 045-252-15

2 working days Call before you Dig. 1-800-227-2600 AVOID CUTTING UNDERGROUND UTILITIES

GENERAL NOTES:

1. PARCEL NUMBER: 045-252-14 AND 045-252-15
2. PROJECT ADDRESS: 5500 SHAWNA LN
3. LOCATED SOUTH OF HWY 431 AND WEST OF I-580.
4. EXISTING ZONING IS LOW DENSITY SUBURBAN (LDS), MEDIUM DENSITY SUBURBAN (MDS), AND OPEN SPACE (OS).
5. NO BUILDINGS EXIST ON THE SUBJECT PROPERTY.
6. NO SEPTIC SYSTEMS, WELLS, LEACH FIELDS OR OVERHEAD UTILITIES EXIST OR ARE PROPOSED ON THE SUBJECT PROPERTY.
7. WASHOE COUNTY TO PERFORM OFF-SITE COLLECTION, CONVEYANCE, TREATMENT, AND DISPOSAL OF WASTEWATER AT THEIR STMWRF FACILITY.
8. PROMINENT LANDMARKS, AREAS OF UNIQUE NATURAL BEAUTY, ROCK OUTCROPPINGS, AND VISTAS ARE SHOWN ON THE GRADING PLAN.
9. NO WETLANDS OR SPRINGS ARE KNOWN TO EXIST ON THE SUBJECT PROPERTY.
10. SECONDARY EMERGENCY ACCESS IS PROPOSED THROUGH THE ADJACENT SUBDIVISION TO THE WEST.
11. LANDSCAPING REQUIRED PER SECTION 110.412 OF THE WASHOE COUNTY DEVELOPMENT CODE.
12. LIGHTING SHALL BE IN CONFORMANCE WITH SECTION 110.414 OF THE WASHOE COUNTY DEVELOPMENT CODE. SPECIFICALLY, PER SECTION 110.414.21 COVERS MUST BE INSTALLED ON ALL LIGHTING FIXTURES AND LAMPS MUST NOT EXTEND BELOW THE BOTTOM OF THE COVER.
13. THE DESIGN AND POSTED SPEED FOR THIS SUBDIVISION IS TYPICALLY 25 MPH. A 20 MPH SPEED LIMIT IS PROPOSED FOR THE CONNECTING ROADS BETWEEN VILLAGES WHERE MODIFIED STREET SECTIONS AND STEEP SLOPES ARE PROPOSED. ALL PRIVATE ROADS ARE TO HAVE POSTED SPEED LIMIT OF 15MPH. SEE PLANS
14. ALL SIGNS AND PAVEMENT MARKINGS SHALL CONFORM WITH THE MOST RECENT EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION AND WASHOE COUNTY STANDARDS.
15. THE MINIMUM PAVEMENT STRUCTURAL SECTION SHALL BE THREE (3) INCHES OF TYPE 2 OR TYPE 3 ASPHALT CONCRETE PAVEMENT COMPACTED TO NINETY-FIVE (95) PERCENT MINIMUM DENSITY OVER SIX (6) INCHES OF TYPE 2 CLASS B AGGREGATE GRAVEL BASE. DRAINAGE SHALL BE CONSISTENT WITH COUNTY STANDARDS, INCLUDING ARTICLE 420, STORM DRAINAGE STANDARDS. THE PAVEMENT SHALL BE SEALED IN ACCORDANCE WITH WASHOE COUNTY STANDARDS.

BASIS OF BEARINGS: REFERENCE TENTATIVE MAP OF DIVISION INTO LARGE PARCELS MAP SUBMITTED ON SEPTEMBER 12, 2016.

EXISTING TOPOGRAPHY FROM WASHOE COUNTY GIS.

ENGINEER'S STATEMENT:

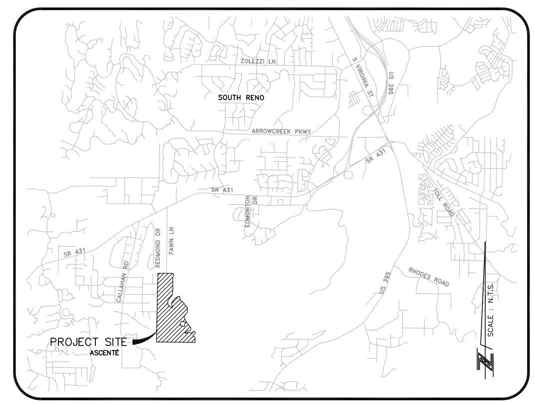
THESE PLANS, SHEETS C0.1 THROUGH L1.5 HAVE BEEN PREPARED IN ACCORDANCE WITH THE WASHOE COUNTY DEVELOPMENT CODE.

PROFESSIONAL ENGINEER STATE OF NEVADA THOMAS W. YOUNG 04/12/17 CIVIL No. 13797 Exp: 06/30/2018

4/12/2017

THOMAS YOUNG, P.E. #13797 DATE

LOCATION MAP



VICINITY MAP

LAND USE DATA:

1. NUMBER OF LOTS: 225 LOTS
2. TOTAL AREA: 225.00 ACRES
3. COMMON AREA: 79.83 ACRES
   35% COMMON OPEN SPACE PROPOSED
4. DENSITY/INTENSITY: 1.0 DWELLING UNITS PER ACRE PERMITTED
   1.0 DWELLING UNITS PER ACRE PROPOSED
5. HEIGHT: 35' MAXIMUM PERMITTED/PROPOSED HEIGHT
6. LOT WIDTH: 70' MINIMUM LOT WIDTH *
   * MINIMUM LOT WIDTH MODIFIED FOR COMMON OPEN SPACE DEVELOPMENT
7. COMMON OPEN SPACE DEVELOPMENT: THE PROVISIONS OF SECTION 110.404.05, LOT STANDARDS, MAY BE MODIFIED PURSUANT TO ARTICLE 408, COMMON OPEN SPACE DEVELOPMENT. THIS MODIFICATION MAY INCLUDE THE REDUCTION IN MINIMUM LOT SIZES AS LONG AS THE OVERALL DENSITY IS NOT INCREASED BEYOND THAT PERMITTED IN THE REGULATORY ZONE.
8. AVERAGE LOT SIZE: 24,450 SF
9. LARGEST LOT: 91,450 SF (LOT 141)
10. SMALLEST LOT: 10,120 SF (LOT 204)
11. YARD/SETBACKS: SIERRA VILLAGE FRONT/REAR YARD: 20' SIDE YARD: 8' — TIOGA/WHITNEY VILLAGES FRONT/REAR YARD: 30' SIDE YARD: 12' — DONNER VILLAGE FRONT/REAR YARD: 30' TYPICAL ** SIDE YARD: 12'
    **REDUCED TO 20' FRONT AND REAR SETBACK FOR LOTS ON A CUL-DE-SAC
12. THERE SHALL BE NO FENCES OR OTHER OBSTRUCTIONS TO VISION MORE THAN 18" HIGHER THAN CURB LEVEL WITHIN THE SITE VISIBILITY TRIANGLES.
13. ARCHITECTURAL FEATURES: CORNICES, CANOPIES, CHIMNEYS, EAVES OR OTHER SIMILAR ARCHITECTURAL FEATURES MAY EXTEND INTO A REQUIRED SETBACK BY A DISTANCE NOT TO EXCEED TWO (2) FEET.
14. DECKS WHICH ARE LESS THAN 18" IN HEIGHT FROM THE FINISHED GRADE ARE NOT COUNTED AS A STRUCTURE FOR SETBACK PURPOSES.
15. OFF-STREET PARKING: 2 SPACES REQUIRED PER DWELLING UNIT, 1 OF WHICH MUST BE IN AN ENCLOSED GARAGE.
    4 SPACES PROVIDED PER DWELLING UNIT, 2 OF WHICH IN A GARAGE AND 2 OF WHICH IN THE DRIVEWAY.
16. OPEN SPACE: PRIVATE OPEN SPACE PROPOSED PER SECTION 110.432.10 OF THE WASHOE COUNTY DEVELOPMENT CODE AND COMMON OPEN SPACE PROPOSED PER SECTION 110.432.15 OF THE CODE.
    REQUIRED: 400 SF PRIVATE SPACE PER LOT
    200 SF COMMON OPEN SPACE PER LOT (TOTAL=45,000 SF)
    PROPOSED: 400 SF MINIMUM PRIVATE SPACE PER LOT
    15,455 SF (0.355 AC) COMMON OPEN SPACE PER LOT (COMMON AREAS 'A', 'B', 'C', 'D', 'E', 'F', AND 'G',) (TOTAL = 79.83 ACRES)

ASCENTÉ RENO • NEVADA

SYMBIO DEVELOPMENT

OWNERS:

NNV1 PARTNERS, LLC
6151 LAKESIDE DRIVE, SUITE 1000
RENO, NEVADA 89511
PH.: (775) 843-4300

CWH 2011 IRREVOCABLE TRUST ET AL
355 BOXINGTON WAY
SPARKS, NEVADA 89434

APPLICANT:

SYMBIO DEVELOPMENT, LLC
6151 LAKESIDE DRIVE, SUITE 1000
RENO, NEVADA 89511
PH.: (775) 843-4300

ENGINEER

LUMOS & ASSOCIATES

9222 PROTOTYPE DRIVE
RENO, NEVADA 89521
PH.: (775) 827-6111
FAX: (775) 827-6122

SHEET INDEX:

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NNV1 PARTNERS, LLC
ASCENTÉ
TITLE SHEET
RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

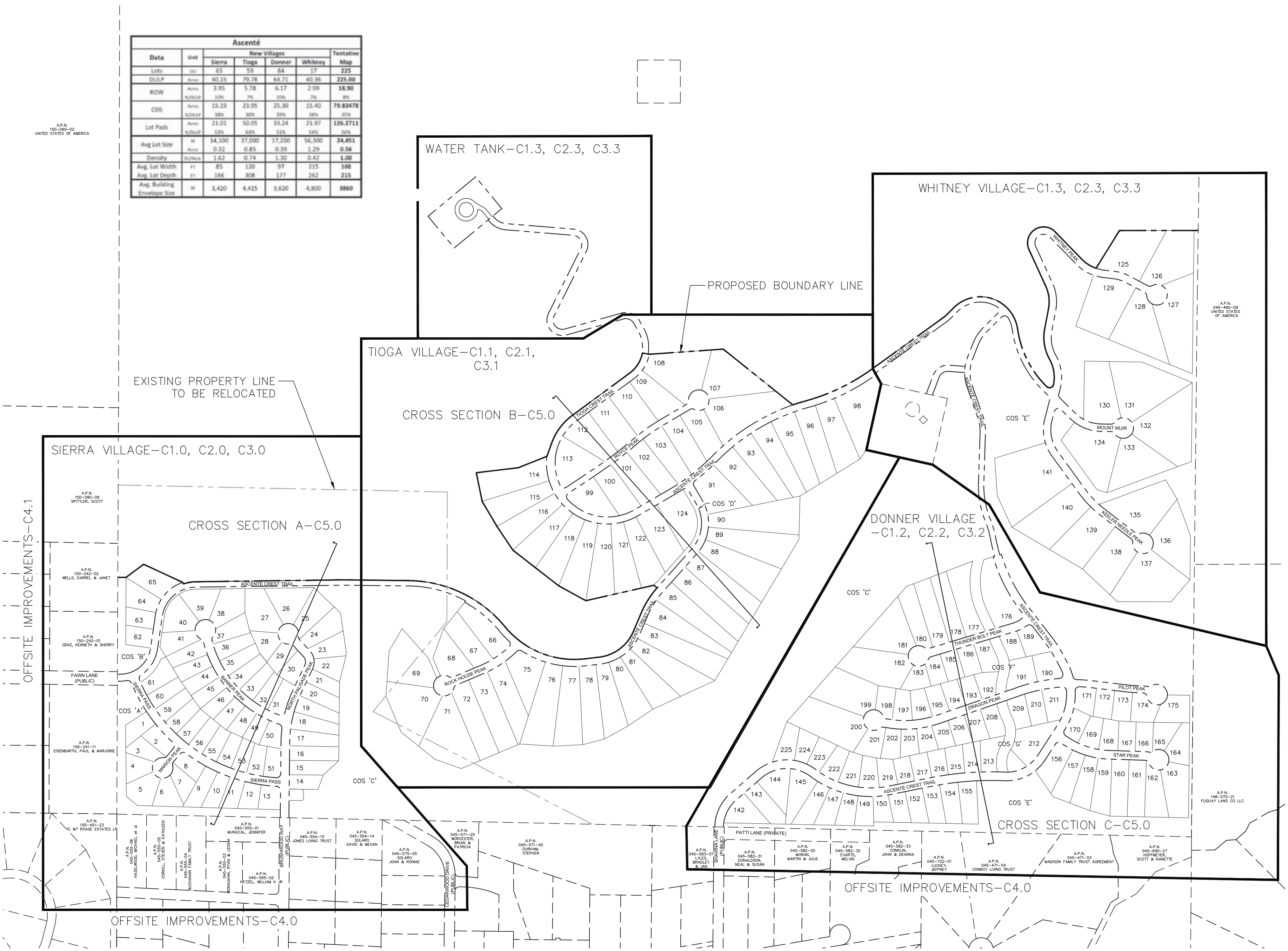
TENTATIVE MAP

C0.0

DATE: APRIL 12, 2017
DRAWN BY: AJG
DESIGNED BY: AJG/TY
CHECKED BY: TY/MB
JOB NO.: 9019.000

L:\LAPro\9019.000 - Acenté-Matero Ridge Tentative Map\DWG\Civil 3D\9019.000- REVISED TITLE SHEET AND DETAILS.dwg,C0.0, 04/13/2017 09:22 am agreenblat

Ascenté						
Data	Unit	New Villages				Tentative Map
		Sierra	Tioga	Donner	Whitney	
Lots	DU	65	59	84	17	**225**
DLILP	Acres	40.15	79.78	64.71	40.36	**225.00**
ROW	Acres	3.95	5.78	6.17	2.99	**18.90**
	%/DLILP	10%	7%	10%	7%	8%
COS	Acres	15.19	23.95	25.30	15.40	**79.83478**
	%/DLILP	38%	30%	39%	38%	35%
Lot Pads	Acres	21.01	50.05	33.24	21.97	**126.2711**
	%/DLILP	52%	63%	51%	54%	56%
Avg Lot Size	SF	14,100	37,000	17,200	56,300	**24,451**
	Acres	0.32	0.85	0.39	1.29	**0.56**
Density	DU/Acre	1.62	0.74	1.30	0.42	**1.00**
Avg. Lot Width	FT	85	120	97	215	**108**
Avg. Lot Depth	FT	166	308	177	262	**215**
Avg. Building Envelope Size	SF	3,420	4,415	3,620	4,800	**3860**



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PROFESSIONAL ENGINEER STATE OF NEVADA
THOMAS W. YOUNG
04/12/17
CIVIL
No. 13797
Exp: 06/30/2018

NNV1 PARTNERS, LLC

OVERALL SITE PLAN
REVISED TENTATIVE MAP

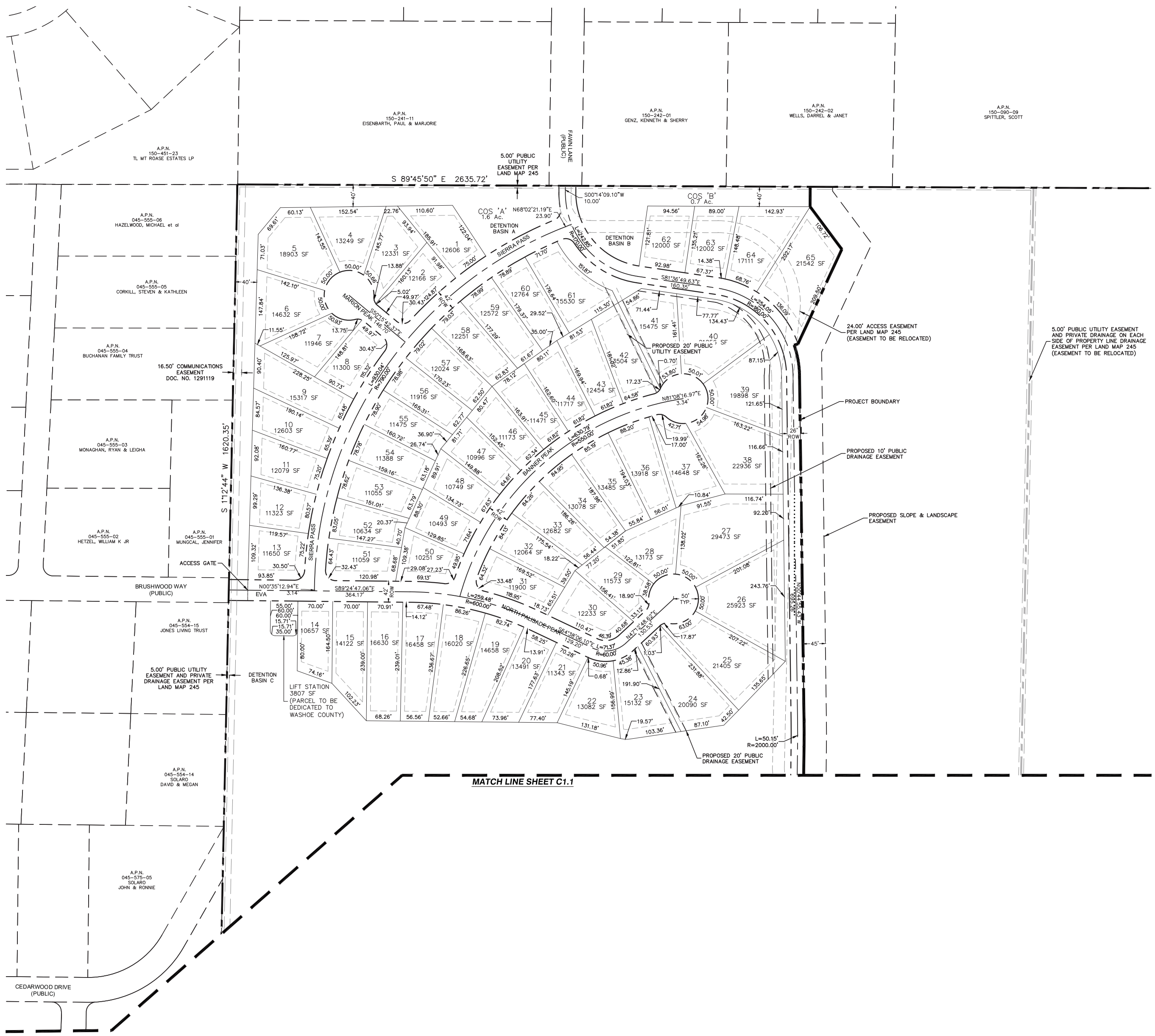
RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

C0.1

DATE: APRIL 12, 2017
DRAWN BY: MHU
DESIGNED BY: AJG/TY
CHECKED BY: TY/MB
JOB NO.: 9019.000



SITE KEY:

- PROPERTY LINE
- RIGHT OF WAY / PROJECT BOUNDARY
- EASEMENT
- CENTER LINE
- SETBACK

PRELIMINARY SITE NOTES:

1. AREAS DEDICATED AS OPEN SPACE TO BE MAINTAINED BY THE HOME OWNER'S ASSOCIATION
2. SEE DETAIL SHEET C6.0 FOR TYPICAL RIGHT OF WAY SECTION AND SEE SHEET C6.0 FOR MODIFIED STREET WIDTH CROSS SECTIONS
3. 10' FOOT PUE, TRAFFIC CONTROL AND PLOWED SNOW EASEMENT TO BE DEDICATED BOTH SIDES OF ROW
4. TYPICAL SIERRA VILLAGE SETBACKS: FRONT/REAR YARD 20' & SIDE YARD 8' FROM PROPERTY LINE

Ascenté		
Data	Unit	Sierra Village
Lots	DU	65
DLILP	Acres	40.15
ROW	Acres	3.95
	%/DLILP	10%
COS	Acres	15.19
	%/DLILP	38%
Lot Pads	Acres	21.01
	%/DLILP	52%
Avg Lot Size	SF	14,100
	Acres	0.32
Density	DU/Acre	1.62
Avg. Lot Width	FT	85
Avg. Lot Depth	FT	166
Avg. Building Envelope Size	SF	3,420

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No. 13797
Exp: 06/30/2018

NNV1 PARTNERS, LLC

SIERRA VILLAGE PRELIMINARY SITE PLAN

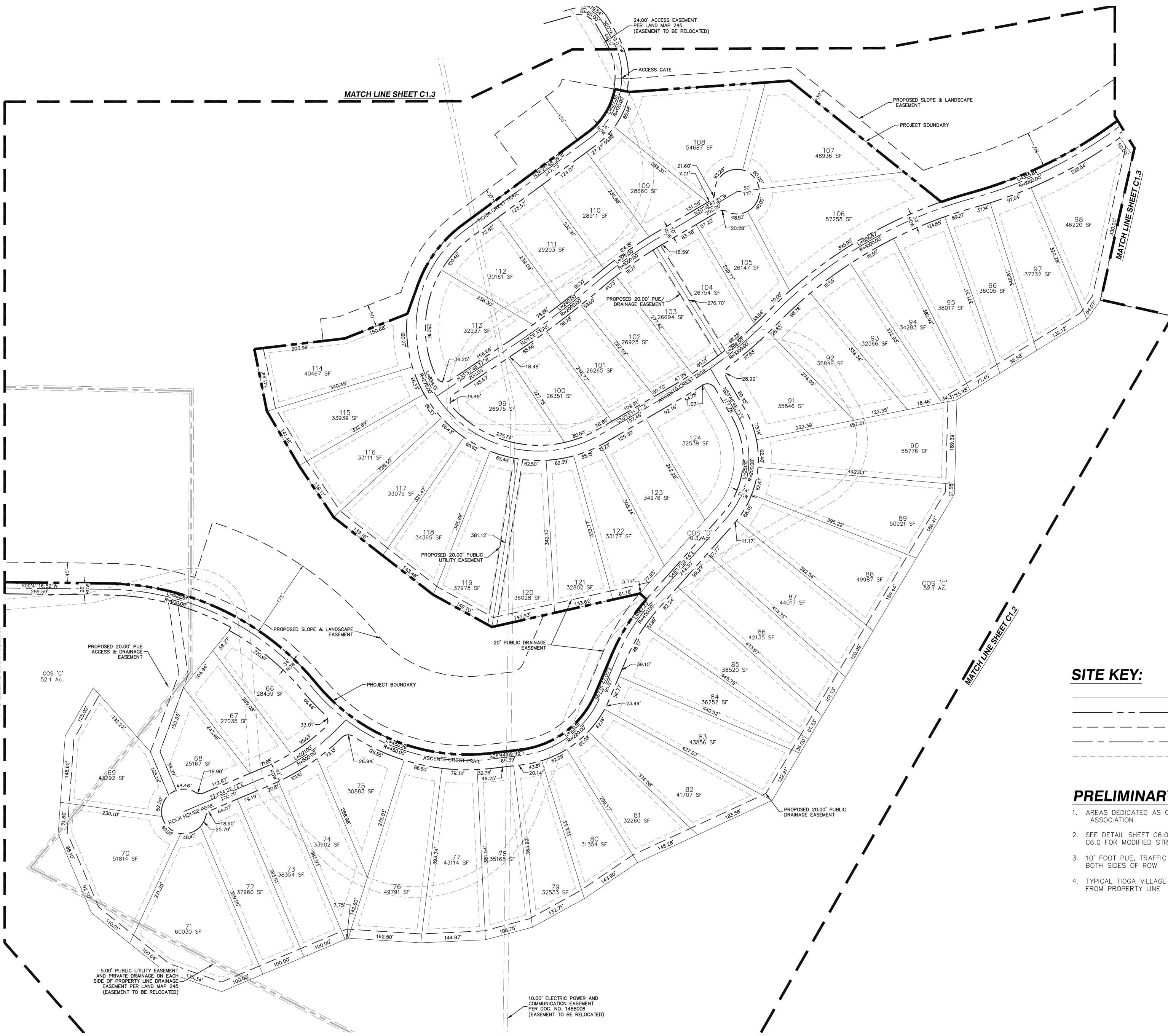
RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

C1.0

DATE: APRIL 12, 2017
DRAWN BY: MHU
DESIGNED BY: AJG/TY
CHECKED BY: TY/MB
JOB NO.: 9019.000



SITE KEY:

PROPERTY LINE
RIGHT OF WAY / PROJECT BOUNDARY
EASEMENT
CENTER LINE
SETBACK

Ascenté		
Data	Unit	Tioga Village
Lots	DU	59
DUILP	Acres	79.78
ROW	Acres %/DUILP	5.78 7%
COS	Acres %/DUILP	23.95 30%
Lot Pads	Acres %/DUILP	50.05 63%
Avg Lot Size	SF Acres	37,000 0.85
Density	DU/Acre	0.74
Avg. Lot Width Avg. Lot Depth	FT FT	120 308
Avg. Building Envelope Size	SF	4,415

PRELIMINARY SITE NOTES:

1. AREAS DEDICATED AS OPEN SPACE TO BE MAINTAINED BY THE HOME OWNER'S ASSOCIATION
2. SEE DETAIL SHEET C6.0 FOR TYPICAL RIGHT OF WAY SECTION AND SEE SHEET C6.0 FOR MODIFIED STREET WIDTH CROSS SECTIONS
3. 10' FOOT PUE, TRAFFIC CONTROL AND PLOWED SNOW EASEMENT TO BE DEDICATED BOTH SIDES OF ROW
4. TYPICAL TIOGA VILLAGE SETBACKS: FRONT/REAR YARD 30' & SIDE YARD 12' FROM PROPERTY LINE

100 50 0 100 200
SCALE: 1" = 100'

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No. 13797
STATE OF NEVADA
Exp: 06/30/2018

NNV1 PARTNERS, LLC

TIOGA VILLAGE
PRELIMINARY SITE PLAN

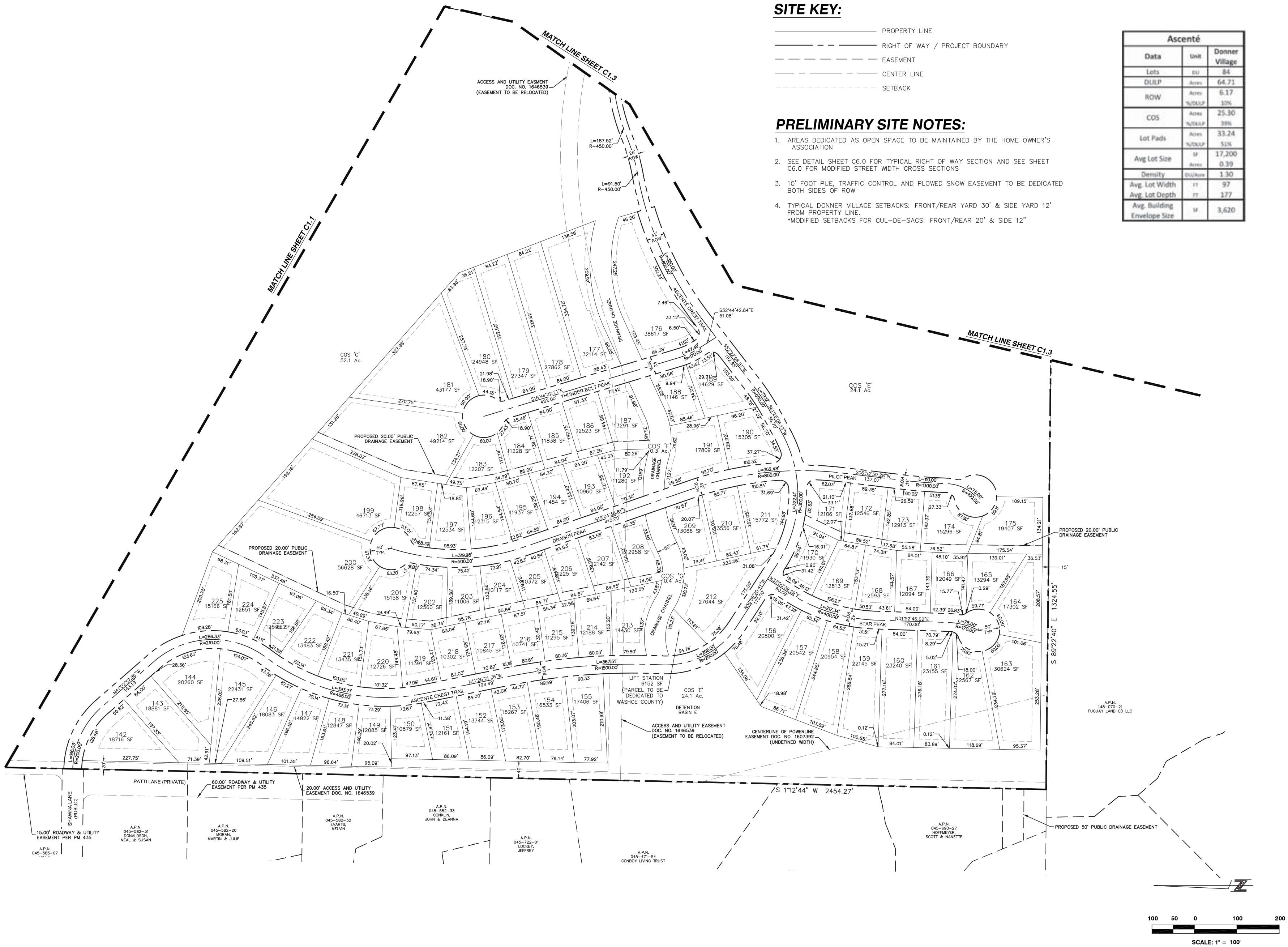
RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

C1.1

DATE: APRIL 12, 2017
DRAWN BY: AJG
DESIGNED BY: AJG/TY
CHECKED BY: TY/MB
JOB NO.: 9019.000



SITE KEY:

- PROPERTY LINE
- RIGHT OF WAY / PROJECT BOUNDARY
- EASEMENT
- CENTER LINE
- SETBACK

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3. 10' FOOT PUE, TRAFFIC CONTROL AND PLOWED SNOW EASEMENT TO BE DEDICATED BOTH SIDES OF ROW
4. TYPICAL DONNER VILLAGE SETBACKS: FRONT/REAR YARD 30' & SIDE YARD 12' FROM PROPERTY LINE.
   *MODIFIED SETBACKS FOR CUL-DE-SACS: FRONT/REAR 20' & SIDE 12"

Ascenté		
Data	Unit	Donner Village
Lots	DU	84
DULP	Acres	64.71
ROW	Acres	6.17
	%DULP	10%
COS	Acres	25.30
	%DULP	39%
Lot Pads	Acres	33.24
	%DULP	51%
Avg Lot Size	SF	17,200
	Acres	0.39
Density	DU/Acre	1.30
Avg. Lot Width	FT	97
Avg. Lot Depth	FT	177
Avg. Building Envelope Size	SF	3,620

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No. 13797
Exp: 06/30/2018

NNV1 PARTNERS, LLC

DONNER VILLAGE PRELIMINARY SITE PLAN

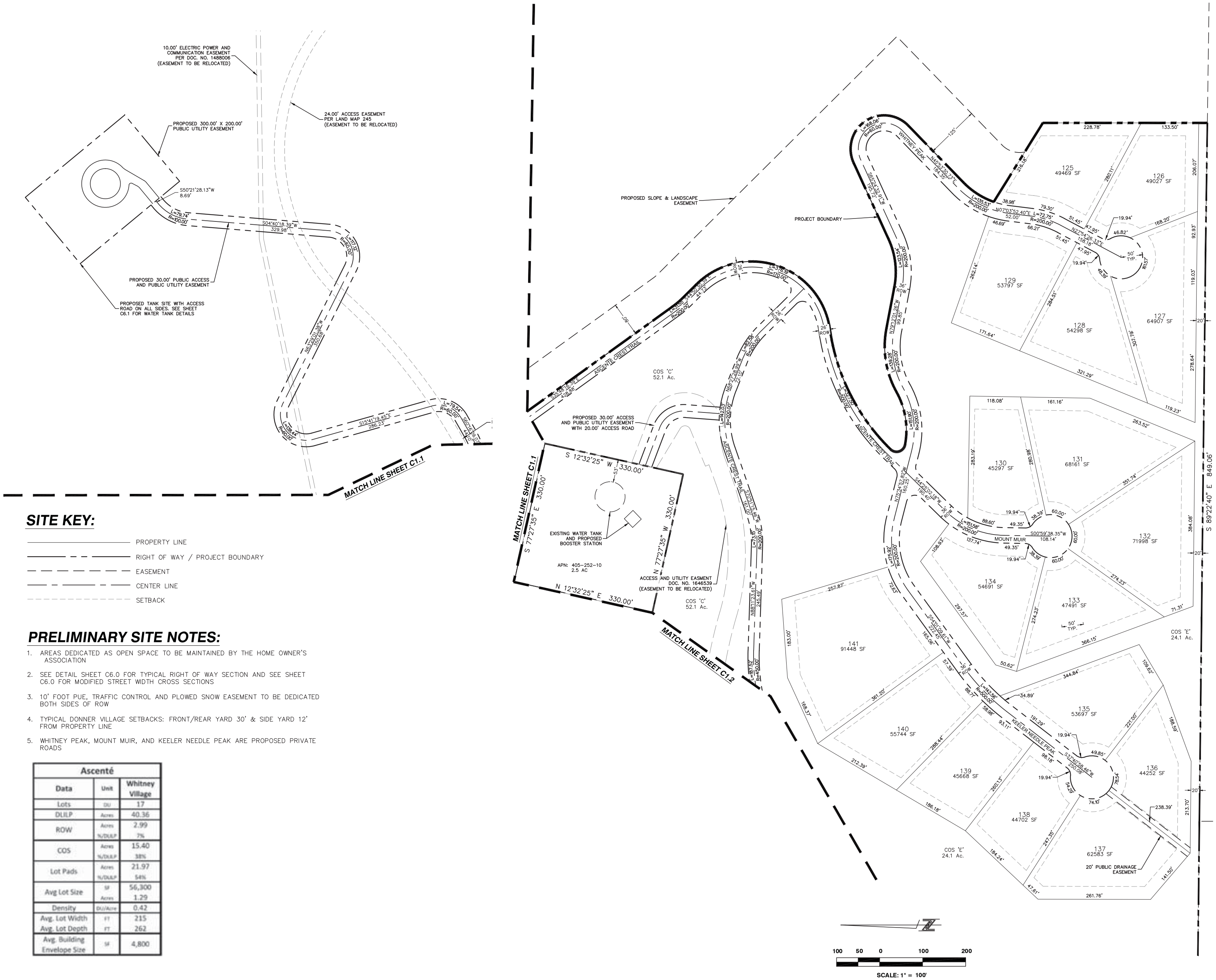
CITY COUNTY STATE

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

C1.2

DATE:	APRIL 12, 2017
DRAWN BY:	MHU
DESIGNED BY:	AJG/TY
CHECKED BY:	TY/MB
JOB NO.:	9019.000



SITE KEY:

- PROPERTY LINE
- RIGHT OF WAY / PROJECT BOUNDARY
- EASEMENT
- CENTER LINE
- SETBACK

PRELIMINARY SITE NOTES:

1. AREAS DEDICATED AS OPEN SPACE TO BE MAINTAINED BY THE HOME OWNER'S ASSOCIATION
2. SEE DETAIL SHEET C6.0 FOR TYPICAL RIGHT OF WAY SECTION AND SEE SHEET C6.0 FOR MODIFIED STREET WIDTH CROSS SECTIONS
3. 10' FOOT PUE, TRAFFIC CONTROL AND PLOWED SNOW EASEMENT TO BE DEDICATED BOTH SIDES OF ROW
4. TYPICAL DONNER VILLAGE SETBACKS: FRONT/REAR YARD 30' & SIDE YARD 12' FROM PROPERTY LINE
5. WHITNEY PEAK, MOUNT MUIR, AND KEELER NEEDLE PEAK ARE PROPOSED PRIVATE ROADS

Ascenté

Data	Unit	Whitney Village
Lots	DU	17
DLILP	Acres	40.36
ROW	Acres	2.99
	%/DLILP	7%
COS	Acres	15.40
	%/DLILP	38%
Lot Pads	Acres	21.97
	%/DLILP	54%
Avg Lot Size	SF	56,300
	Acres	1.29
Density	DU/Acre	0.42
Avg. Lot Width	FT	215
Avg. Lot Depth	FT	262
Avg. Building Envelope Size	SF	4,800

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PROFESSIONAL ENGINEER THOMAS W. YOUNG 04/12/17 CIVIL No. 13797 STATE OF NEVADA
Exp: 06/30/2018

NNV1 PARTNERS, LLC

WHITNEY VILLAGE / PROPOSED WATER TANK PRELIMINARY SITE PLAN

RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

C1.3

DATE: APRIL 12, 2017
DRAWN BY: AJG
DESIGNED BY: AJG/TY
CHECKED BY: TY/MB
JOB NO.: 9019.000

UTILITY KEY:

WL	PROPOSED WATER/GAS
SS	PROPOSED SEWER
SD	PROPOSED STORM DRAIN
EX WL	EXISTING WATER
	EASEMENT

PRELIMINARY SANITARY SEWER NOTES:

1. MAXIMUM MANHOLE SPACING IS 400 FEET.
2. THE INVERT GRADE AT THE EXIT OF EACH MANHOLE IS 0.1 FOOT BELOW THE INVERT GRADE OF THE ENTRANCE PIPE.
3. MINIMUM SLOPE OF 8" SDR 35 PIPE IS 0.5%.
4. ALL MANHOLES SHALL BE A CONE TYPE 1-A AS SHOWN ON STANDARD DETAIL NO. WR-1.3: TYPE 1-A MANHOLE" WITH THE VERTICAL WALL ON THE INFLOW SIDE.
5. WATERTIGHT, BOLTED MANHOLE COVERS SHALL BE USED ON MANHOLES LOCATED IN AREAS SUBJECT TO FLOODING.
6. AT LOCATIONS WHERE FORCE MAIN RUNS PARALLEL TO GRAVITY MAIN, COMMON TRENCH.
7. REFERENCE SEWER REPORT FOR PROPOSED FORCE MAIN DETAILS.

SCALE: 1" = 100'

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Exp: 06/30/2018

NNV1 PARTNERS, LLC

SIERRA VILLAGE PRELIMINARY UTILITY PLAN

RENO · WASHOE · NEVADA

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

C2.0

DATE:	APRIL 12, 2017
DRAWN BY:	MHU
DESIGNED BY:	AJG/TY
CHECKED BY:	TY/MB
JOB NO.:	9019.000

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UTILITY KEY:

WL	PROPOSED WATER/GAS
SS	PROPOSED SEWER
SD	PROPOSED STORM DRAIN
EX WL	EXISTING WATER
	EASEMENT

PRELIMINARY SANITARY SEWER NOTES:

1. MAXIMUM MANHOLE SPACING IS 400 FEET.
2. THE INVERT GRADE AT THE EXIT OF EACH MANHOLE IS 0.1 FOOT BELOW THE INVERT GRADE OF THE ENTRANCE PIPE.
3. MINIMUM SLOPE OF 8" SDR 35 PIPE IS 0.5%.
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7. REFERENCE SEWER REPORT FOR PROPOSED FORCE MAIN DETAILS.

100 50 0 100 200

SCALE: 1" = 100'

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NNV1 PARTNERS, LLC

TIOGA VILLAGE
PRELIMINARY UTILITY PLAN

RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

C2.1

DATE:	APRIL 12, 2017
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UTILITY KEY:

WL	PROPOSED WATER/GAS
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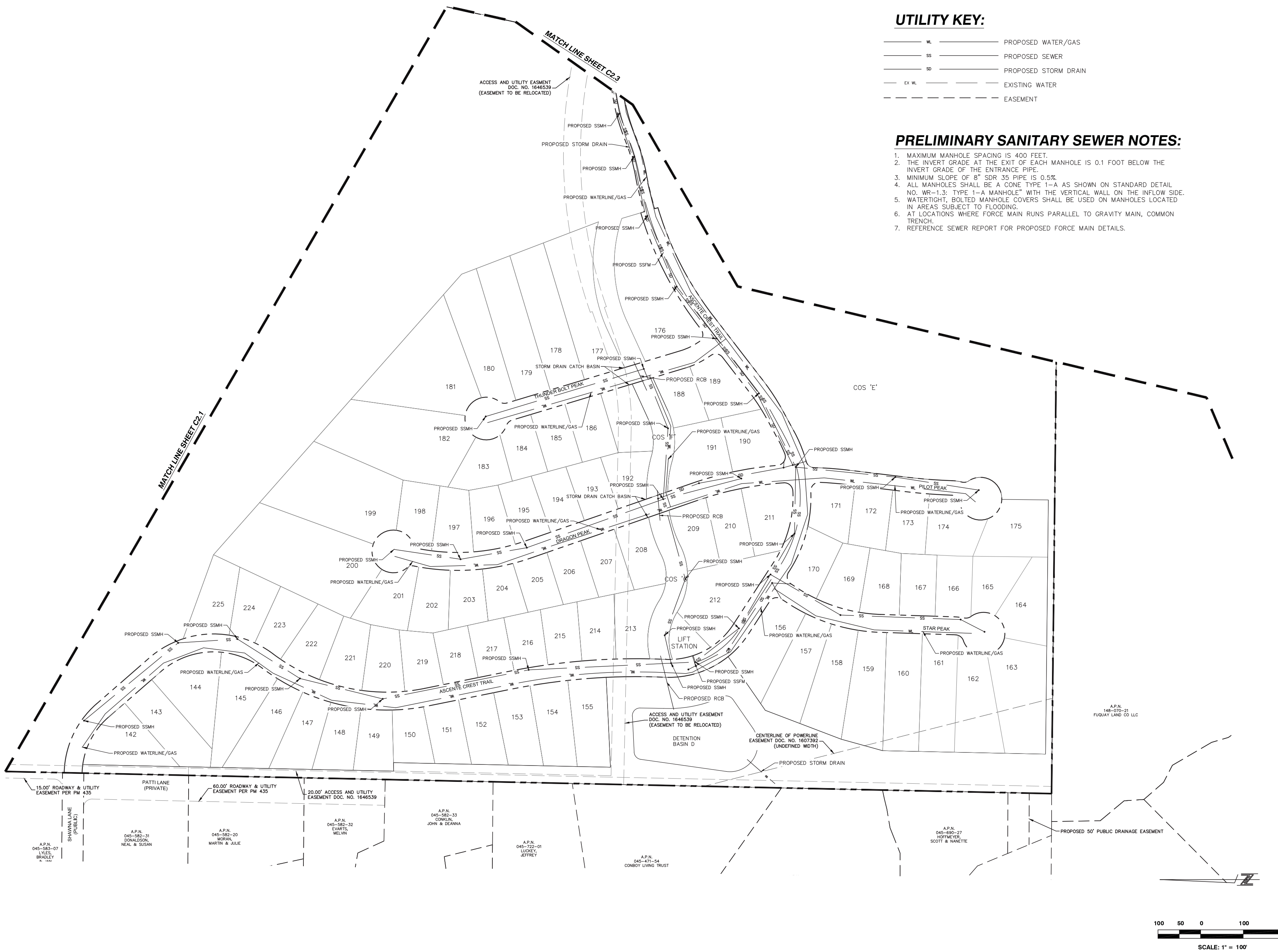

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DONNER VILLAGE
PRELIMINARY UTILITY PLAN

CITY COUNTY STATE

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

C2.2

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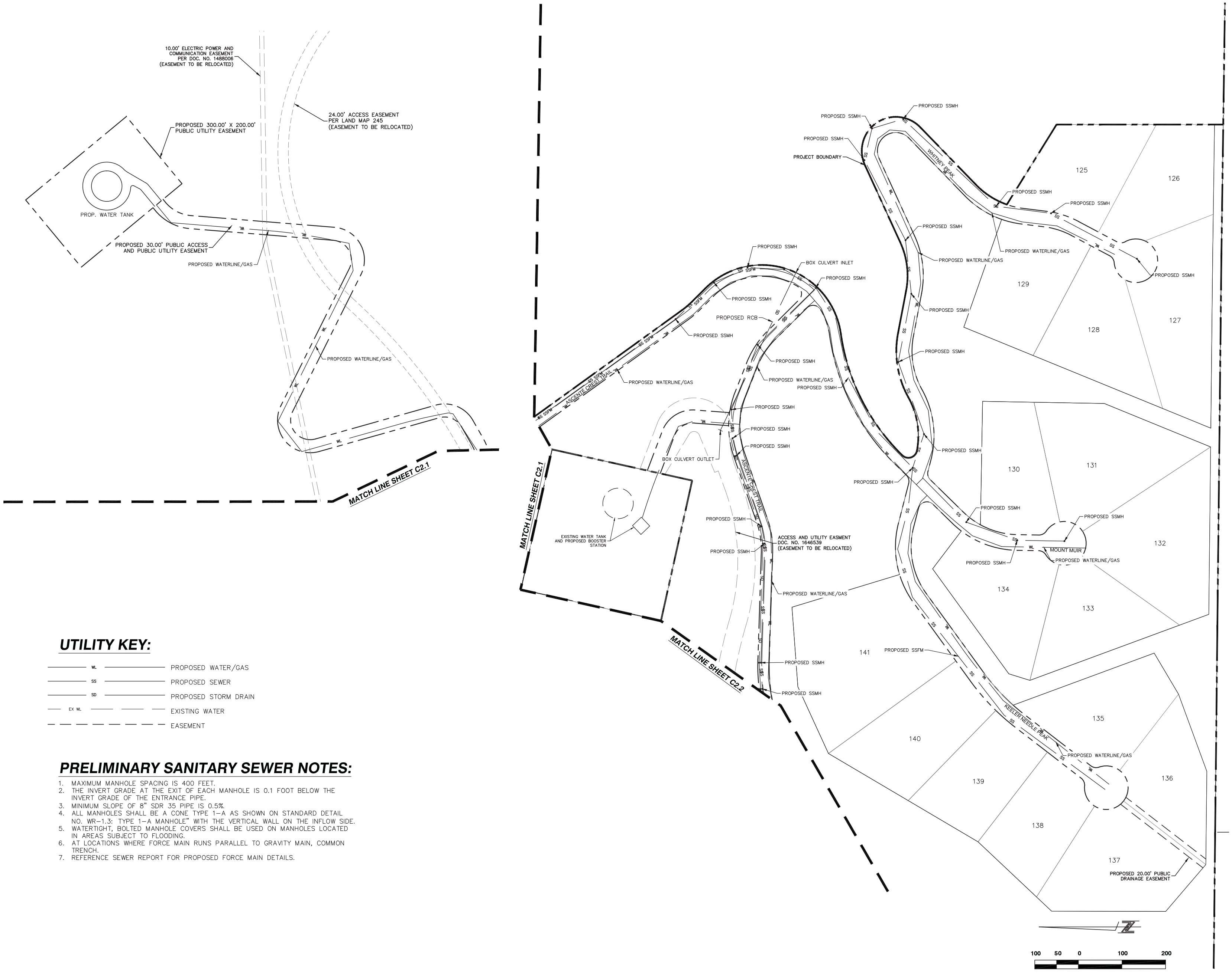

UTILITY KEY:

WL	PROPOSED WATER/GAS
SS	PROPOSED SEWER
SD	PROPOSED STORM DRAIN
EX WL	EXISTING WATER
	EASEMENT

PRELIMINARY SANITARY SEWER NOTES:

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7. REFERENCE SEWER REPORT FOR PROPOSED FORCE MAIN DETAILS.

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Exp: 06/30/2018

NNV1 PARTNERS, LLC

WHITNEY VILLAGE / PROPOSED WATER TANK PRELIMINARY UTILITY PLAN

RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

C2.3

DATE:	APRIL 12, 2017
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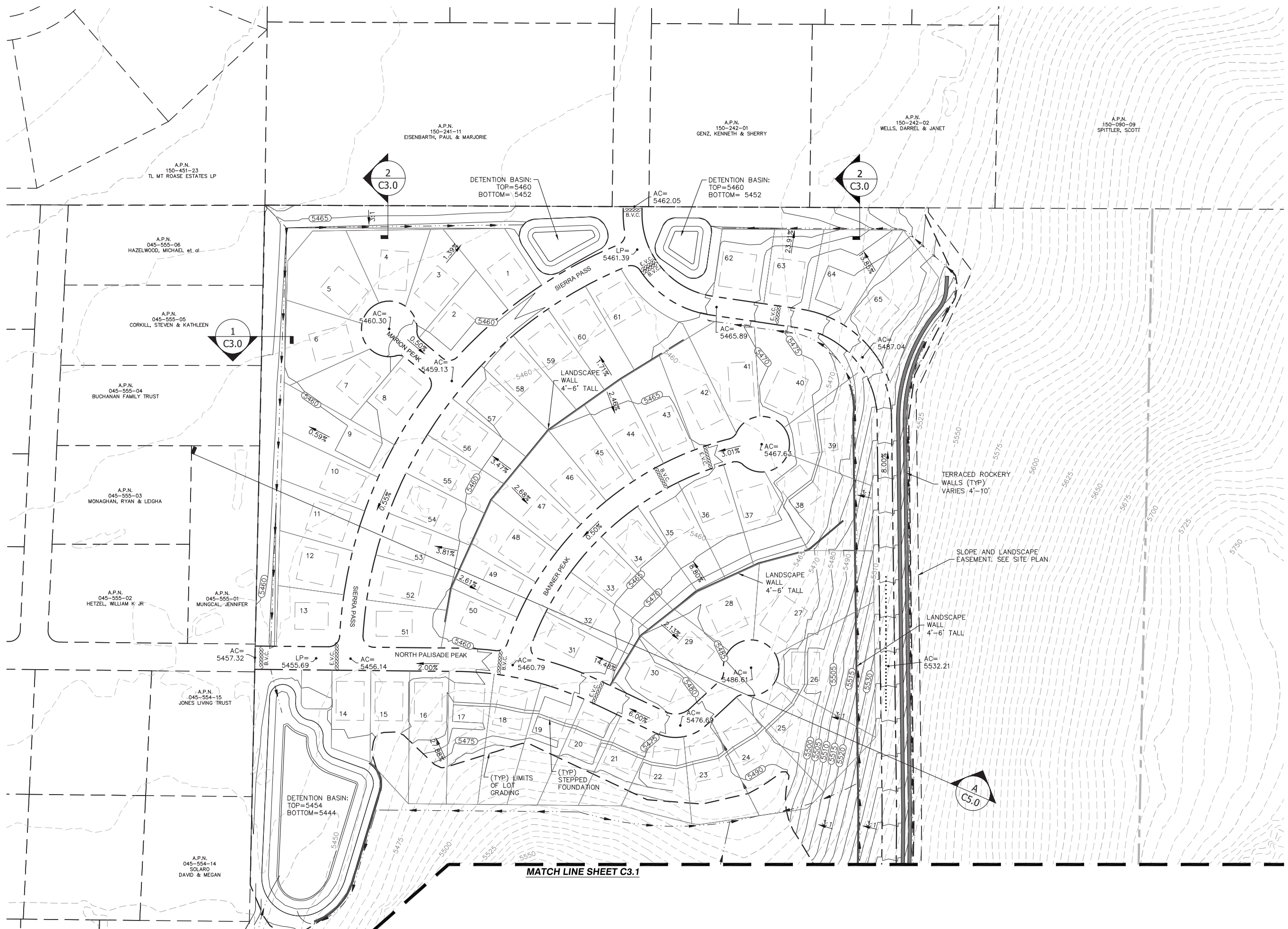
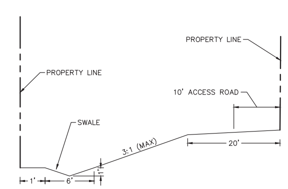
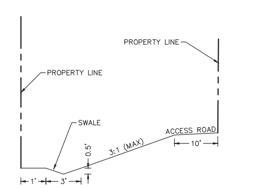




SWALE SECTION 1/C3.0
SCALE: N.T.S.



SWALE SECTION 2/C3.0
SCALE: N.T.S.

GRADING KEY:

- CONCRETE SWALE
- BEGIN OR END VERTICAL CURVE
- STREET SLOPE OR SPOT ELEVATION
- ROCKERY RETAINING WALL
- PROPOSED CONTOUR
- EXISTING CONTOUR
- GRADING LIMITS
- STEPPED FOUNDATION BUILDING ENVELOPE

PRELIMINARY GRADING NOTES:

1. ESTIMATED EARTHWORK: CUT – 610,000 CY
   FILL – 521,000 CY
   AREA TO BALANCE AFTER CLEAR & GRUB AND ROCK LOSS FACTOR
2. AREA OF DISTURBANCE: 123.72 ACRES
3. 3:1 MAXIMUM SLOPE ON ALL CATCH SLOPES, DETENTION BASINS, AND DITCHES.
4. NO MATERIAL IS TO BE REMOVED FROM THE SITE.
5. ROCKERY WALL TERRACES TO HAVE A BENCH WIDTH OF 6' MINIMUM AND A MAXIMUM WALL HEIGHT OF 10'
6. SEE SHEET C3.4 FOR ALL TYPICAL LOT GRADING SCENARIOS
7. BEST MANAGEMENT PRACTICES:
   - 7.1. IF A DISTURBED AREA IS LEFT UNDEVELOPED FOR OVER THIRTY DAYS, THE AREA IS TO BE TREATED TO PREVENT EROSION. THE TREATMENT MAY INCLUDE REVEGETATION, STRAW MATTING, AND/OR HYDROSEEDING, SURFACE APPLICATION OF WATER TO PREVENT WIND EROSION AND PROMOTE GROWTH OF VEGETATION. THIS IS REQUIRED UNTIL VEGETATION IS FULLY ESTABLISHED AND THE SITE IS STABILIZED.
   - 7.2. WADDLES WILL BE INSTALLED ACROSS ALL STORM DRAIN INLETS, DEPRESSED CURB INLETS, CULVERT INLETS, AND LOW-FLOW PIPES TO PREVENT TRANSPORT OF SITE-GENERATED SEDIMENT.
   - 7.3. STRAW BALES WILL BE PLACED ACROSS THE DOWNSTREAM END OF ALL GRADED CHANNELS AND DITCHES TO PROTECT BASIN OUTLET WEIRS AND LOW-FLOW OUTLET PIPES.
   - 7.4. CONTINUOUS SILT FENCING WILL BE INSTALLED ALONG THE ENTIRE SITE PERIMETER.
   - 7.5. APPLICATION OF WATER TO PREVENT WIND BLOWN SEDIMENT TRANSPORT WILL BE REQUIRED FOR ALL EXPOSED SURFACES THROUGHOUT THE DURATION OF CONSTRUCTION.
8. SEE SHEET C5.0 FOR APPROPRIATE CROSS SECTION
9. SNOW STORAGE AREAS ARE THE PROPOSED DETENTION BASINS AND COMMON OPEN SPACE.
10. REFERENCE DRAINAGE REPORT FOR EXISTING AND PROPOSED DRAINAGE PATTERNS.

100 50 0 100 200
SCALE: 1" = 200

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04/12/17
CIVIL
No. 13797
Exp: 06/30/2018

NNV1 PARTNERS, LLC

SIERRA VILLAGE
PRELIMINARY GRADING PLAN

RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

C3.0

DATE:	APRIL 12, 2017
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CHECKED BY:	TY/MB
JOB NO.:	9019.000

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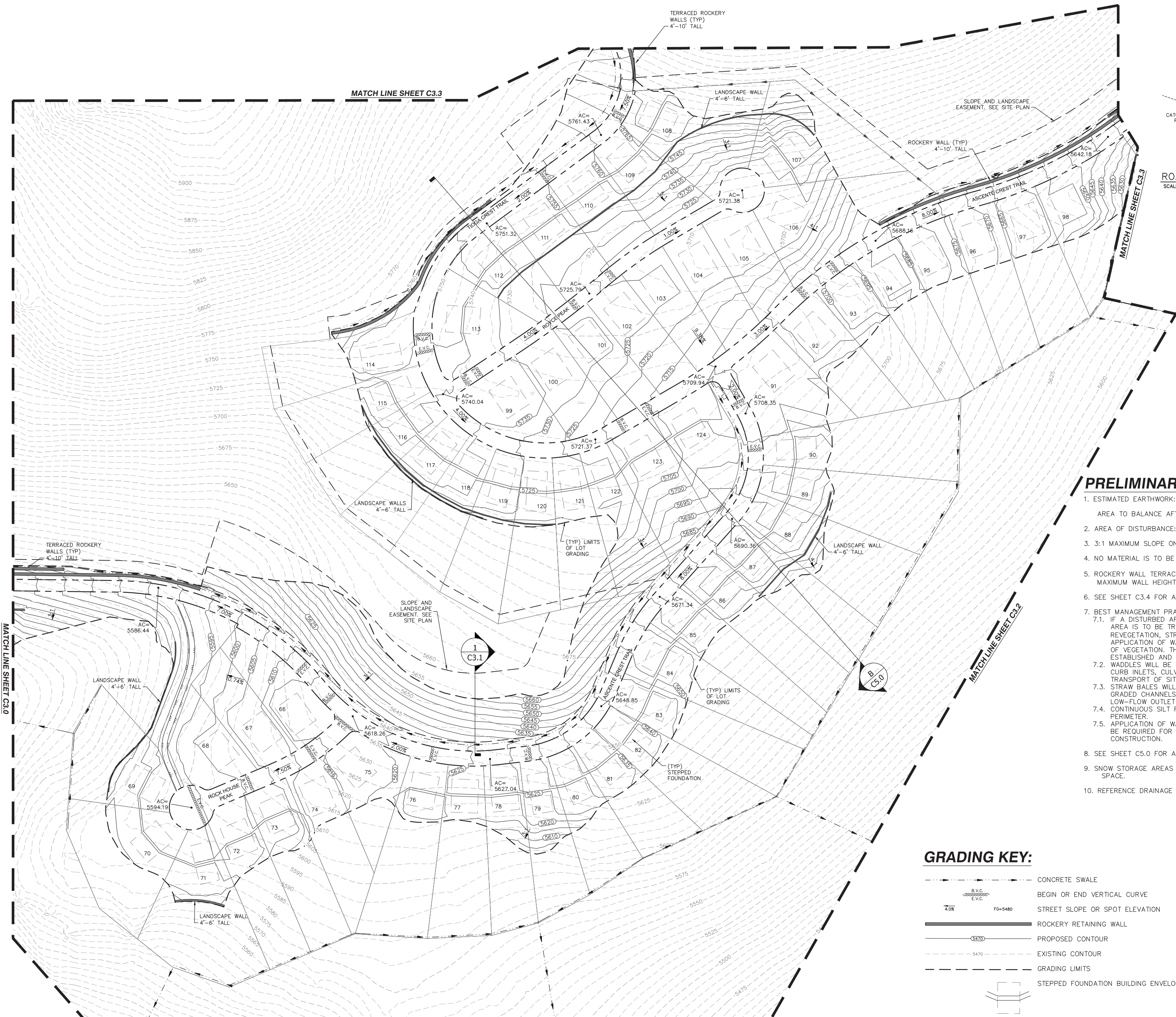
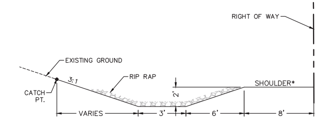
04/13/2017 10:24 am mlaack





* SHOULDER TO INCLUDE SNOW STORAGE, SIGNAGE, AND LANDSCAPING

ROADSIDE CHANNEL SECTION 1 C3.1
SCALE: N.T.S.

PRELIMINARY GRADING NOTES:

1. ESTIMATED EARTHWORK: CUT – 610,000 CY
   FILL – 521,000 CY
   AREA TO BALANCE AFTER CLEAR & GRUB AND ROCK LOSS FACTOR
2. AREA OF DISTURBANCE: 123.72 ACRES
3. 3:1 MAXIMUM SLOPE ON ALL CATCH SLOPES, DETENTION BASINS, AND DITCHES.
4. NO MATERIAL IS TO BE REMOVED FROM THE SITE.
5. ROCKERY WALL TERRACES TO HAVE A BENCH WIDTH OF 6' MINIMUM AND A MAXIMUM WALL HEIGHT OF 10'
6. SEE SHEET C3.4 FOR ALL TYPICAL LOT GRADING SCENARIOS
7. BEST MANAGEMENT PRACTICES:
   7.1. IF A DISTURBED AREA IS LEFT UNDEVELOPED FOR OVER THIRTY DAYS, THE AREA IS TO BE TREATED TO PREVENT EROSION. THE TREATMENT MAY INCLUDE REVEGETATION, STRAW MATTING, AND/OR HYDROSEEDING. SURFACE APPLICATION OF WATER TO PREVENT WIND EROSION AND PROMOTE GROWTH OF VEGETATION. THIS IS REQUIRED UNTIL VEGETATION IS FULLY ESTABLISHED AND THE SITE IS STABILIZED.
   7.2. WADDLES WILL BE INSTALLED ACROSS ALL STORM DRAIN INLETS, DEPRESSED CURB INLETS, CULVERT INLETS, AND LOW–FLOW PIPES TO PREVENT TRANSPORT OF SITE–GENERATED SEDIMENT.
   7.3. STRAW BALES WILL BE PLACED ACROSS THE DOWNSTREAM END OF ALL GRADED CHANNELS AND DITCHES TO PROTECT BASIN OUTLET WEIRS AND LOW–FLOW OUTLET PIPES.
   7.4. CONTINUOUS SILT FENCING WILL BE INSTALLED ALONG THE ENTIRE SITE PERIMETER.
   7.5. APPLICATION OF WATER TO PREVENT WIND BLOWN SEDIMENT TRANSPORT WILL BE REQUIRED FOR ALL EXPOSED SURFACES THROUGHOUT THE DURATION OF CONSTRUCTION.
8. SEE SHEET C5.0 FOR APPROPRIATE CROSS SECTION
9. SNOW STORAGE AREAS ARE THE PROPOSED DETENTION BASINS AND COMMON OPEN SPACE.
10. REFERENCE DRAINAGE REPORT FOR EXISTING AND PROPOSED DRAINAGE PATTERNS.

GRADING KEY:

- CONCRETE SWALE
- BEGIN OR END VERTICAL CURVE
- STREET SLOPE OR SPOT ELEVATION
- ROCKERY RETAINING WALL
- PROPOSED CONTOUR
- EXISTING CONTOUR
- GRADING LIMITS
- STEPPED FOUNDATION BUILDING ENVELOPE

100 50 0 100 200
SCALE: 1" = 100'

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NNV1 PARTNERS, LLC

TIOGA VILLAGE PRELIMINARY GRADING PLAN

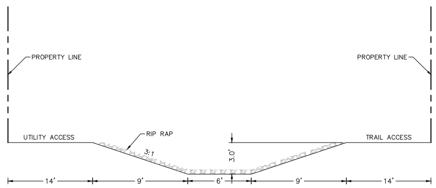
RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

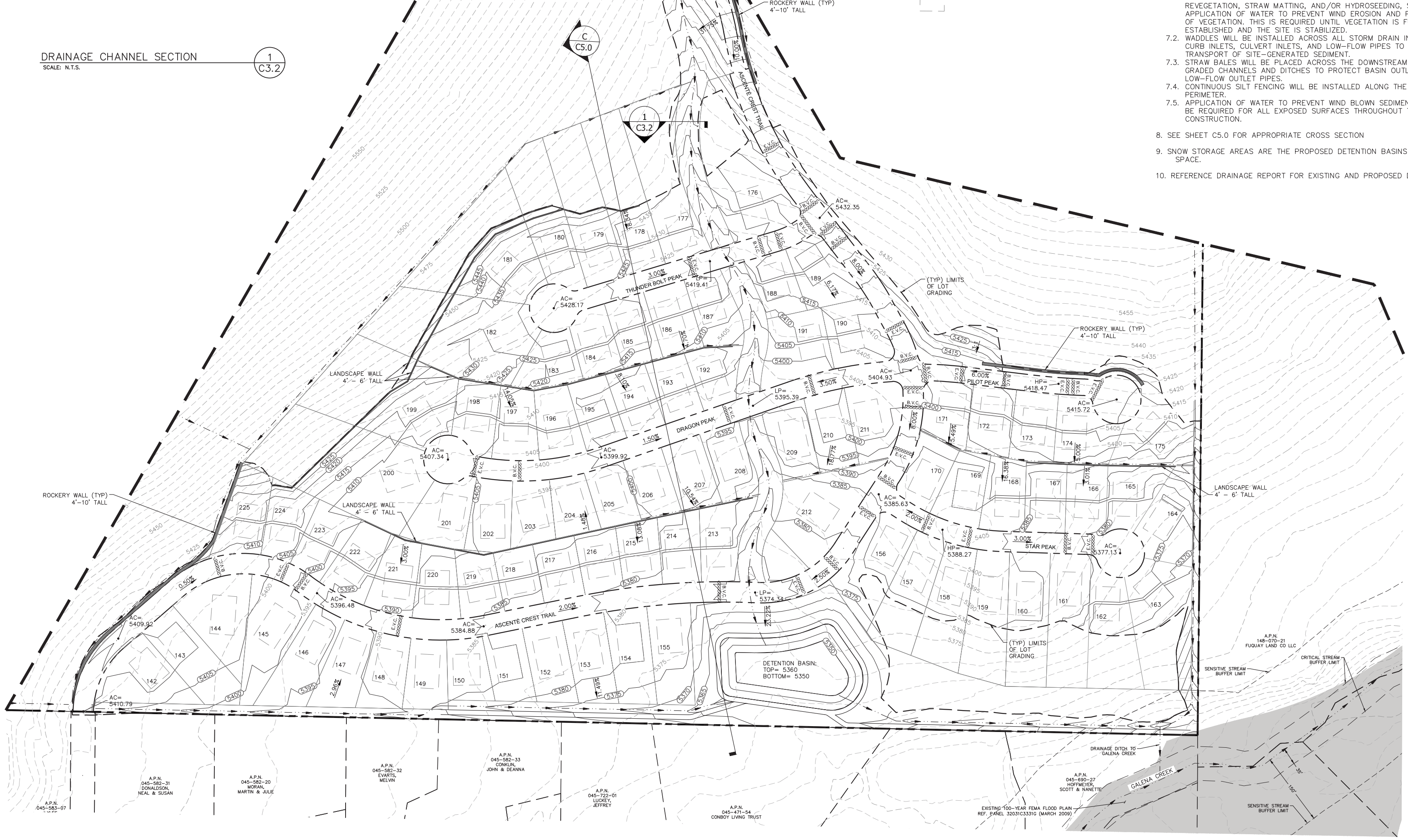
TENTATIVE MAP

C3.1

DATE:	APRIL 12, 2017
DRAWN BY:	MKL
DESIGNED BY:	AJG/TY
CHECKED BY:	TY/MB
JOB NO.:	9019.000



DRAINAGE CHANNEL SECTION 1/C3.2
SCALE: N.T.S.



GRADING KEY:

- CONCRETE SWALE
- BEGIN OR END VERTICAL CURVE (B.V.C. / E.V.C.)
- STREET SLOPE OR SPOT ELEVATION (4.0% / FG=5480)
- ROCKERY RETAINING WALL
- PROPOSED CONTOUR (5470)
- EXISTING CONTOUR (5470)
- GRADING LIMITS
- STEPPED FOUNDATION BUILDING ENVELOPE

PRELIMINARY GRADING NOTES:

1. ESTIMATED EARTHWORK: CUT – 610,000 CY
   FILL – 521,000 CY
   AREA TO BALANCE AFTER CLEAR & GRUB AND ROCK LOSS FACTOR
2. AREA OF DISTURBANCE: 123.72 ACRES
3. 3:1 MAXIMUM SLOPE ON ALL CATCH SLOPES, DETENTION BASINS, AND DITCHES.
4. NO MATERIAL IS TO BE REMOVED FROM THE SITE.
5. ROCKERY WALL TERRACES TO HAVE A BENCH WIDTH OF 6' MINIMUM AND A MAXIMUM WALL HEIGHT OF 10'
6. SEE SHEET C3.4 FOR ALL TYPICAL LOT GRADING SCENARIOS
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SCALE: 1" = 100'
100 50 0 100 200

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Exp: 06/30/2018

NNV1 PARTNERS, LLC

DONNER VILLAGE
PRELIMINARY GRADING PLAN

RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

C3.2

DATE:	APRIL 12, 2017
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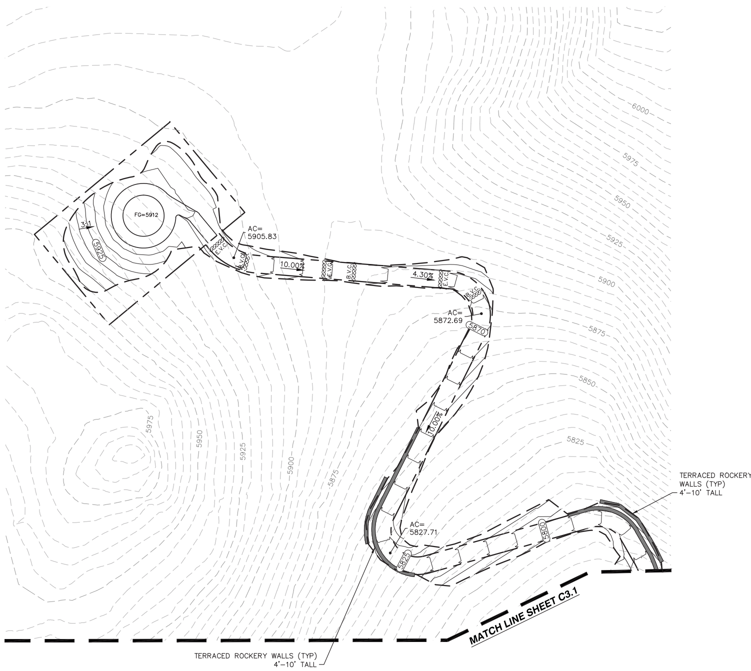
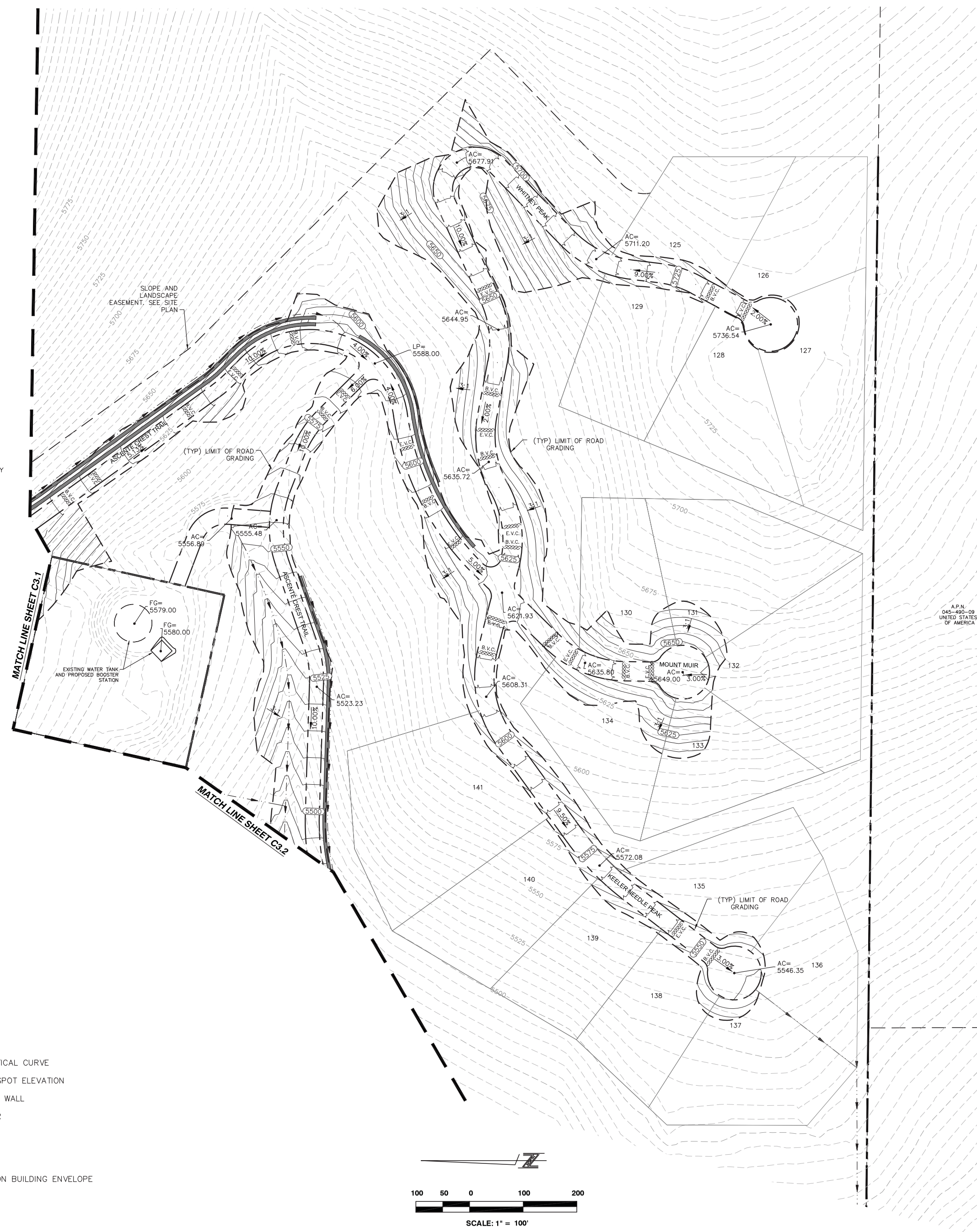
L:\LAPro\9019.000 - Acente-Matera Ridge Tentative Map\DWG\Civil 3D\9019.000- Grading Base.dwg,Custom Village,
04/13/2017 10:25 am mlaack





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6. SEE SHEET C3.4 FOR ALL TYPICAL LOT GRADING SCENARIOS
7. BEST MANAGEMENT PRACTICES:
   7.1. IF A DISTURBED AREA IS LEFT UNDEVELOPED FOR OVER THIRTY DAYS, THE AREA IS TO BE TREATED TO PREVENT EROSION. THE TREATMENT MAY INCLUDE REVEGETATION, STRAW MATTING, AND/OR HYDROSEEDING, SURFACE APPLICATION OF WATER TO PREVENT WIND EROSION AND PROMOTE GROWTH OF VEGETATION. THIS IS REQUIRED UNTIL VEGETATION IS FULLY ESTABLISHED AND THE SITE IS STABILIZED.
   7.2. WADDLES WILL BE INSTALLED ACROSS ALL STORM DRAIN INLETS, DEPRESSED CURB INLETS, CULVERT INLETS, AND LOW-FLOW PIPES TO PREVENT TRANSPORT OF SITE-GENERATED SEDIMENT.
   7.3. STRAW BALES WILL BE PLACED ACROSS THE DOWNSTREAM END OF ALL GRADED CHANNELS AND DITCHES TO PROTECT BASIN OUTLET WEIRS AND LOW-FLOW OUTLET PIPES.
   7.4. CONTINUOUS SILT FENCING WILL BE INSTALLED ALONG THE ENTIRE SITE PERIMETER.
   7.5. APPLICATION OF WATER TO PREVENT WIND BLOWN SEDIMENT TRANSPORT WILL BE REQUIRED FOR ALL EXPOSED SURFACES THROUGHOUT THE DURATION OF CONSTRUCTION.
8. SEE SHEET C5.0 FOR APPROPRIATE CROSS SECTION
9. SNOW STORAGE AREAS ARE THE PROPOSED DETENTION BASINS AND COMMON OPEN SPACE.
10. REFERENCE DRAINAGE REPORT FOR EXISTING AND PROPOSED DRAINAGE PATTERNS.

GRADING KEY:

	CONCRETE SWALE
B.V.C. / E.V.C.	BEGIN OR END VERTICAL CURVE
4.0% FG=5480	STREET SLOPE OR SPOT ELEVATION
	ROCKERY RETAINING WALL
5470	PROPOSED CONTOUR
5470	EXISTING CONTOUR
	GRADING LIMITS
	STEPPED FOUNDATION BUILDING ENVELOPE

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THOMAS W. YOUNG
04/12/17
CIVIL
No. 13797
Exp: 06/30/2018

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WHITNEY VILLAGE
PRELIMINARY GRADING PLAN

RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

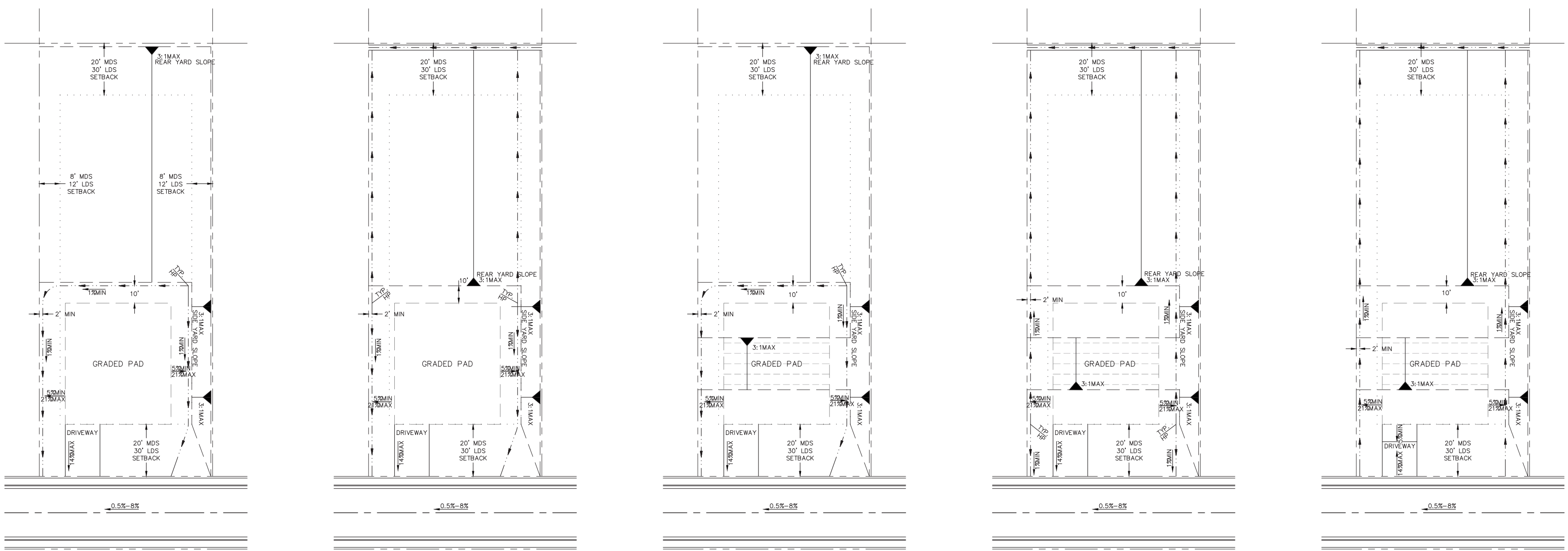
TENTATIVE MAP

C3.3

DATE:	APRIL 12, 2017
DRAWN BY:	MKL
DESIGNED BY:	AJG/TY
CHECKED BY:	TY/MB
JOB NO.:	9019.000

GRADING KEY:

- FLOWLINE
- PROPERTY LINE
- TOP OF SLOPE
- TOE OF SLOPE



FLAT PAD
ALL FLOW TO STREET

FLAT PAD
DOWN–SLOPE IN REAR
REAR FLOW TO REAR

STEPPED PAD
UP–SLOPE IN REAR
FLOW TO FRONT

STEPPED PAD
DOWN–SLOPE IN REAR
FLOW TO REAR

STEPPED PAD
DOWN–SLOPE IN REAR
DEPRESSED PAD
ALL FLOW TO REAR

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04/12/17
CIVIL
No. 13797
STATE OF NEVADA
Exp: 06/30/2018

NNV1 PARTNERS, LLC

PRELIMINARY GRADING PLAN
TYPICAL LOT GRADING

RENO WASHOE NEVADA

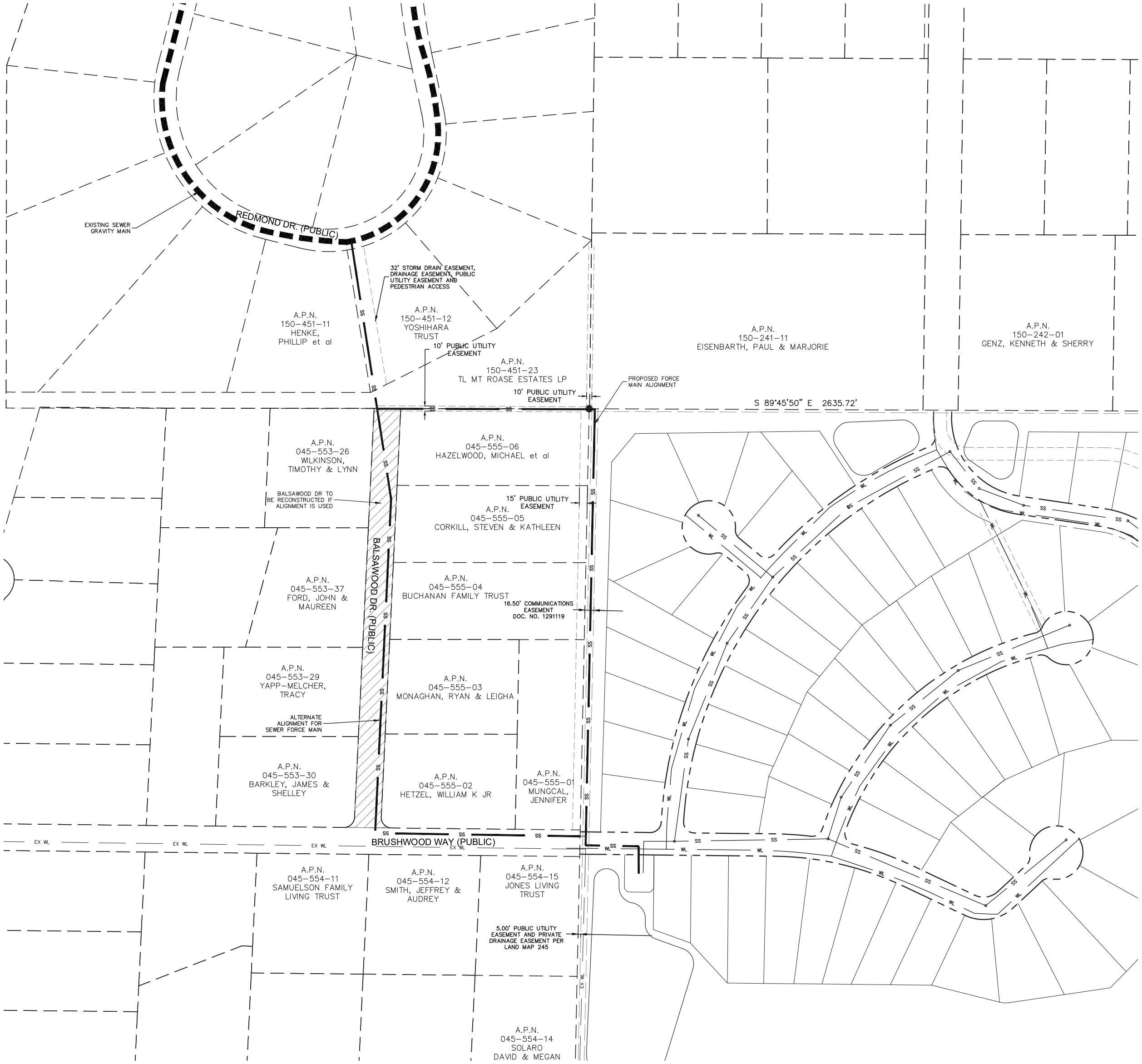
REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

C3.4

DATE: APRIL 12, 2017
DRAWN BY: MKL
DESIGNED BY: AJG/TY
CHECKED BY: TY/MB
JOB NO.: 9019.000

L:\LAPro\9019.000 – Acente-Matera Ridge Tentative Map\DWG\Civil 3D\9019.000- Grading Base.dwg,Typ Lot Grading C3.4,
04/13/2017 10:10 am mlaack



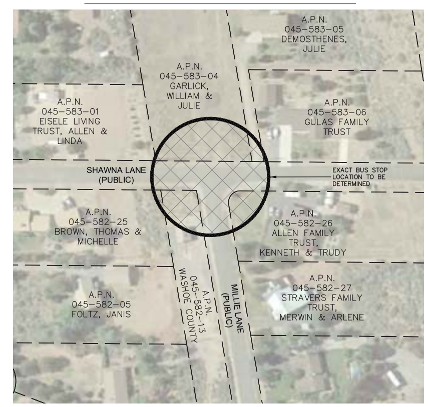
OFFSITE IMPROVEMENTS KEY:

- EXISTING SANITARY SEWER GRAVITY MAIN
- SS — PROPOSED SANITARY SEWER FORCE MAIN
- ROAD RECONSTRUCTION
- BUS STOP LOCATION

OFFSITE IMPROVEMENT NOTES:

1. WATER MAIN TO CONNECT TO EXISTING WATER MAIN ON BRUSHWOOD WAY. SEE TMWA DISCOVERY.
2. SEWER FORCE MAIN TO TIE INTO EXISTING SEWER GRAVITY MAIN ON REDMOND DR.
3. BALSAWOOD DR. TO BE RECONSTRUCTED IF THE ALTERNATE SEWER FORCE MAIN ALIGNMENT IS USED.
4. BUS STOP TO BE LOCATED AT INTERSECTION OF SHAWNA LANE AND MILLIE LANE PER RTC STANDARDS AND GUIDELINES
5. REFERENCE SEWER REPORT FOR ADDITIONAL INFORMATION REGARDING PROPOSED AND ALTERNATE OFFSITE SEWER ALIGNMENTS

BUS STOP IMPROVEMENTS:



100 50 0 100 200

SCALE: 1" = 100'

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Exp: 06/30/2018

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PRELIMINARY OFFSITE IMPROVEMENT PLAN

CITY | COUNTY | STATE

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

C4.0

DATE:	APRIL 12, 2017
DRAWN BY:	AJG
DESIGNED BY:	AJG/TY
CHECKED BY:	TY/MB
JOB NO.:	9019.000

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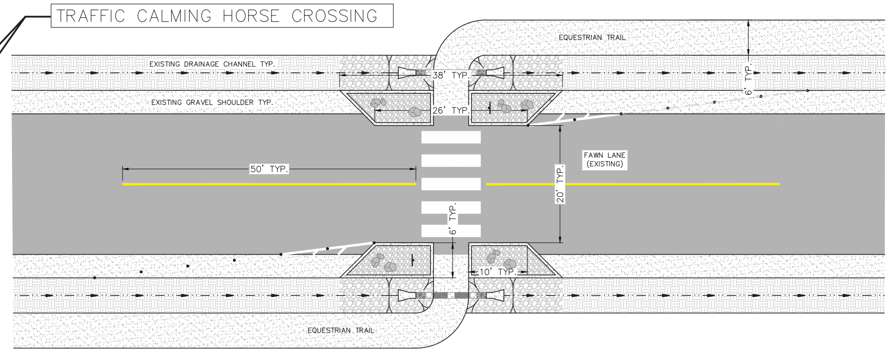
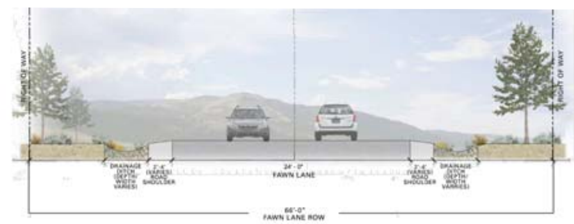
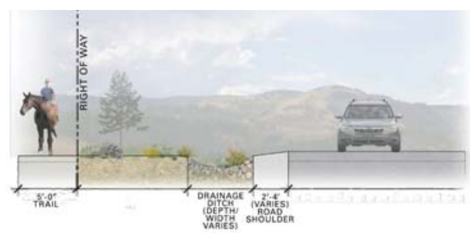
TRAFFIC CALMING HORSE CROSSING



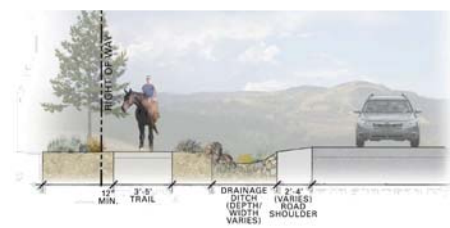
FAWN LANE TRAIL SECTIONS



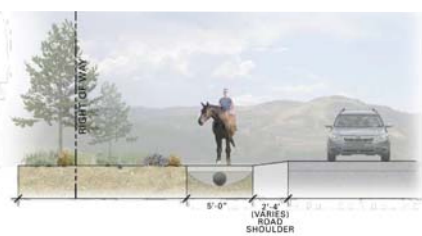
TYPICAL EXISTING SECTION THROUGH FAWN LANE



① CONDITION ALONG FOREST SERVICE PROPERTY



② CONDITION ALONG PRIVATE PROPERTY – OPEN CHANNEL



③ CONDITION ALONG PRIVATE PROPERTY – COVERED DITCH

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CIVIL
No. 13797
STATE OF NEVADA
Exp: 06/30/2018

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PRELIMINARY OFFSITE IMPROVEMENT PLAN

CITY COUNTY STATE

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

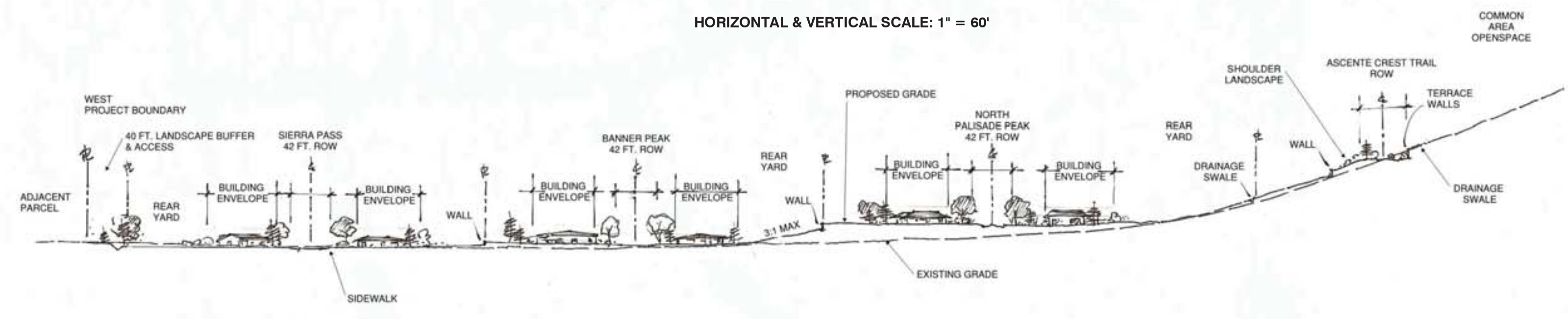
C4.1

DATE:	APRIL 12, 2017
DRAWN BY:	AJG
DESIGNED BY:	AJG/TY
CHECKED BY:	TY/MB
JOB NO.:	9019.000

L:\LAPro\9019.000 - Acenté-Matera Ridge Tentative Map\DWG\Civil 3D\9019.000-REVISED CROSS SECTION.dwg,C5.0, 04/13/2017 09:50 am agreenblat

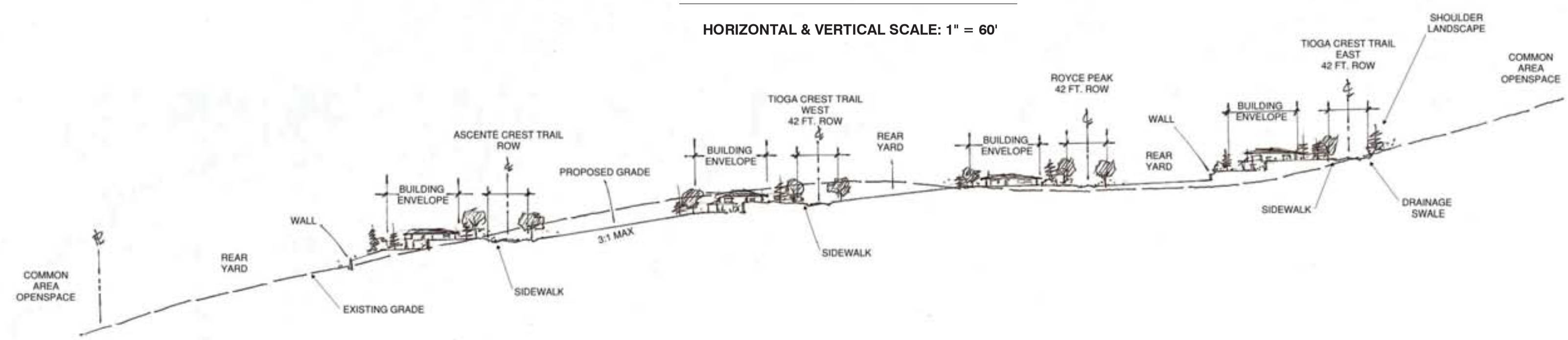
CROSS SECTION 'A' SIERRA VILLAGE

HORIZONTAL & VERTICAL SCALE: 1" = 60'



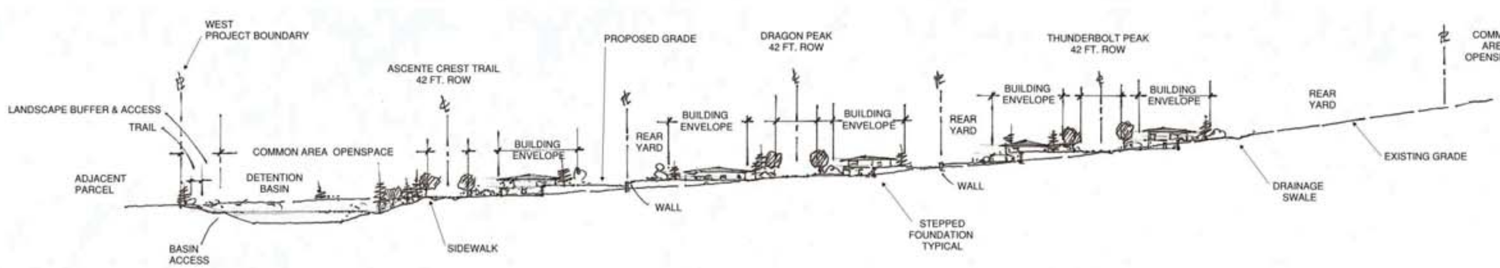
CROSS SECTION 'B' TIOGA VILLAGE

HORIZONTAL & VERTICAL SCALE: 1" = 60'



CROSS SECTION 'C' DONNER VILLAGE

HORIZONTAL & VERTICAL SCALE: 1" = 60'



60 30 0 60 120

SCALE: 1" = 60'

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No. 13797

Exp: 06/30/2018

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OVERALL SITE CROSS SECTIONS

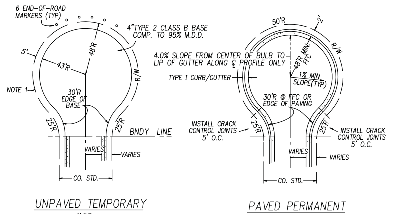
CITY | COUNTY | STATE

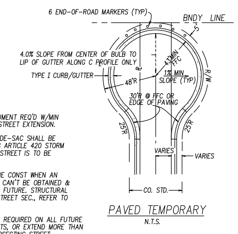
REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

C5.0

DATE:	APRIL 12, 2017
DRAWN BY:	MAC
DESIGNED BY:	MAC
CHECKED BY:	TY/MB
JOB NO.:	9019.000

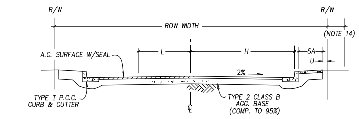




NOTES

1. TEMP TURNAROUND EASEMENT DOCUMENT REQ'D W/MIN 48' RADIUS TO BE ABANDONED W/STREET EXTENSION.
2. DRAINAGE OF UNPAVED TEMP CUL-DE-SAC SHALL BE CONSISTANT W/CO. STDS INCLUDING ARTICLE 420 STORM DRAINAGE & TO BE USED ONLY IF STREET IS TO BE EXTENDED WITHIN 1 YR.
3. PAVED TEMP TURNAROUND SHALL BE CONST WHEN AN OFF-SITE TEMP TURNAROUND EASE CAN'T BE OBTAINED & STREET IS TO BE EXTENDED IN THE FUTURE. STRUCTURAL SEC. OF TURNAROUND TO MATCH STREET SEC., REFER TO CODE 111.444 FOR CONSTRUCTION.
4. PAVED TEMPORARY TURNAROUND IS REQUIRED ON ALL FUTURE THROUGH-STREETS THAT FRONT LOTS, OR EXTEND MORE THAN 150 FT BEYOND THE NEAREST INTERSECTING STREET.

TYPICAL CUL-DE-SAC DETAIL (1/D1)
SCALE: N.T.S.

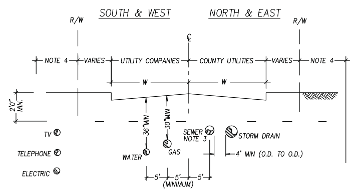


ROW	H	SA	U	L	B	PL	ADT MAX PER 2 TRAVEL LANES	REMARKS
52	20	5	0.5	12	4	0	9600	COLLECTOR
42	16	4	0.5	11	0	2	1000	LOCAL

NOTES

1. ALL WIDTHS ARE IN FEET.
2. H IS MEASURED TO THE FRONT FACE OF CURB.
3. L IS TRAVEL LANE; SA IS SIDEWALK AREA; B IS BICYCLE LANE; ROW IS RIGHT OF WAY PL IS MAX. NUMBER OF PARKING LANES; ADT IS AVERAGE DAILY TRAFFIC.
4. ADT REPRESENTS THE DESIGN VOLUME FOR A TWO LANE FACILITY.
5. BICYCLE LANES SHALL BE PROVIDED IN ACCORDANCE W/THE BICYCLE AND PEDESTRIAN ELEMENT OF THE REGIONAL TRANSPORTATION PLAN AND TO THE SATISFACTION OF THE COUNTY ENGINEER.
6. STRUCTURAL SECTIONS SHALL BE DETERMINED BY GEOTECHNICAL ENGINEERING DESIGN BUT IN NO CASE SHALL BE LESS THAN 4" A.C. OVER 6" GRAVEL BASE FOR COLLECTOR STREETS AND 3" A.C. OVER 6" GRAVEL BASE FOR LOCAL STREETS.
7. ALL CURB AND GUTTER IS MONOLITHIC CONCRETE AND L SHAPED PER STANDARD DETAIL.
8. SIDEWALK AREA SHALL BE @ 2% SLOPE TOWARD TOP OF CURB & COMPACTED 90% ASTM D-1557, BACKFILL SHALL BE EITHER TYPE 2 CLASS B BASE OR CLASS A BACKFILL.
9. ALL A.C. SURFACES SHALL BE SEALED IN ACCORDANCE WITH WASHOE CO. STANDARDS.
10. RESIDENTIAL ACCESS NOT ALLOWED TO STREETS ON WHICH 10YR. DESIGN ADT EXCEEDS 2000.
11. DESIGN OF IMPROVEMENTS TO BE DONE IN ACCORDANCE WITH ARTICLES 420 & 436 OF WASHOE COUNTY DEVELOPMENT STANDARDS AND DESIGN GUIDELINES.
12. ALL CONSTRUCTION IS TO BE DONE TO CURRENT WASHOE CO. STANDARDS & SPECIFICATIONS.
13. SLOPE EASEMENTS MAY BE REQ'D IN CERTAIN TERRAIN TO ACCOMMODATE ROADWAY SECTION.
14. MIN 7.5' PUBLIC UTILITY/TRAFFIC CONTROL SIGNAGE/PLOWED SNOW EASEMENT IS REQ'D ON BOTH SIDES OF ROW.

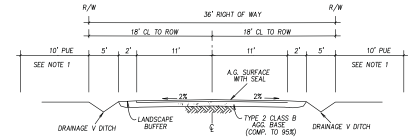
TYPICAL ROADWAY SECTION (2/D1)
SCALE: N.T.S.



NOTES

1. FOR ALL UTILITIES IN A COMMON TRENCH, SEE STANDARD DETAIL DWG. 1-3.
2. MAINTAIN A MIN SEPARATION OF 5' BETWEEN GAS LINE & WASHOE CO. UTILITIES WATER LINE.
3. 5' MIN FROM FINISHED GRADE TO FLOWLINE OF SANITARY SEWER.
4. MIN 7.5' PUBLIC UTILITY/TRAFFIC CONTROL SIGNAGE/PLOWED SNOW EASEMENT

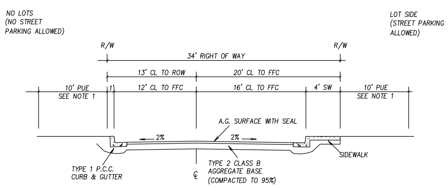
TYPICAL UTILITY MAIN LOCATIONS DETAIL (3/D1)
SCALE: N.T.S.



NOTES

1. MIN 10' PUBLIC UTILITY, TRAFFIC CONTROL SIGNAGE AND PLOWED SNOW EASEMENT
2. ROADWAY MAY SLOPE TO ONE SIDE

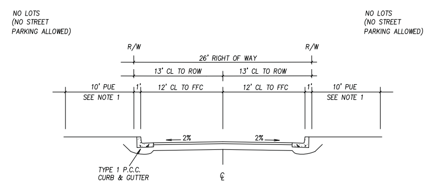
TYPICAL PRIVATE ROAD SECTION (4/D1)
SCALE: N.T.S.



NOTES

1. MIN 10' PUBLIC UTILITY, TRAFFIC CONTROL SIGNAGE AND PLOWED SNOW EASMENT

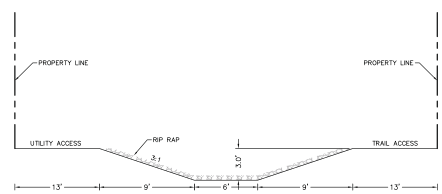
MODIFIED ROADWAY SECTION
SINGLE LOADED STREET (5/D1)
SCALE: N.T.S.



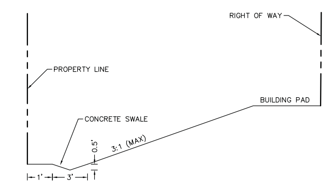
NOTES

1. MIN 10' PUBLIC UTILITY, TRAFFIC CONTROL SIGNAGE AND PLOWED SNOW EASMENT

MODIFIED ROADWAY SECTION
UNLOADED STREET (6/D1)
SCALE: N.T.S.



DRAINAGE CHANNEL SECTION (7/D1)
SCALE: N.T.S.



CONCRETE SWALE SECTION (8/D1)
SCALE: N.T.S.

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THOMAS W. YOUNG
04/12/17
CIVIL
No. 13797
Exp: 06/30/2018

NNV1 PARTNERS, LLC
ASCENTÉ
DETAIL SHEET
RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

C6.0

DATE: APRIL 12, 2017
DRAWN BY: CS
DESIGNED BY: AJG/TY
CHECKED BY: TY/MB
JOB NO.: 9019.000

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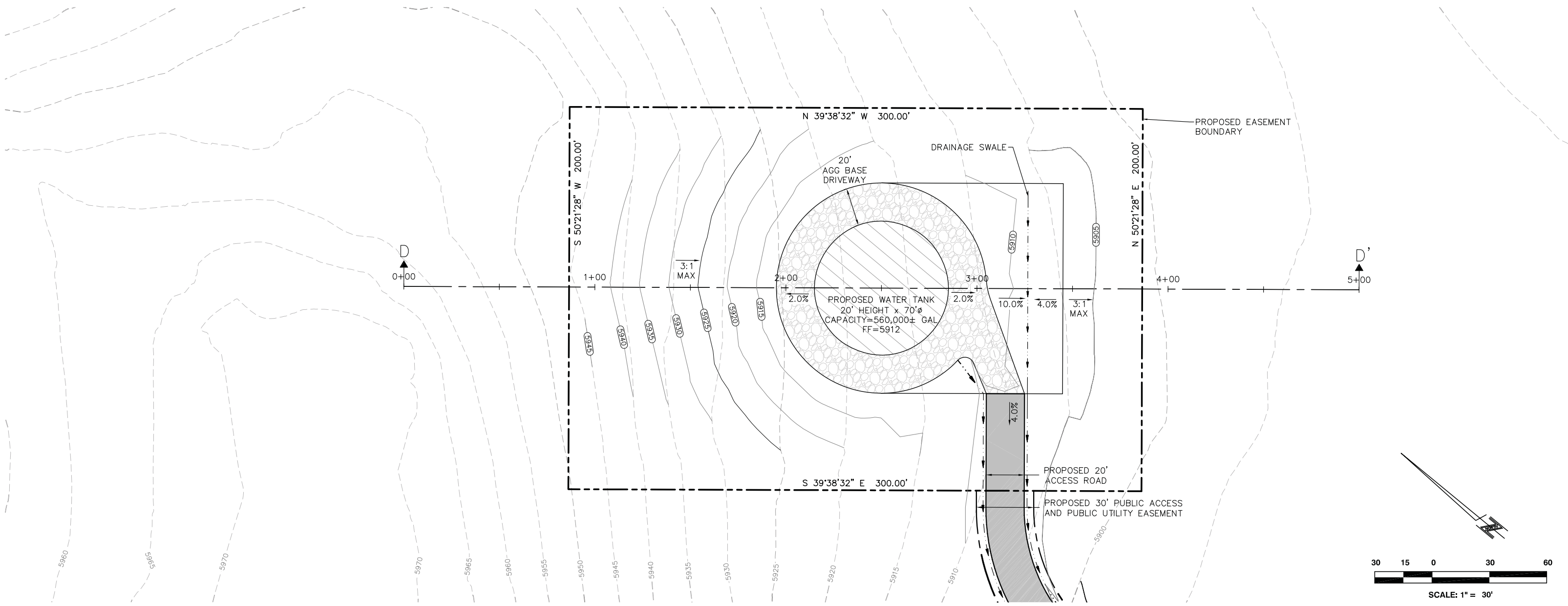
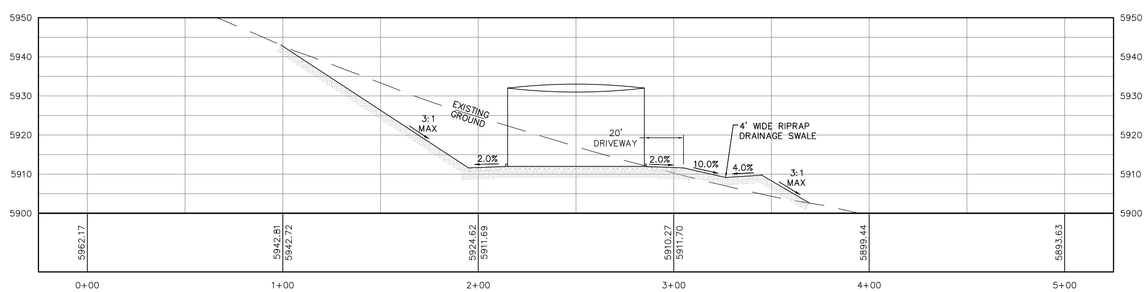


CROSS SECTION D-D'

HORIZONTAL SCALE: 1"=30'
VERTICAL SCALE: 1"=15'



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No. 13797
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ASCENTÉ PROPOSED WATER TANK CROSS SECTION DETAIL

RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

C6.1

DATE: APRIL 12, 2017
DRAWN BY: WRA
DESIGNED BY: AJG/TY
CHECKED BY: TY/MB
JOB NO.: 9019.000

L:\LAPro\9019.000 - Acenté-Matero Ridge Tentative Map\DWG\Civil 3D\9019.000- Grading Base_Water Tank-Private Lots-Connector Road.dwg,C6.1, 04/13/2017 09:40 am agreenblat

NNV1 PARTNERS, LLC

PRELIMINARY LANDSCAPE PLAN
OVERALL SITE

RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

L1.0

DATE: 04/12/2017
DRAWN BY: MAC
DESIGNED BY: MAC
CHECKED BY: TY/MB
JOB NO. 9019.000

04/12/2017

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LANDSCAPE LEGEND

- DECIDUOUS COMMON OPEN SPACE TREE – 1" & 2" CALIPER SIZE
- DECIDUOUS STREET TREE (BY HOME OWNER) – 1" & 2" CALIPER SIZE NOT EVENLY SPACED; MASSING ENCOURAGED
- ACCENT TREE – 1" & 2" CALIPER SIZE
- EVERGREEN TREE – 6' & 10' HT.
- SHRUBS – 1 GAL & 5 GAL SIZE
- PED/EQ = PEDESTRIAN/EQUESTRIAN TRAIL
- PED ONLY = PEDESTRIAN ONLY TRAIL
- SIDEWALK
- NOTEWORTHY OUT-CROPPING OR GROUP OF ROCKS
- TH = TRAILHEAD (SIGNAGE & ASSEMBLY AREA)
- ROCKERY RETAINING WALLS
- COS = COMMON OPEN SPACE
- ENHANCED LANDSCAPE
- DISTURBED LANDSCAPE – TO BE REVEGETATED
- NATIVE LANDSCAPE
- ROADWAYS
- FENCING: SEE LANDSCAPE HANDBOOK
- BOULDERS – MINIMUM. 1 FT. X 2 FT SIZE

PRELIMINARY LANDSCAPE NOTES:

1. ALL AREAS DISTURBED BY GRADING ACTIVITIES ARE TO RECEIVE EROSION CONTROL DRYLAND NATIVE REVEGETATION SEED MIX, UNLESS SHOW OTHERWISE.
2. ALL LANDSCAPED AREAS OUTSIDE OF LOTS ARE TO BE MAINTAINED BY THE HOMEOWNER'S ASSOCIATION (HOA).
3. STREET TREES SHOWN AT 50 FT. SPACING PER WASHOE COUNTY STANDARDS; BY HOMEOWNER ALONG LOT FRONTAGES BY HOMEOWNER; OUTSIDE LOTS PER HOA
4. COMMON TREE IRRIGATION TO BE BY METERED, DRIP IRRIGATION SYSTEM
5. STREET TREES TO BE IRRIGATED BY INDIVIDUAL LOT-OWNER'S METER
6. FOR TYPICAL FRONTYARD LANDSCAPE PLANS, SEE SHEET L1.5

30 15 0 30 60
SCALE: 1" = 30'

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SURVEYING / GIS
CONSTRUCTION SERVICES
MATERIALS TESTING

REGISTERED LANDSCAPE ARCHITECT MARC CHAPELLE 622 STATE OF NEVADA
04/12/2017

NNV1 PARTNERS, LLC

SIERRA VILLAGE PRELIMINARY LANDSCAPE PLAN

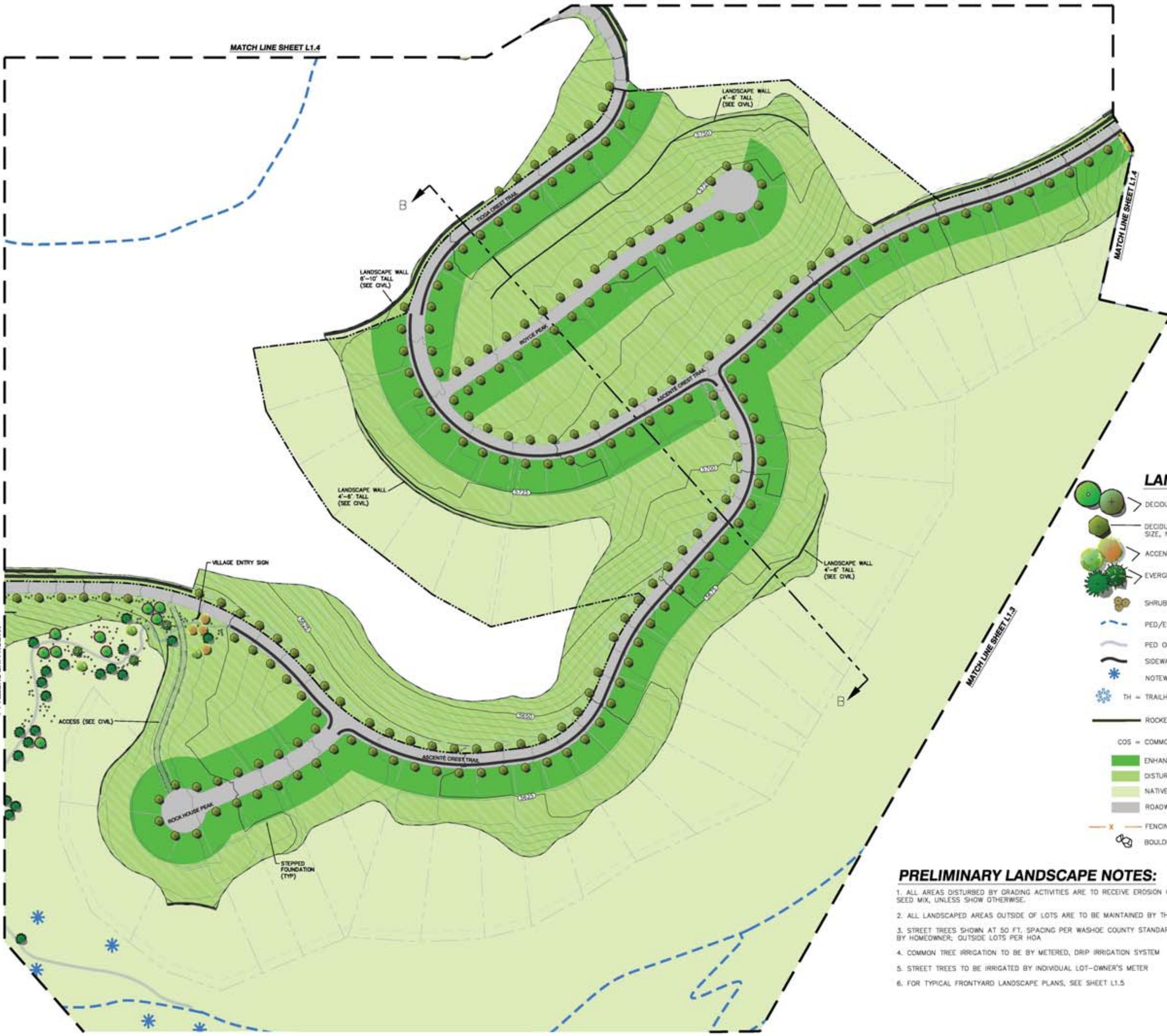
RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

L1.1

DATE:	04/17/2017
DRAWN BY:	MAC
DESIGNED BY:	AJG/TY
CHECKED BY:	TY/MB
JOB NO.:	9019.000



LANDSCAPE LEGEND

- DECIDUOUS COMMON OPEN SPACE TREE – 1" & 2" CALIPER SIZE
- DECIDUOUS STREET TREE (BY HOME OWNER) – 1" & 2" CALIPER SIZE, NOT EVENLY SPACED; MASSING ENCOURAGED
- ACCENT TREE – 1" & 2" CALIPER SIZE
- EVERGREEN TREE – 6' & 10' HT.
- SHRUBS – 1 GAL & 5 GAL SIZE
- PED/EQ = PEDESTRIAN/EQUESTRIAN TRAIL
- PED ONLY = PEDESTRIAN ONLY TRAIL
- SIDEWALK
- NOTEWORTHY OUT-CROPPING OR GROUP OF ROCKS
- TH = TRAILHEAD
- ROCKERY RETAINING WALLS
- COS = COMMON OPEN SPACE
- ENHANCED LANDSCAPE
- DISTURBED LANDSCAPE –TO BE REVEGETATED
- NATIVE LANDSCAPE
- ROADWAYS
- FENCING: SEE LANDSCAPE HANDBOOK
- BOULDERS – MINIMUM. 1 FT. X 2 FT SIZE

PRELIMINARY LANDSCAPE NOTES:

1. ALL AREAS DISTURBED BY GRADING ACTIVITIES ARE TO RECEIVE EROSION CONTROL DRYLAND NATIVE REVEGETATION SEED MIX, UNLESS SHOW OTHERWISE.
2. ALL LANDSCAPED AREAS OUTSIDE OF LOTS ARE TO BE MAINTAINED BY THE HOMEOWNER'S ASSOCIATION (HOA).
3. STREET TREES SHOWN AT 50 FT. SPACING PER WASHOE COUNTY STANDARDS; BY HOMEOWNER ALONG LOT FRONTAGES BY HOMEOWNER; OUTSIDE LOTS PER HOA
4. COMMON TREE IRRIGATION TO BE BY METERED, DRIP IRRIGATION SYSTEM
5. STREET TREES TO BE IRRIGATED BY INDIVIDUAL LOT-OWNER'S METER
6. FOR TYPICAL FRONTYARD LANDSCAPE PLANS, SEE SHEET L1.5

100 50 0 100 200

SCALE: 1" = 100'

LUMOS & ASSOCIATES

800 E. COLLEGE PARKWAY
CARSON CITY, NEVADA 89706
TEL (775) 883-7077
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REGISTERED LANDSCAPE ARCHITECT
MARC CHAPELLE
622
STATE OF NEVADA
04/12/2017

NNV1 PARTNERS, LLC

TIOGA VILLAGE
PRELIMINARY LANDSCAPE PLAN

RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

L1.2

DATE:	04/12/2017
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LANDSCAPE LEGEND

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30 15 0 30 60

SCALE: 1" = 30'

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04/12/2017

NNV1 PARTNERS, LLC

TIOGA VILLAGE PRELIMINARY LANDSCAPE PLAN

RENO WASHOE NEVADA

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

L1.3

DATE:	04/12/2017
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LANDSCAPE LEGEND

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04/12/2017

NNV1 PARTNERS, LLC

GENDARME VILLAGE & NEW WATER TANK PRELIMINARY LANDSCAPE PLAN

CITY COUNTY STATE

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

L1.4

DATE:	04/12/2017
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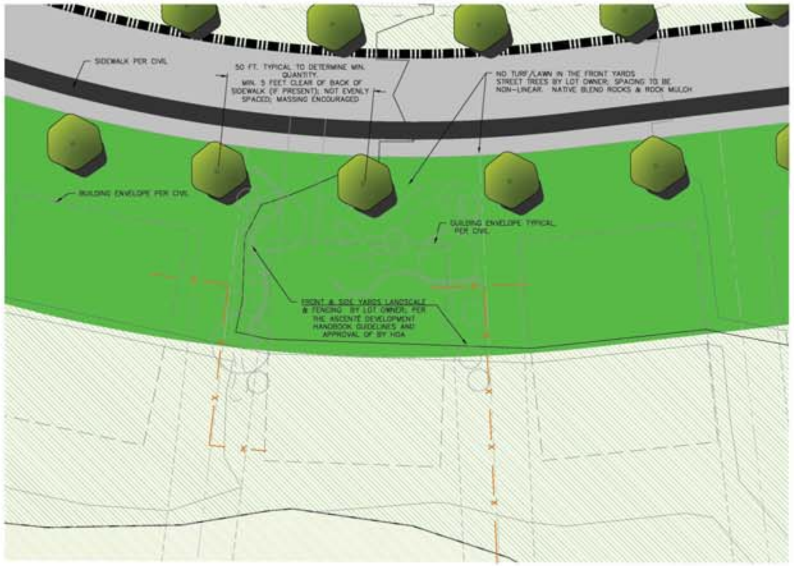
JOB NO.:	9019.000



TYPICAL FRONT YARD LANDSCAPING
(ASCENTE CREST TRAIL EAST SHOWN)

LANDSCAPE LEGEND

- DECIDUOUS COMMON OPEN SPACE TREE – 1" & 2" CALIPER SIZE
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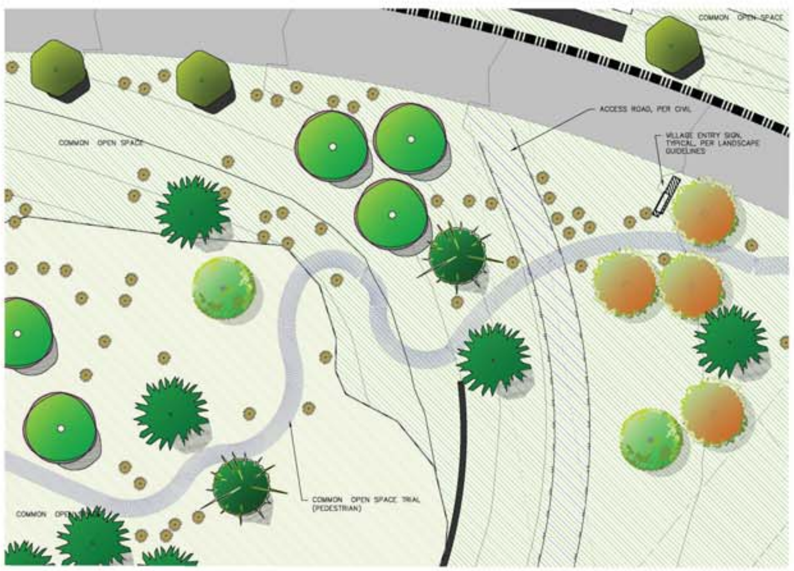
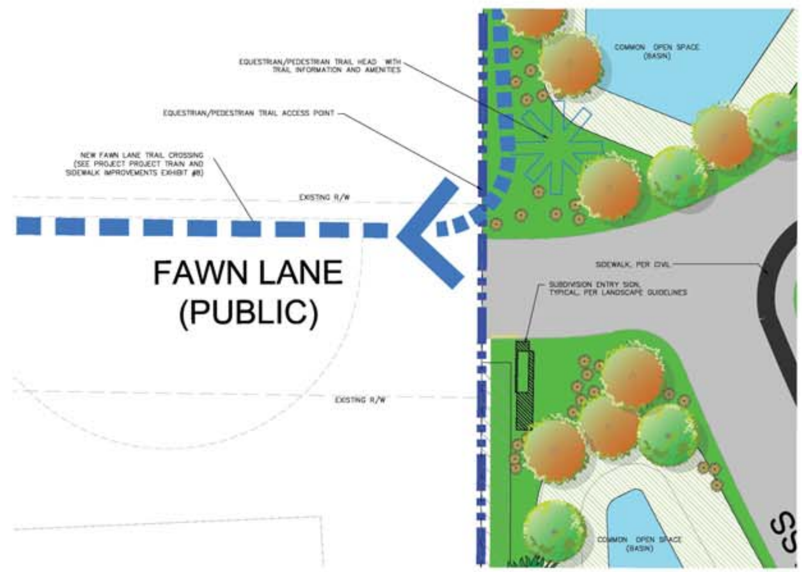


SUBDIVISION ENTRY LANDSCAPING
(TIOGA VILLAGE – NORTH EAST ENTRY SHOWN)



TYPICAL VILLAGE ENTRY LANDSCAPING
(SIERRA VILLAGE NORTH ENTRY SHOWN)

20 10 0 20 40
SCALE: 1" = 20'

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04/12/2017

NNV1 PARTNERS, LLC

TYPICAL FRONTYARD LANDSCAPES
PRELIMINARY LANDSCAPE PLAN

CITY · COUNTY · STATE

REV	DATE	DESCRIPTION	BY

TENTATIVE MAP

L1.5

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