TALUS VALLEY

PLANNED UNIT DEVELOPMENT HANDBOOK

Prepared for:

City of Reno

Adopted by the City Council on July 22, 2020
Amended on March 8, 2022
& February 3, 2023

Formerly referred to as Daybreak Planned Unit Development Handbook

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*Appendices were not updated as part of the Minor PUD Amendment submitted on 12/13/2021 and may reference the Daybreak PUD when referring to the Talus Valley PUD.

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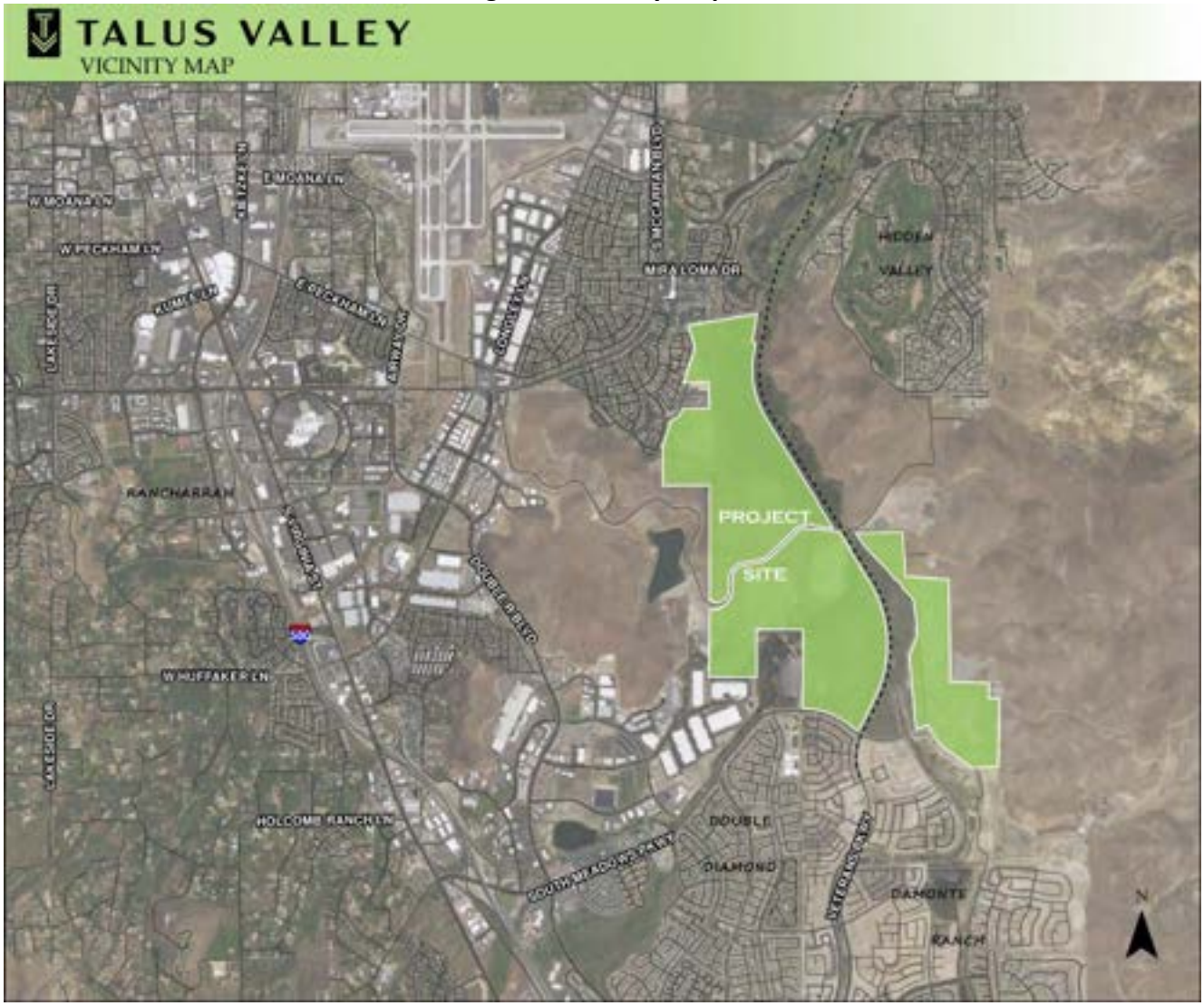
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Chapter 1
Project Description

1.1 Introduction

The Talus Valley Master Planned Community (formerly approved as Daybreak Planned Unit Development) encompasses 980± acres, formerly known as Butler Ranch, located in southeast Reno north of South Meadows Parkway along Veteran's Parkway from the Damonte Ranch area extending north approximately 2 miles to the Donner Springs area. Access to the heart of the property is provided via Veteran's Parkway, in addition to Rio Poco Drive providing access to the north, and South Meadows Parkway and Rio Wrangler providing access to the south. The Property is bound to the north by the existing Heron's Landing development, a mix of single family and multi-family homes known as Donner Springs development, including Donner Springs Elementary School to the northwest, Steamboat Creek, steep slopes and Veteran's Parkway to the east, Washoe County's South Truckee Meadows Water Reclamation Facility and Huffaker Hills open space to the west, an Industrial development and Double Diamond, Bella Vista, and Damonte Ranch PUDs to the south.

Figure 1: Vicinity Map



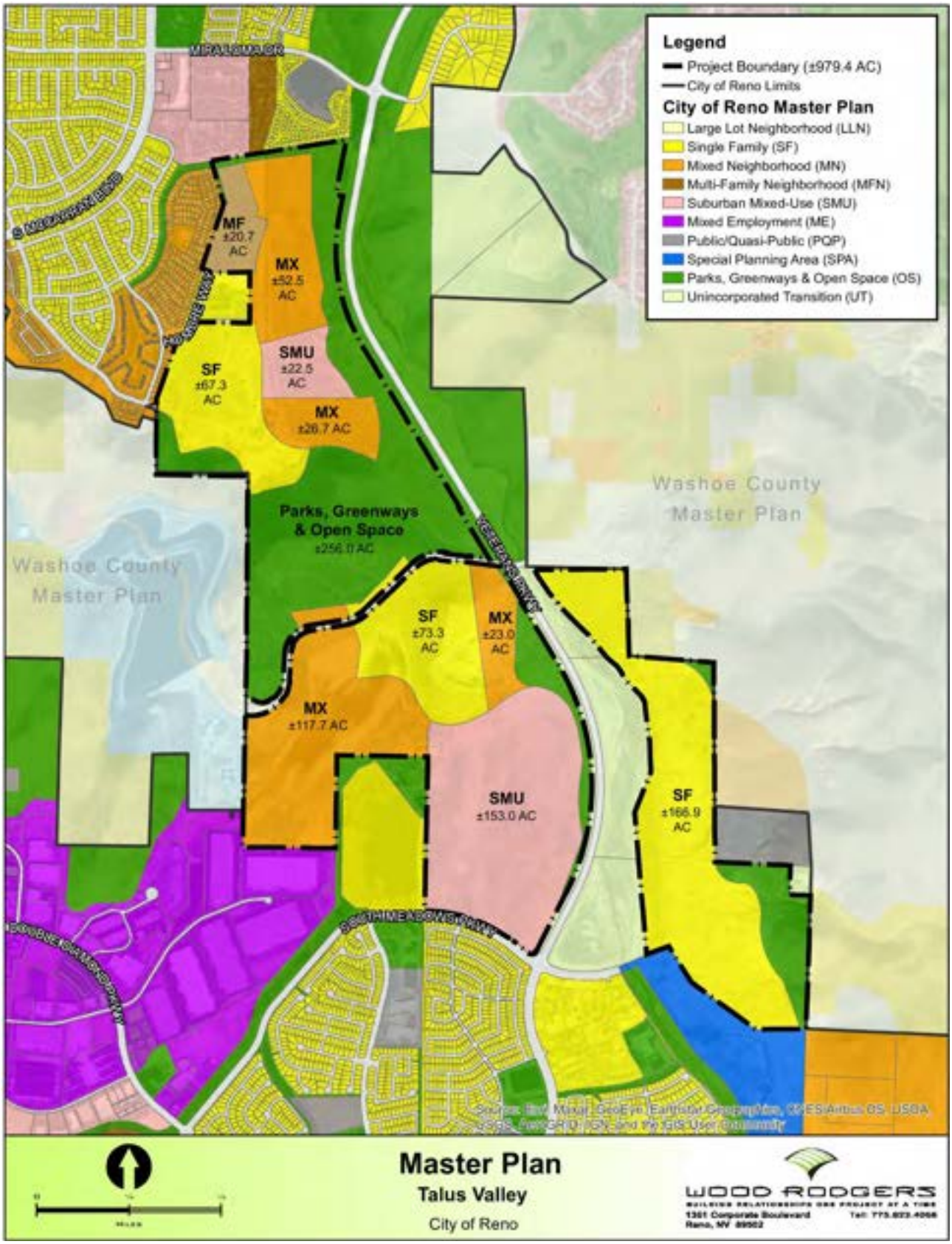
The Talus Valley Planned Unit Development (PUD) Handbook represents design standards to guide development of the Talus Valley Master Planned Community. Talus Valley is the vision for new development under the Reimagine Reno Master Plan, providing well-managed growth with parks, greenways, and open space, and connected vibrant neighborhoods surrounding a town center. The development plan for Talus Valley provides for large scale infill development made possible through the extension of Veteran's Parkway (Southeast Connector), and includes a mix of single family residential, mixed neighborhood, and multi-family residential that will provide a range of detached and attached residential units. Preservation of open space, a community park, and trail networks will enhance the environment, while providing amenities and recreation opportunities for the community. The proposed trail networks will connect the Talus Valley and surrounding communities to existing parks and pedestrian trails, improving overall non-motorized regional connectivity. Neighborhood commercial surrounded by a mix of density (Suburban Mixed Use) is identified in the southern portion creating a town center feel for the development. The commercial categories within the PUD will provide the growing area with community gathering space, services and employment opportunities to serve both the future and adjacent areas, as well as helping to promote a more walkable and bikeable community.

1.2 Objectives and Master Plan

The objective of the Talus Valley PUD is to develop a mix of uses and design standards for the property that support the following:

- **Responsible growth**; take advantage of existing infrastructure, tie together new development with existing development, and open space preservation.
- **Vibrant neighborhoods and centers**; provide a large-scale infill development with a mix of housing types surrounding a suburban mixed-use town center with bike and pedestrian connectivity. The Talus Valley community will have limited use of walls to create an open and inviting atmosphere. A community that provides for education opportunities.
- **Well-connected city and region**; take advantage of the new Veteran's Parkway (Southeast Connector), provide trail and sidewalk networks that connect the Talus Valley communities with the regional systems already in place, and promote multimodal transportation opportunities.
- **Safe, healthy, and inclusive community**; provide a mix of product types that support attainability and affordability to create a diverse community. A community that promotes health and wellness through bike and pedestrian connectivity to all aspects of that community, education opportunities, and outdoor recreation opportunities.
- **Quality places and outdoor recreation opportunities**; A community developed around open space that embraces and protects historic and natural resources such as restoration of natural drainage facilities, and enhancement of wetlands. A community park and regional trail connectivity to promote outdoor recreation.

Figure 2: Master Plan



1.3 Development Plan Overview

The Project Development Plan is designed to create a mix of housing opportunities that allow the City to meet its growing needs, while incorporating historical and environmental amenities that are unique to the Property. The mix of residential categories will allow for a range of detached and attached homes with the addition of commercial uses to help serve future and existing adjacent development. The land uses and standards will encourage smart urban design connected by a regional bike and pedestrian trail network.

The development plan for Talus Valley includes the following Land Use Categories and acreages:

Land Use	**Acreage**[2] (acres)	**Units** (approx.)	**Density** (du/ac)	**Percent of Total**
Single Family Residential	360.9±	2,010±	5.6±	36.8%
Mixed Neighborhood	128.6±	1,390±	10.8±	13.3%
Multi-Family Residential	26.4±	595±	22.5±	2.7%
Neighborhood Commercial	30.6±	-		3.1%
Arterial Commercial	15.2±	-		1.6%
Backbone Roads	62.4±	-		6.3%
Parks, Greenways and Open Space	355.4±	-		36.2%
TOTAL	**979.4±**	**3,995**[1]	4.1±	**100%**

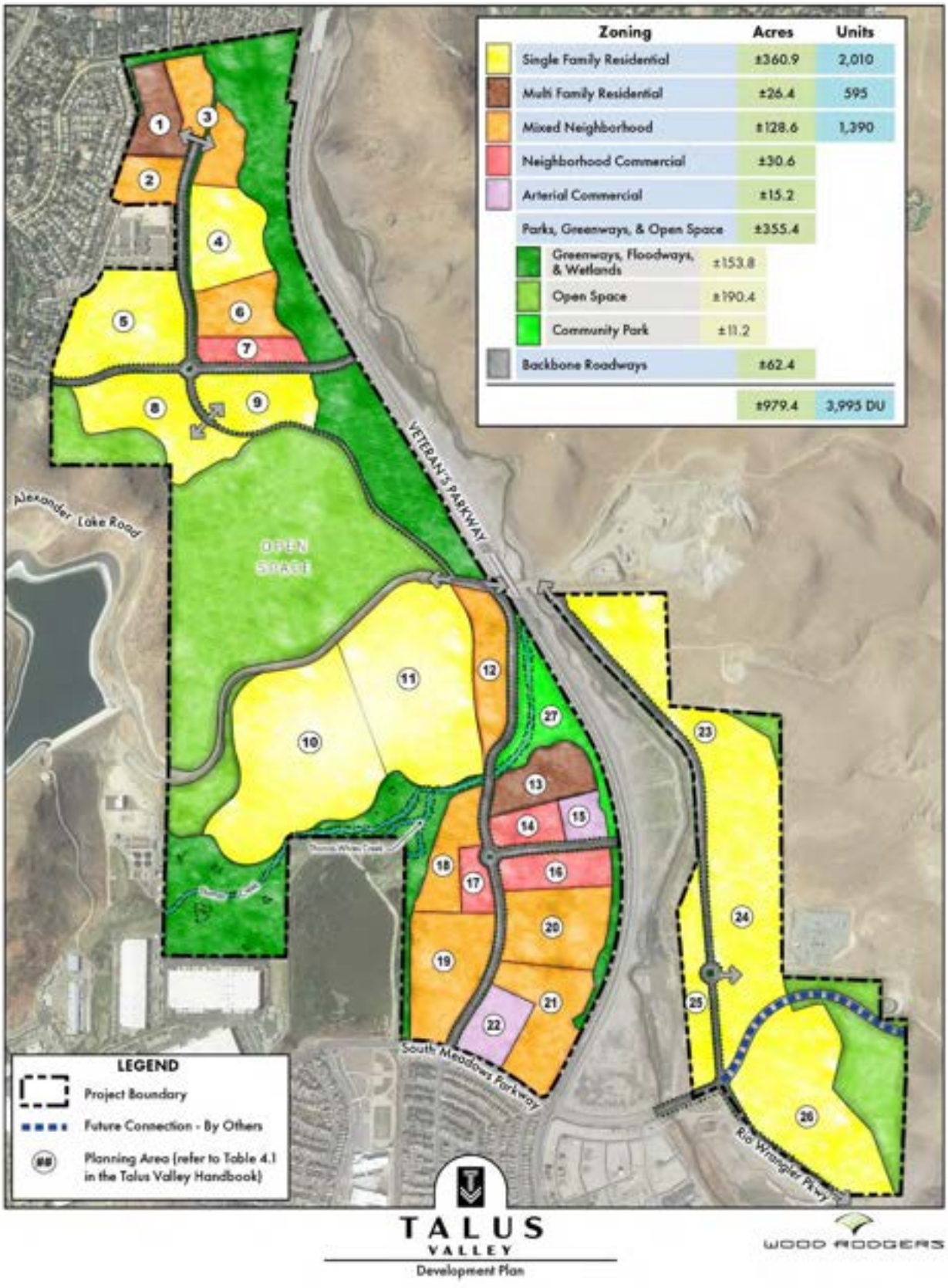
Notes:

1. *The total amount of residential dwelling units by land use category may vary from the above assumptions and shall not exceed 3,995 dwelling units or the max allowed density of the underlying Master Plan.*
2. *Individual land use acreages may vary from the above assumptions such that they comply with the underlying Master Plan designations and are within the limitations of the PUD.*
3. *An accounting of the actual acreages and unit count shall be provided with each tentative map or building permit as applicable.*

The Talus Valley PUD will assist the City of Reno in providing affordable housing through a multi-prong approach:

- ✓ **"Affordability by Design"** – The Mixed Neighborhood land use category and five of the Single Family Residential Villages provide a density requirement between 8 and 21 dwelling units per acre, or 50% of the total allowed units in the PUD. This density range coupled with the new single family attached units styles will help fill in the "missing middle" defined by the Reimagine Reno Master Plan, providing more housing options targeted at 80%-120% of Washoe County Area Average Median Income (AMI).
- ✓ The **Multi-Family Residential** land use category will provide additional opportunities for more affordable housing options at higher densities.
- ✓ Accessory Dwelling Units (**ADUs**) are an allowed use in Talus Valley to provide affordability options.
- ✓ The Master Developer has entered into an Agreement with the City of Reno to make a **donation to the City of Reno Housing Trust Fund** or designee per unit sold with each tentative map giving the City flexibility on providing affordable housing (reference Talus Valley Affordable Housing Agreement).

Figure 3: Development Plan



1.4 Existing Site Overview

The Talus Valley property has been used for ranching purposes by the Butler family since 1955. Sitting in the valley of southeast Reno adjacent to Steamboat Creek, the Property is rich in history, more commonly dating back to early 1860s when the Comstock mining was booming. It is also known that the Native Americans also settled along the Steamboat Creek much earlier than the 1800s. During the mid-1800s mining era mercury was used upstream and carried throughout the southeast valley via the Steamboat Creek. Contaminated soils protection, preservation of the Property's history, and natural resources is a top priority for the PUD.

The Talus Valley property is predominately undeveloped, with existing ranch buildings located in the north, and active aggregate pits and mining operations towards the south. Steamboat Creek runs along the eastern portion of the site, which is currently being enhanced by the Washoe RTC, and falls within the right of way for the new Veteran's Parkway. Approximately 75% of the site has slopes ranging between 0 and 15% (reference Figure 5 – Slope Map on the following page), which is considered to be unconstrained and most appropriate for development in the Truckee meadows Regional Plan. The middle portion of the site includes a hill with an approved Special Use Permit (Doc. SWP 8-24-99 Bella Vista Ranch Pit) for an active aggregate pit and mining operations. The eastern portion of the central pit has currently been excavated, and the western portion will be mined in the near future; therefore, it has not been included in the slope calculations. The steep terrain along the western boundary of the property that exceed 30% slopes will be preserved as open space, with existing hiking trails left intact and enhanced.

The southwestern portion of the site includes two forks of Thomas Creek, which have been previously disturbed up-stream and throughout the project site. Thomas creek arrives on to the property through a series of dams and diversions. The water conveyed through the property is conveyed through a series of irrigation ditches. The damming of the north fork of Thomas Creek created Alexander Lake, a man-made irrigation water storage pond used for irrigation of the fields. The project proposes to return the Thomas Creek to a more natural state by removing the dam at Alexander Lake, creating a meandering stream and restoring and enhancing the natural wetland habitat.

Figure 4: Existing Site Plan

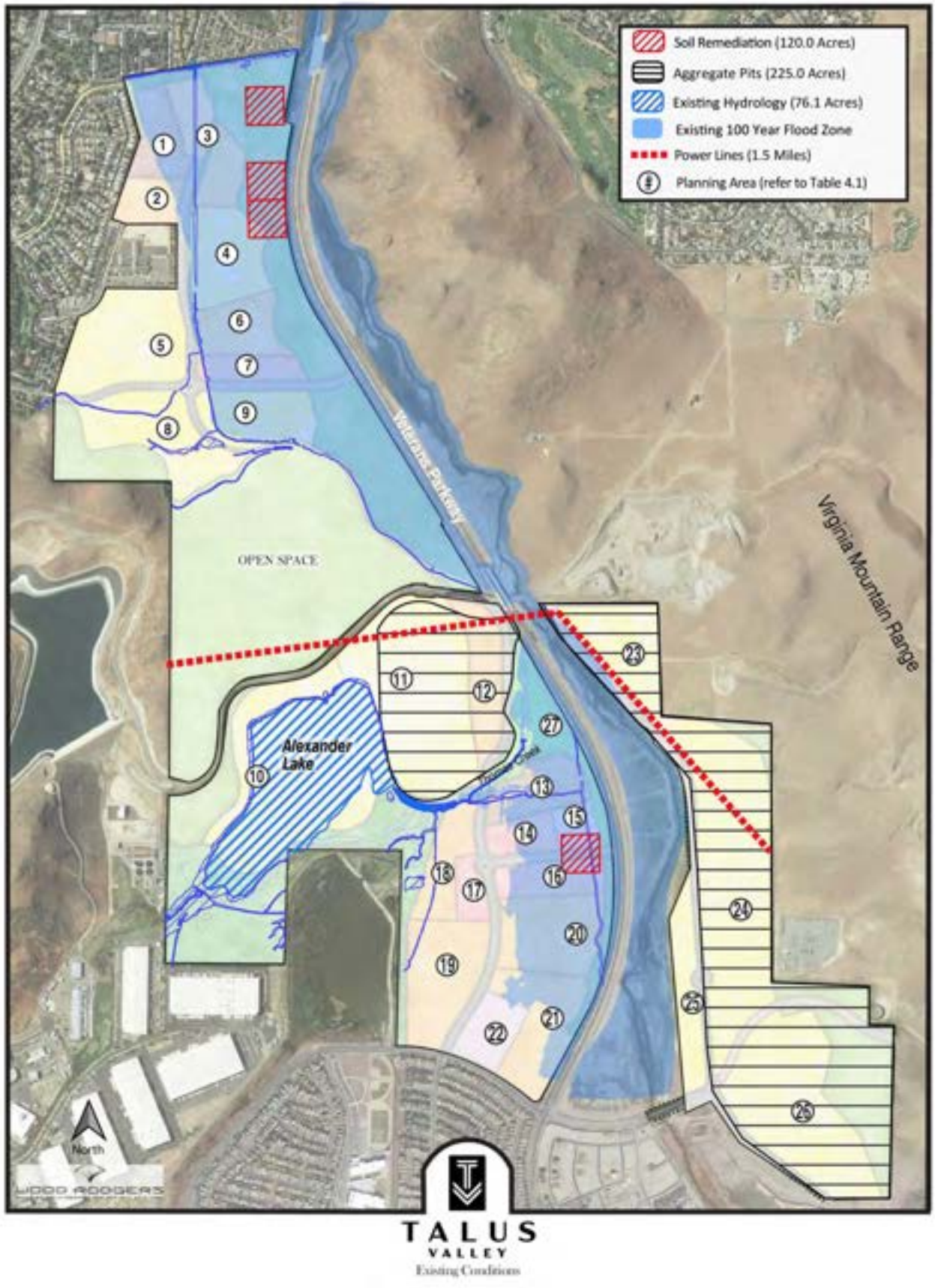
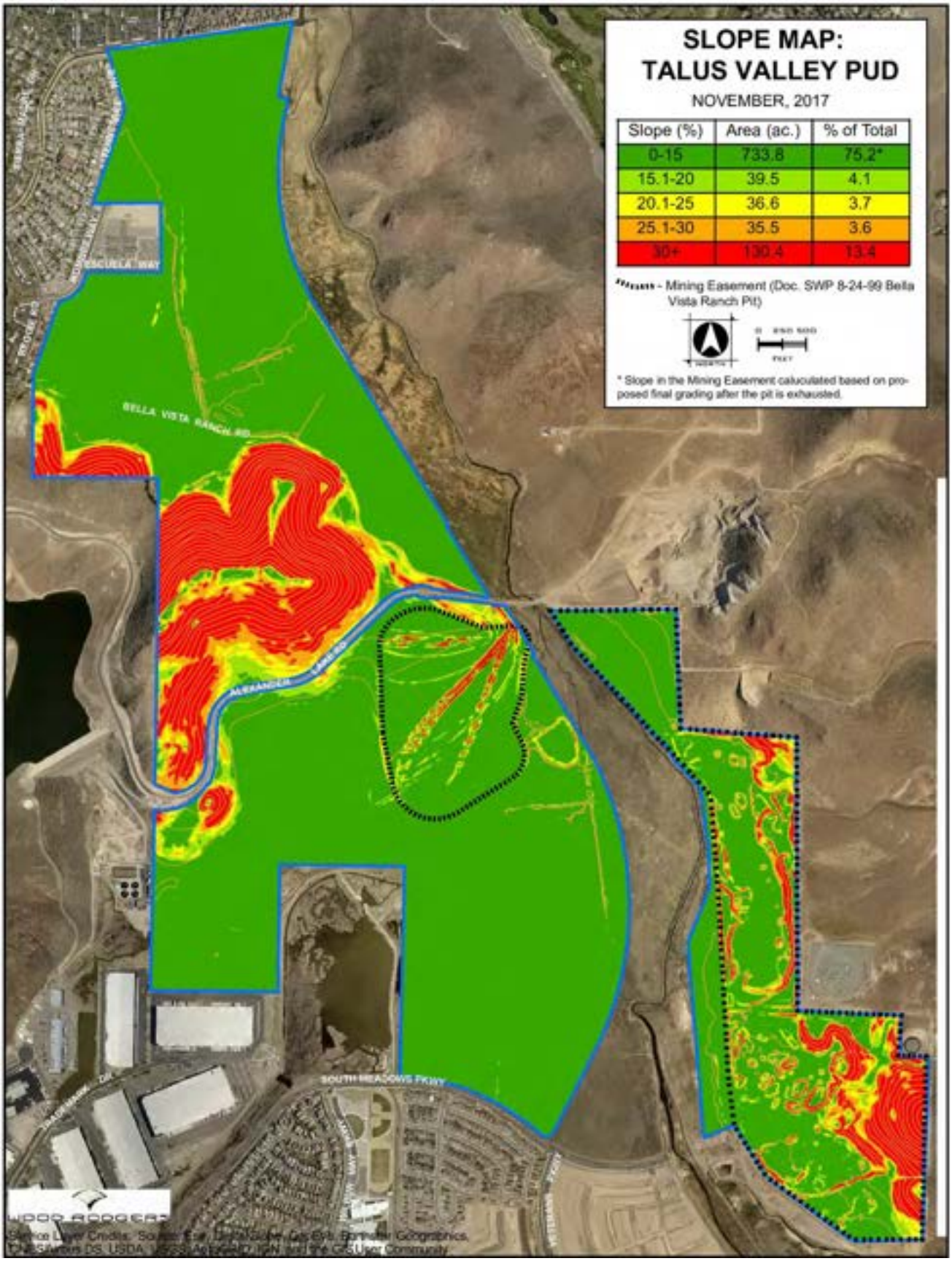


Figure 5: Slope Map



Chapter 2
Implementation

2.1 Administration

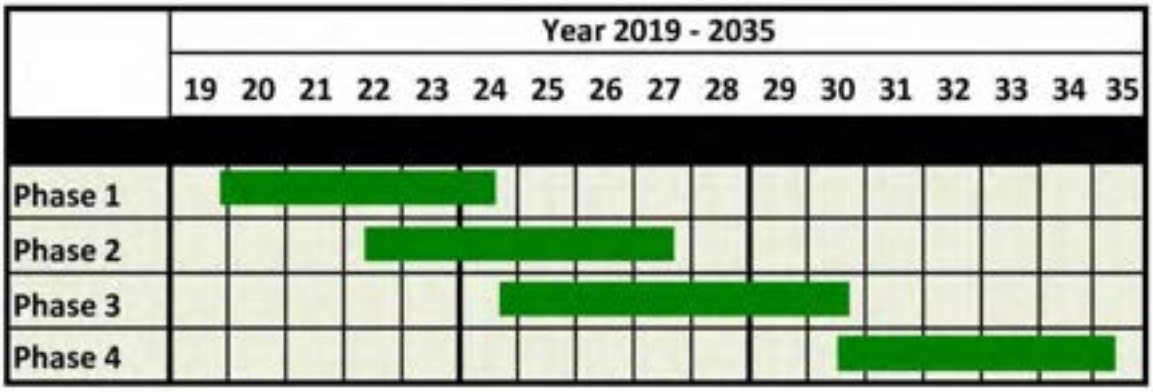
The Talus Valley Planned Unit Development (PUD) shall be administered by the Zoning Administrator (Administrator) or his/her designee as defined in the City of Reno Annexation and Land Development Code. The administrator shall have the authority to reasonably interpret and apply this PUD handbook.

NPLC BV Investment Company LLC, shall be the Master Developer of development of the PUD. Should the Master Developer be designated or assigned to another entity, the assignee shall notify the City of Reno in writing and provide documentation of the change in entity. This Master Developer shall continue throughout the development of the PUD until and unless a master property owners association or other such entity is created to serve the role as Master Developer. Master Developer rights may be assigned dependent on the underlying property ownership and previous assignment of declarant rights, which shall be disclosed to the City of Reno upon application for development permits. The role of the Master Developer, for the purposes of this PUD, shall be:

- To prescribe and administer methods and procedures to ensure and control the quality of development that occurs within Talus Valley PUD;
- To maintain all common area improvements, storm drain and/or irrigation channels, detention and/or other flood control facilities (including Thomas Creek) - the City of Reno may provide emergency maintenance during flood events, if necessary;
- To construct, or have constructed, all backbone roadways and infrastructure, bike and pedestrian trails, pathways, and sidewalks;
- To establish Covenants, Conditions and Restrictions (CC&R's), which may allow for the creation of: an Architectural Review Committee to maintain consistent project architecture; and a master owners association to provide maintenance and operations of the common elements of the PUD and enforcement of the CC&R's;
- To review all landscape plans within common areas, town centers, and along backbone roadways; and
- To develop a community park and enter into an agreement with the City of Reno for use of Residential Construction Tax and dedication of the Park. The master developer will not be responsible for on-going maintenance of park. NRS Chapter 116 limited purpose association will be.

Only the Master Developer or its authorized agent or assignee may initiate an amendment to the PUD handbook, except for modifications by the City, as allowed under NRS 278A.410.

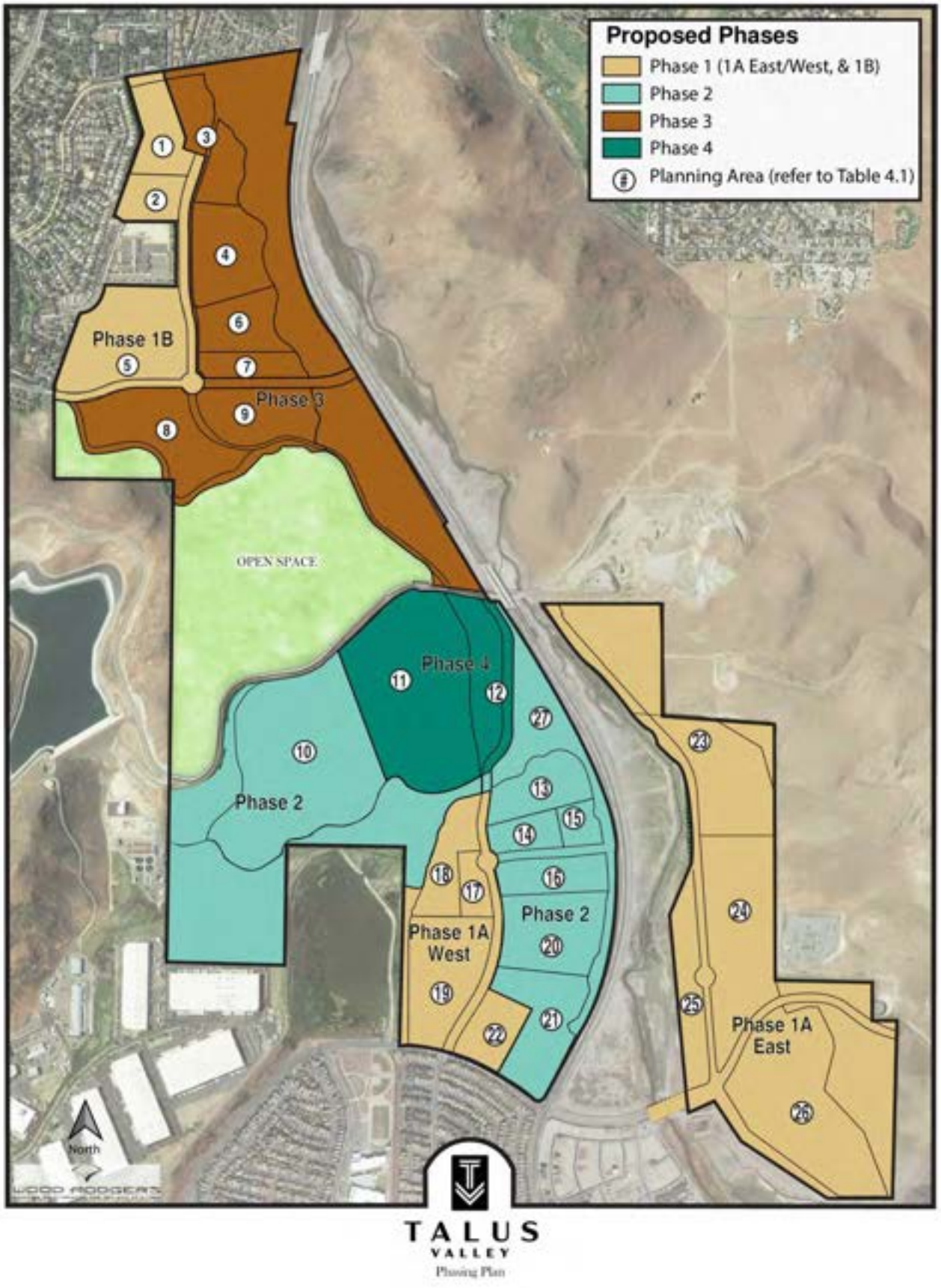
2.2 Proposed Development Schedule



Development Phase	Plan Area	Backbone Infrastructure Included
1A	18, 17, 19, 22, 23, 24, 25, 26	Utility extension from S. Meadows Pkwy & backbone roadway to serve south villages, S. Meadows Pkwy Steamboat crossing and connection to Rio Wrangler
1B	1, 2, 5	Sewer connection to Mira Loma and lift station, mass grading of northern villages, backbone roadway and utilities to serve northern villages, flood mitigation, Rio Poco improvements
2	13, 14, 15, 16, 20, 21, 27	Backbone roadway and utilities to serve south villages and town center, wetland mitigation, flood mitigation, southern connection made to Veteran's Pkwy, construction of Community Park
3	3, 4, 6, 7, 8, 9	Backbone roadway and utilities to serve villages, northern connection made to Veteran's Pkwy
4	10, 11, 12	Wetland mitigation, backbone roadway and utilities to serve villages, transmission line relocation, backbone roadway and utilities to serve villages, public school site dedication

The development and build-out of Talus Valley will ultimately be dependent on market conditions, and this PUD shall have a 20 year completion timeframe. The 20 year timeframe shall commence upon final approval of this PUD (as evidenced by the initial recording date of the certified handbook). All project phasing must include major infrastructure (i.e. backbone utilities and roadways) to support development. If the project is not completed at the end of 20 years, then the PUD shall require an application to the Reno City Council to determine if it is appropriate to extend the development schedule prior to further development. Completion is defined as the recordation of all Master Developer's parcel maps (creation of Village Parcels) for all phases; completion of all mass grading for all phases; construction of the community park; construction of all on and off-site backbone infrastructure including water, sewer, backbone roadways identified in Figure 7, and construction of all improvements affecting major drainageways, wetlands, and floodplains. The timeframe shall not apply to the construction of individual homes on recorded lots of approved final maps or for construction of permitted non-residential uses, as described in the PUD Handbook.

Figure 6: Phasing Plan



2.3 PUD Implementation and Responsibility

Action Items identified in PUD	Responsibility	Review/ Coordination	Timeframe for Implementation
Manage existing uses (agricultural uses/Aggregate pits)	Master Developer	Aggregate Pit SUP reviewed by City of Reno	Until full build out of the project or until the use is exhausted
Installation of Backbone Roadways	Master Developer	Dedicated to City of Reno	Per phasing plan through full build out
Traffic Mitigation as identified in Appendix 2	Master Developer	Review by City of Reno/RTC	Per Traffic Impact Analysis (Appendix 2)
Submit a Trip Generation Letter	Master Developer or Village Builder	City of Reno	With each Tentative Map, Special Use Permit, or Site Plan Review
Rio Poco Improvements	Master Developer	City of Reno	When daily traffic volume on Rio Poco reach 6,900 vehicles per day (Appendix 2)
South Meadows Parkway Extension to Rio Wrangler	Master Developer	City of Reno / (Army Corps – Steamboat Crossing)	Shall be included with development applications for Phase 1A East
Southern Connection to Veteran's Parkway	Master Developer	City of Reno	Prior to traffic volumes on north to south backbone roadway reaching 13,400 vehicles per day (Appendix 2)
Northern Connection to Veteran's Parkway	Master Developer	City of Reno	Shall be included with development applications for Phase 3
Construct Transit Stops within the Town Center	Master Developer	City of Reno / RTC	To be included with development applications for Plan Areas 14 and or 16
Alexander Lake Rd Acquisition or Abandonment	Master Developer	Washoe County / City of Reno	Prior to development applications associated with

Action Items identified in PUD	Responsibility	Review/ Coordination	Timeframe for Implementation
			Villages 10, 11, and 12
Installation of Backbone Sanitary Sewer	Master Developer	Dedicated to City of Reno	Per phasing plan through full build out
Sanitary Sewer Will Serve Letters	Master Developer	City of Reno/ Washoe County	Prior to each final map or building permit as applicable
Installation of Backbone Domestic Water Service	Master Developer	Dedicated to TMWA	Per phasing plan through full build out
Installation of Backbone Reclaimed Water Service	Master Developer	Washoe County	Agreement prior to first Tentative Map
Interior Streets and utilities (Public)	Village builder TBD	City of Reno / Dedicated to City of Reno	Built as part of associated village or commercial development
Interior Streets and utilities (Private)	Village builder TBD	City of Reno / owned and maintained by HOA	Built as part of associated village or commercial development
Powerline Realignment Alternatives Analysis and Final Relocation Plans	Master Developer	NV Energy	Completed in Phase 4
Wetland Mitigation	Master Developer	Army Corps / City of Reno	Completed per Army Corps permit
Site Plan Review for Disturbing Major Drainageway (Thomas Creek)	Master Developer	City of Reno	Prior to any grading activities within the Major Drainageway
Flood Storage/CLOMR/City of Reno Letter of Concurrence	Master Developer	FEMA / City of Reno	Prior to any grading activities identified in the existing flood zone
Flood Storage/LOMR	Master Developer	FEMA / City of Reno	Upon completion of Mass Grading within existing flood zones approved with CLOMR
Implementation of NDEP approved Soil Remedial Action Plan and associated testing	Master Developer	NDEP/City of Reno	Per grading plan relative to action plan areas

Action Items identified in PUD	Responsibility	Review/ Coordination	Timeframe for Implementation
Cultural Resource Preservation Plan	Master Developer	SHPO/Army Corps /City of Reno	Per phasing plan relative to preservation areas
Feral horse fencing	Village builder TBD – To be maintained by HOA	City of Reno	Prior to construction of adjacent villages 23, 24, and 26
Install temporary Feral horse guards in backbone roadway (if fence connections not made to adjacent properties)	Master Developer	City of Reno	With construction of backbone roadway to serve adjacent villages 23, 24, and 26.
Dedication of 8 acres for public elementary school site (Talus Valley School Agreement)	Master Developer	Dedicated to Washoe County School District	Agreement prior to certification of the final handbook, dedication TBD by WCSD
Development Plan accounting of units/acreages	Master Developer	Update provided to City of Reno with development applications	Tentative Map or Building Permit as applicable
Develop 11-acre Community Park	Master Developer	City of Reno	Park to be constructed with Phase 2
Dedication of the Community Park to the City of Reno	Master Developer	City of Reno/ Park to be maintained by Master Maintenance Association	Upon completion of the Park and a Master Maintenance Association agreement to maintain the Park
Talus Valley Residential Construction Tax Agreement	Master Developer	Agreement with City of Reno	Prior to certification of the final handbook
Setup Master Association for maintenance of common area landscape, drainage and wetland areas	Master Developer	City of Reno	Prior to first Final Map
Connect Huffaker Hills open space trail network to Plan Areas 8, 10, 11, and 27 (Park)	Master Developer	Washoe County	Per phasing plan
Private or Public neighborhood parks (Pocket Parks)	Village builder TBD	City of Reno / Maintained by HOA	Built as part of associated village

Action Items identified in PUD	Responsibility	Review/ Coordination	Timeframe for Implementation
Architectural Builder Design Guidelines	Master Developer	City of Reno (Review and Comment)	Prior to first tentative map or building permit as applicable
Design Review	Master Developer	N/A	Prior to submittal of each development application
A hydraulic analysis of the proposed improvements will be submitted and approved by the City of Reno. The hydraulic analysis will be prepared in conjunction with and consistent with the hydraulic analysis for the proposed regional LOMR being prepared by the Truckee River Flood Management Authority (TRFMA). The analysis will include: • Base flood elevations for the Truckee River provided by the TRFMA developed for the proposed regional 100 Year FEMA LOMR for the analysis of Steamboat Creek. • Flood water flow rates for Steamboat Creek provided by the TRFMA being used in the proposed regional 100 Year FEMA LOMR. • Analysis will be prepared using the Truckee River Regional HEC-RAS combined 1D/2D base model provided by the TRFMA developed for the proposed regional 100 Year FEMA LOMR. • Comments from the original TRFMA review completed by HDR dated October 2, 2018 will be incorporated • The City of Reno will retain the services of a third-party engineering firm to review the hydraulic analysis of Steamboat Creek prepared for the Talus Valley project. • Critical Flood Zone 1 volume calculations based upon the 1997 flood of record. Fill volume within the flood of record area will be mitigated with 25% additional replacement volume.	Master Developer	City of Reno	Prior to Issuance of Grading Permit for areas within Critical Flood Zone 1
Demonstrate with each Final Map or building permit submitted after revision of the regional LOMR that the development proposed within the Final Map or building permit, as applicable, complies with the revised regional LOMR or that appropriate mitigation will be provided to bring such development into compliance with revised regional LOMR.	Master Developer	City of Reno (Review and Comment)	In the event the proposed regional LOMR is amended after certification of the final handbook
No building permits for home construction within Plan Areas 3, 4, 5 and 6, inclusive, may be issued until earlier	Master Developer/Village builder TBD	City of Reno	1 year after final certification of the PUD Handbook or

Action Items identified in PUD	Responsibility	Review/ Coordination	Timeframe for Implementation
of 1 year after final certification of the Revised PUD Handbook or issuance of a revised FEMA FIRM map.			issuance of a revised FEMA FIRM map.
Update the Technical Drainage Study to include the revised FEMA flood data and provide such update with each subsequent Tentative Map application along with demonstration that adequate stormwater management facilities are available or can be provided to service the site in conformance with the City of Reno Public Works Design Manual.	Master Developer	City of Reno	In the event the FEMA FIRM map is amended after certification of the final handbook
A FEMA Conditional Letter of Map Revision (CLOMR) shall be prepared and approved to depict the new floodways contained within the proposed storm drain channels, detention and/or other flood control facilities (including Thomas and Steamboat Creeks). The CLOMR shall be prepared in compliance with the effective FEMA floodway in place at the time of submittal. Should the regional LOMR not be in effect, the improvements designed with the CLOMR will also be analyzed with the proposed regional LOMR to confirm future compliance.	Master Developer	City of Reno	Prior to the approval of any grading or site improvement permit within the City of Reno's Critical Flood Zone 1
Prepare and obtain approval of a FEMA Letter of Map Revision (LOMR) or elevation certificate.	Master Developer	FEMA	Prior to the issuance of the first Certificate of Occupancy for any structure located within a FEMA designated floodway or floodplain
Provide a final hydrology study which incorporates analysis of all previous phases of development in addition to the current phase of development, which identifies the required mitigation, if any, to maintain the controlled elevation of Steamboat Creek.	Master Developer	City of Reno	Prior to approval of each building permit or Final Map, as applicable, within the City of Reno's Critical Flood Zone 1
Provide approved plans for the disposition of storm waters generated on site up to and including a 100-year frequency storm, including any necessary easements. routing of peak flows shall be based on the 100-year, 24-hour storm event. Final hydrology must account for the peak of storm flows generated by the 100-year storm event, and final design shall incorporate measures to assure that the improvements are in compliance with FEMA regulations.	Master Developer	City of Reno	Prior to the issuance of the first building permit in the first Tentative Map
Demonstrate the proposed storm water collection, conveyance, and discharge facilities within area proposed to be developed mitigate upstream and	Master Developer	City of Reno	Prior to the approval of each building permit or

Action Items identified in PUD	Responsibility	Review/ Coordination	Timeframe for Implementation
downstream impacts and meet the City's minimum requirements for erosion control, storm water flow velocities, and energy dissipation.			Final Map, as applicable
The volumetric mitigation of flood plain storage for the Plan Area shall be reviewed to ensure that the volume is sufficient to provide this mitigation. If any Plan Area's final hydrology report identifies any deficiency of available volumetric mitigation area, the development of the Plan Area shall not continue until the deficiency is resolved as approved.	Master Developer	City of Reno Community Development Engineering and Public Works Departments	Prior to approval of each Plan Area's hydrology report
Enter a Stormwater Improvement Contribution Agreement with the City of Reno pursuant to which the Project will donate up to $1.7 million to the City of Reno to be administered and used by City of Reno on capital projects that provide drainage and flood mitigation within 1.5 miles of Project in accordance with the following schedule: Prior to the issuance of the first grading/building permit within Phase 1A East (Planning Areas 23, 24, 25 and 26), the Master Developer shall donate $200,000 to the City of Reno which shall be used to initiate design of storm drain improvements in the vicinity of the Project. Prior to the issuance of the first grading/building permit for Phase 2 (Planning Areas 12, 14, 15, 16, 20 and 21), the Master Developer shall donate $750,000 to the City of Reno which shall be used for design and construction of storm drain improvements in the vicinity of the Project. Prior to the issuance of the first grading/building permit for Phase 3 (Planning Areas 3,3,6,7,8 and 9)), the Master Developer shall donate $750,000 to the City of Reno which shall be used for design and construction of storm drain improvements in the vicinity of the Project.	Master Developer		Prior to certification of the final handbook
Create a limited purpose association under NRS Chapter 116 which shall be responsible for the ownership, operation and maintenance of private storm drain and flood plain improvements and parks within the Project.	Master Developer	City of Reno	Prior to the recordation of the first residential subdivision final map for an individual village
Provide a trip generation letter which includes all previously approved development associated with the Revised PUD Handbook to verify the traffic impact is within the envelope provided in the PUD's Traffic Impact Study. If the trip generation letter indicates that the trips exceed the anticipated levels, the Master Developer shall be required to amend the PUD to address such increased levels.	Master Developer	City of Reno	Prior to approval of each Tentative Map, Site Plan Review or Special Use Permit, as applicable

Action Items identified in PUD	Responsibility	Review/ Coordination	Timeframe for Implementation
Provide a traffic report update to identify entry and access requirements and recommended roadway improvements in conformance with the City of Reno Public Works Design Manual. All improvements shall meet City of Reno and Regional Transportation Commission (RTC) level of service (LOS) standards.	Master Developer	City of Reno	Prior to approval of each Site Plan Review associated with the commercial sites within the Project
Project will use only 2 of 4 proposed future signalized intersections on Veterans Parkway between South Meadows Parkway and Mira Loma.	Master Developer	City of Reno	Agreement prior to first final map
Construct signal improvements at Rio Poco and McCarran, roadway, bike lane and landscape maintenance improvements along Rio Poco.	Master Developer	City of Reno	Upon approval of the final map to extend Rio Poco
Collect confirmation soil samples to demonstrate that no mercury impacts above the regulated limit are present within the top two feet of soil in the residential areas where cut and fill activities occurred.	Master Developer	City of Reno	Prior to issuance of the first building permit in each of Plan Area 3, 4, 15 and 16
Demonstrate that the Nevada Department of Environmental Protection has approved a mercury remediation plan for the Project.	Master Developer	City of Reno	Prior to final certification of the Revised PUD Handbook
Dedicate an 11 acre unimproved park site within the Project to the City; City shall issue Residential Construction Tax credits equal to 100% of the Project's approved density to Master Developer; and Master Developer will agree to construct and require the NRS 116 association to maintain improvements to the 11 acre community park.	Master Developer	City of Reno	Phase 2
Provide copies of the PUD Handbook in effect to builders purchasing property from Master Developer within the Project and will require builders to acknowledge obligations to comply with PUD Handbook.	Master Developer	Builders	Upon agreement between Master Developer and Builder
An Affordable Housing charitable donation of up to $500 per dwelling unit, to be donated at the time of building permit on each residential unit in the Project to the Reno Land Trust or its designee for affordable housing projects in the City of Reno.	Master Developer	Agreement with the City of Reno	Subject to approval of the PUD Handbook, and upon issuance of each building permit per residential unit as applicable
A Public Safety charitable donation of i) up to $150 per dwelling unit for police and rescue first response services provided by the City of Reno; ii) up to $500 per dwelling unit for fire stations, fire protection equipment or to support the provision of fire protection services within the City of Reno. Such donations shall be made to the City of Reno at the time of issuance of building permit for a residential unit.	Master Developer	Agreement with the City of Reno	Subject to approval of the PUD Handbook, and upon issuance of each building permit per residential unit as applicable

Action Items identified in PUD	Responsibility	Review/ Coordination	Timeframe for Implementation
A School Site Identification Agreement with the Washoe County School District in the form previously presented to the City Council or such other form agreeable to the Developer and Washoe County School District.	Master Developer	Agreement with the Washoe County School District	Subject to approval of the PUD Handbook
A youth sports donation of up to $50 per dwelling unit to be donated to the City of Reno at the time of issuance of building permit and used for public sports facilities in the City of Reno for youth sports.	Master Developer	Agreement with the City of Reno	Subject to approval of the PUD Handbook, and upon issuance of each building permit per residential unit as applicable
A Parks agreement pursuant to which Developer will dedicate an 11 acre unimproved park site within the Project to the City; City shall issue Residential Construction Tax credits equal to 100% of the Project's approved density to Master Developer; and Master Developer will agree to construct and require the NRS Chapter 116 association to maintain improvements to the 11 acre community park.	Master Developer	Agreement with the City of Reno	Subject to approval of the PUD Handbook
A Stormwater Improvement contribution in the amount of $1.7 million to the City of Reno to be administered and used by City of Reno on capital projects that provide stormwater improvement projects within the vicinity of the Project, consistent with the condition set forth above.	Master Developer	Agreement with the City of Reno	Subject to approval of the PUD Handbook
Provide additional mercury testing south of Alexander Lake Road in Planning Area 12.	Master Developer	City of Reno	Prior to the first building permit or tentative map for Planning Area 12

The Project shall not be subject to or responsible for any charge, fee, contribution, impact fee, donation, condition or exaction related to fire protection, police protection, public safety services, emergency medical or ambulance services, affordable housing, inclusionary zoning, residential construction tax, parks, schools, stormwater mitigation, or other development fee or exaction imposed by the City of Reno for the development of the Talus Valley Project except as set forth in this Handbook and separate agreements with the City of Reno described above.

2.4 Review Process

Prior to the submittal of a development application to the City, the proposed development shall be reviewed by the Master Developer at their sole discretion. Each development application submitted to the City shall include written documentation of approval from the Master Developer. Written approval by the Master Developer does not constitute City approval of a

development application. The construction of individual projects, including accessory structures shall follow the City of Reno building permit process. For some uses where a tentative map, special use permit, or site plan review is required, these processes shall precede the building permit process, as applicable.

Appeals:

The applicant or developer may appeal any decision, comments, or recommendations of the Administrator in accordance with RMC Section 18.06.208, as amended.

2.5 Conflicts

In the event of a conflict between these design standards and City Code, these standards shall govern development of Talus Valley. When a specific standard is not addressed by the PUD, then the applicable section of Reno Municipal Code Title 18, as amended, at the time of review shall prevail.

2.6 Flexibility

The Development Plan and Development Standards contained herein are intended to depict the general development vision for the PUD. Sufficient flexibility shall be allowed to permit detailed planning and design at the time of actual development. The acreage of each land use category may be increased by up to 10% if it is demonstrated that additional acreages are necessary due to constraints and/or design considerations to accommodate the project, to the satisfaction of the Administrator. This provision shall not exceed a cumulative total of 10% for each land use category. Changes in excess of 10% shall require an amendment to the Development Standards Handbook. Residential densities and residential dwelling unit allocation may be interchangeable between villages and will be defined fully with the tentative map for any given residential village. With each tentative map application, the Master Developer and/or applicant shall provide an accounting of the overall residential unit allocations, and updated land use category acreages approved to date. The total number of residential units shall not exceed 3,995 units. Commercial areas may not exceed a 10% increase without an amendment to the Development Standards Handbook.

Modifications:

The Zoning Administrator shall have the ability to administratively update the PUD to reflect RMC amendments that impact the PUD. The Master Developer shall be notified of any administrative changes by the Zoning Administrator prior to final approval of such changes. Minor deviations shall be subject to written approval from the Master Developer. The Zoning Administrator also shall have the ability to grant minor deviations as outlined in RMC 18.06.411(a)(1), as amended. Deviations of 10% or more shall conform to the City of Reno Variance process as outlined in RMC 18.06.408, as amended.

2.7 Residential Construction Tax

The Talus Valley Master Developer shall be responsible for constructing and shall require an NRS 116 association to maintain the common area, parks, trails, and recreation amenities within the Talus Valley development. Parks deemed as "Public" shall be dedicated to the City of Reno after a maintenance agreement has been setup by the Talus Valley Master Developer. Use of Residential Construction Tax (RCT) will be subject to the RCT Agreement between the Master Developer and the City of Reno.

2.8 Subdivision into Village Parcels

Each phase of development within the Talus Valley PUD may be subdivided into more than four Village Parcels utilizing a sequential series of two or more parcel maps, which may be submitted and approved concurrently. The administrator shall review each sequential parcel map and provide a recommendation to the Planning Commission, and the Planning Commission is authorized to issue a final decision on the sequential parcel maps. When issuing a decision on a sequential parcel map, the Planning Commission shall review the parcel maps in accordance with NRS 278.464 and consistent with the criteria for reviewing tentative subdivision maps in accordance with NRS 278.349(3), as applicable, including the issuance of conditions of approval.

Prior to submittal of the first application for a Village Parcel Map, the Master Developer and staff will agree to an efficient process for submittal and staff review of Village Parcel Map applications, including defraying any necessary additional costs attributable to extraordinary staff review required for Village Parcel Map submittals.

Each application for the initial division of land into Village Parcels through a sequential series of parcel maps shall include the following information to enable review by the planning commission:

1) Each application shall include all land within the phase of development in which the Village Parcels are to be created.
2) Each application shall be accompanied by concurrent application for a special use permit for disturbance of a major drainageway (or any other entitlement as deemed required) for the relevant phase of development, if applicable.
3) Each application shall identify common area parcels, access and utility easements, and proposed Master Developer roadway dedication parcels for the subject phase of development.
4) Each application shall include the documents and information set forth in the City of Reno Tentative Map checklist, plus a 24" x 36" display map showing all proposed sequential parcel maps in the Phase.

Subdivision of Village Parcels

It is anticipated that the individual lot layouts for each Village Parcel will be processed by merchant home builders or commercial developers, as applicable. Subsequent subdivision of any Village Parcel shall be reviewed and processed in accordance with the normal parcel map and/or

tentative subdivision map and final subdivision map processes, in accordance with NRS Chapter 278 and City of Reno code, as applicable. No certificate of occupancy may be issued for any residence or commercial building within a Village Parcel until all required infrastructure improvements (streets and utilities) shown on plans or record necessary for that Village Parcel to stand on its own and meet the requirements in RMC Section 18.14.203(d), Completion of Improvements in Phased Projects, as amended, are constructed and completed.

Chapter 3
Services and Facilities

3.1 Overview of Traffic and Facilities

Existing traffic and facilities adjacent to the Project site, and Project traffic and roadway infrastructure needs are discussed in detail in the Traffic Impact Analysis prepared by Traffic Works (Appendix 2 of this PUD handbook).

Project site Access:

- **North:** Connect to Rio Poco Road, and Veteran's Parkway.
- **South:** Connect to Veteran's Parkway, and South Meadows Parkway.
- **East:** Extend South Meadows Parkway, and a portion of Rio Wrangler Parkway within the project area. The portion of Rio Wrangler Parkway south of the Project Area to the current terminus of the paved section is the responsibility of the adjacent property owners and is not part of this PUD.
- **Existing roadways** have capacity for the proposed Project with improvements targeted for Rio Poco Road, traffic signal at South Meadows Parkway, traffic signals at Veteran's Parkway, and a traffic signal at Rio Wrangler and South Meadows Parkway.
- **Alexander Lake Road** in the middle portion of the Project site is planned to be realigned in the future and incorporated into Villages 10 and 11 with gated emergency access only at the western boundary of the Project site.
- **Internal circulation** will be provided by backbone roadways as depicted in Figure 7: Traffic and Circulation Plan.
- **Existing Sidewalk** on the south side of South Meadows Pkwy, on both sides of Rio Poco Road, and on both sides of Mira Loma Drive.
- **Existing bike lanes** exist on South Meadows Parkway and Mira Loma Drive. Pedestrian and bicycle paths have been constructed along the Veteran's Parkway as part of that project.
- **Transit -** Currently there are no public transit routes that operate within the project area. Per the Veteran's Parkway (Southeast Connector) website, "RTC is researching opportunities to provide transit service along the new roadway corridor, including new bus routes and intercity service to Carson City." New Shared Use path networks will be provided as part of the Project including connections to existing trails and sidewalks.

Existing Facilities:

As an infill site, the Project is surrounded by existing infrastructure and facilities, which are outlined in this chapter.

- **North:** There is an existing sewer interceptor within Mira Loma Drive. The existing Donner Springs Elementary School is located adjacent to the Project site.
- **West:** There is an existing sewer line, water line, and power within Rio Poco Road. There is existing reclaimed water infrastructure to the southwest at Washoe County's South Truckee Meadows Water Reclamation Facility. Huffaker Hills Regional Trails are located to the west of the Project site off of Alexander Lake Rd. An overhead Transmission line runs through the middle portion of the Project site from west to east.
- **South:** There is an existing sewer interceptor, water line and power within South Meadows Parkway. Existing Depoali Middle School and Double Diamond Park are located on the south side of South Meadows Parkway.
- **East:** There is an existing water main within Rio Wrangler.

3.2 Traffic and Circulation

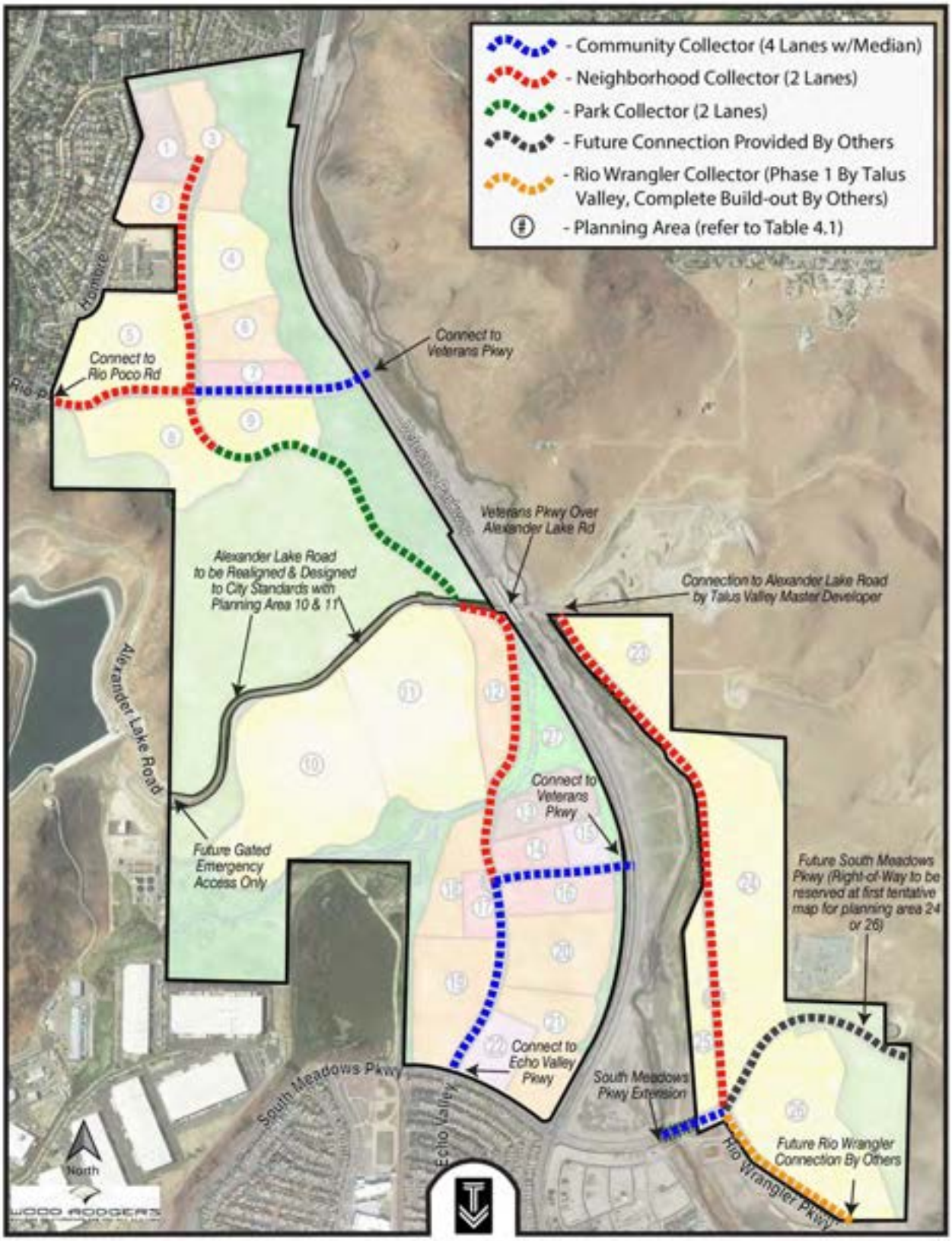
The trip generation is based upon an assumption of land uses and gross square footages. Note that the project land use mix could be revised, without affecting the traffic analysis or impacts, so long as the trip generation estimates used in the analysis are not exceeded and the roadway network is constructed consistent with the preliminary layout utilized in the traffic study. **The external trips for the project shall not exceed 32,900 Daily, 2,277 AM Peak Hour, or 2,999 PM Peak Hour without an amendment to the PUD handbook.**

It is possible that with final development plans, the gross square footage or number of units in a particular commercial center or residential village may exceed that which was assumed in the traffic report (see Appendix 2). Street design standards are provided in Chapter 5 of this handbook. Alternative street sections may be allowed as approved during the Tentative Map approval process or at the time of building permit. An updated Trip Generation Letter shall be provided with each Tentative Map, Special Use Permit, or Site Plan Review.

Proposed Improvements on existing roadways:

- **Rio Poco Rd** – Striping and traffic calming will be used between Snowshoe Ln to Sierra Madre Dr., and a landscape island between Sierra Madre Dr. and Matich Dr. will be used to separate travel lanes from driveways, as well as bikes and pedestrians. Details for design are provided in Chapter 5 - Street Design Standards. These improvements will be required to be made by the Master Developer once daily traffic volumes on Rio Poco reach 6,900 daily trips as outlined in Appendix 2 – Traffic Impact Analysis.
- **Alexander Lake Rd** – Currently a Washoe County owned parcel, will be realigned and used as a local road for Villages 10 and 11, with emergency access only at the west boundary. The eastern portion will be realigned and regraded as part of Village 12 with a new connection made to Rio Wrangler. The new roadway will meet City of Reno Design Standards.
- **South Meadows Parkway** – The Master Developer will extend the existing terminus to connect with Rio Wrangler, crossing Steamboat Creek with a series of box culverts or bridge constructed to match existing Steamboat Creek crossings in the area. Right of Way for future extension of South Meadows Pkwy to the east of Talus Valley will be reserved.
- **Rio Wrangler** – The Master Developer will improve Rio Wrangler to two lanes north of South Meadows Parkway as well as making the connection to Alexander Lake Rd. The Master Developer will dedicate right of way for future build out of Rio Wrangler to four lanes south of South Meadows Parkway within the Talus Valley PUD, but will only build two lanes, with the interior two lanes to be constructed by others. Portions to the south of Talus Valley will be improved by others as outlined in the existing Bella Vista PUD.
- **Veteran's Parkway** – Two connections will be made, and the Master Developer will install the traffic signals for those connections.

Figure 7: Traffic and Circulation Plan



3.3 Sanitary Sewer Service

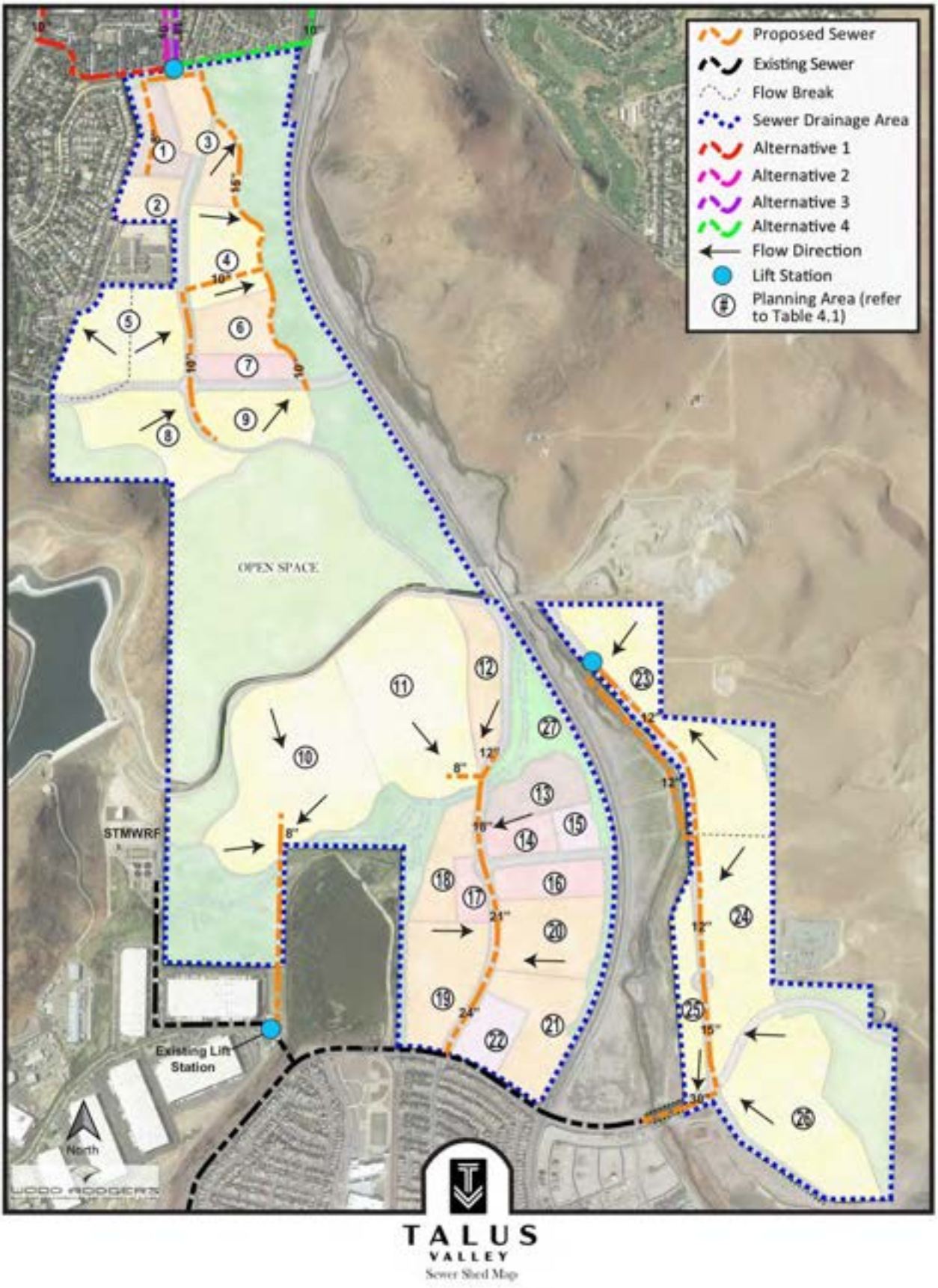
Sewer service for the project will be provided by the City of Reno and Washoe County. The Talus Valley project has two distinct and separate sewer sheds separated at the "narrows" of Steamboat creek. The North area will be served by the City of Reno through its sewer interceptor in Mira Loma. This sewer shed will ultimately flow to the Truckee Meadows Water Reclamation Facility (TMWRF). The south sewer shed will flow to an interceptor located in South Meadows Parkway and on to the South Truckee Meadows Water Reclamation Facility (STMWRF) operated by Washoe County.

As the PUD allows for flexibility within land use categories, and final site layouts are not known at this time, the Master Sanitary Sewer Study (Appendix 4) will be required to be updated with each final development permit/application on the site to assure that adequate facilities are or can continue to service the site. Any sanitary sewer facilities constructed to serve the project will be designed in conformance with the City of Reno Public Works Design Manual, as amended.

Development Phase	Plan Area	Sewer Demand	Time Frame
1A	17,18, 19, 22, 23, 24, 25, 26	±975 units, ±15 ac commercial	2020 – 2023
1B	1, 2, 5	±545 units	2020 - 2023
2	13, 14, 15, 16, 20, 21, 27	±795 units, ±23 ac commercial, Park	2021 - 2026
3	3, 4, 6, 7, 8, 9	±645 units, ±8 ac commercial	2023 - 2028
4	10, 11, 12	±1,035 units, Elementary School	2028 - 2033

Confirmation from Washoe County for STMWRF sewer service is required to be in place prior to the first tentative map application. A letter from Washoe County to commit to serve from STMWRF is required prior to recordation of each final map or building permit application. A letter from the City of Reno to commit to serve from TMWRF is required prior to the recordation of each final map or building permit application.

Figure 8: Sewer Shed Map



3.4 Water Service

Domestic

The northern and southern most portions of the Project Site are currently in TMWA's service territory with direct access to existing water facilities. The central portion of the Project Site will be annexed into TMWA's service territory prior to the first building permit. A preliminary discovery was completed by TMWA in 2016, which indicated that TMWA would serve the project in the future upon full annexation into their service territory and would require on-site improvements. Off-site improvements are not anticipated, but subject to change as development progresses. TMWA already has two tanks and pressures zones (Sparks and Double Diamond) in place that will serve the Project Site, as well as a 16" water main running along the east side of the Project Site, a 14" water main in South Meadows Parkway, and 10" water main north of the Project Site, an 8" water main at Donner Springs Elementary, and a 12" water main at Rio Poco. A pump station is required near the middle of the Project site. The water facilities for the project shall be designed and constructed to conform to TMWA standards and in conformance with Washoe County District Health Department requirements.

Non-potable Reclaimed Water

Non-potable reclaimed water from Washoe County's South Truckee Meadows Water Reclamation Facility, adjacent to the Project Site, will be utilized for common area landscape in both commercial and residential developments, backbone roadway landscape, school landscape areas, the proposed park, and other potential areas to the extent feasible. The Master Developer shall enter into an agreement with Washoe County for use of reclaimed water prior to the first tentative map.

3.5 Stormwater Management/Hydrology

A Preliminary Stormwater Management Plan is provided in Appendix 3 of this PUD Handbook, which discusses in detail the existing conditions and future drainage considerations. As the PUD allows for flexibility within land use categories, and final site layouts are not known at this time, a Technical Drainage Study will be required with each development permit/application on the site to assure that adequate facilities are available or can be provided to service the site in conformance with the City of Reno Pubic Works Design Manual, as amended.

Major Drainageways

The PUD includes one major drainageway, Thomas Creek north and south fork. The major drainageway is located in the southwestern portion of the project site and conveys water northeast until it meets Steamboat Creek. Although there are several basins of over 100 acres or more that drain onto the project, (see the *Stormwater Management Plan Report* in Appendix 3) most convey sheet flow and only one has a definitive water way (refer to the *Wetland Delineation Map* in Appendix 5 of this handbook). Disturbance of the major drainageway includes the relocation of the north fork including the restoration of the wetlands and providing flood storage mitigation. These methods will restore water quality, enhance wetland habitat and wildlife, and provide excess flood mitigation. A future Site Plan Review will be required for

disturbing a major drainage way prior to any grading activities commencing. A Site Plan Review is not required if the proposed enhanced disturbance is included with the first tentative map for any portion adjacent to the Major Drainageway.

Wetland and Stream Environment

The Army Corps of Engineers identified ±76.1 acres of jurisdictional Waters of the United States (WOUS) within the Talus Valley PUD, including ±15.6 acres of existing wetlands (various types) and ±60.4 acres of other waters (streams and open water) as depicted in Figure 10. The delineation and protection of federally protected wetlands on this property have been items of primary interest in developing the Talus Valley PUD. Any changes to existing WOUS, and or enhancements within wetland areas must be consistent with the future Wetland Mitigation Plan as approved by the Army Corps of Engineers.

On-site Floodway Improvements

The Talus Valley PUD has an identified Floodplain that will be modified through a Conditional Letter of Map Revision (CLOMR), and a final Letter of Map Revision (LOMR) requiring approval of the City of Reno and Federal Emergency Management Agency (FEMA). Although the Reimagine Reno Master Plan discourages fill in floodplains, the Talus Valley PUD is modifying a floodplain that has already been planned for modifications with the construction of Veteran's Pkwy. The Talus Valley PUD is improving the previously modified floodplain by creating additional flood storage capacity, increasing City of Reno code requirements by 25%. The flood storage areas will also be enhanced with wetland mitigation and will expand the work completed with the construction of the Southeast Connector. The Talus Valley PUD will allow for fill in the existing floodplain per the PUD Mass Grading plan (Figure 17) upon receiving the City of Reno Letter of Concurrence of the submitted CLOMR. All final grading shall conform to the FEMA approved CLOMR.

Off-site Floodway Improvements

The Master Developer or assignee will donate up to $1.7 million to the City of Reno to be administered and used by the City of Reno on capital projects that provide drainage and flood mitigation within 1.5 miles of the Talus Valley Project in accordance with the following schedule:

- Prior to the issuance of the first grading/building permit within Phase 1A East (Planning Areas 23, 24, 25 and 26), the Master Developer shall donate $200,000 to the City of Reno which shall be used to initiate design of storm drain improvements in the vicinity of the Project.
- Prior to the issuance of the first grading/building permit for Phase 2 (Planning Areas 12, 14, 15, 16, 20 and 21), the Master Developer shall donate $750,000 to the City of Reno which shall be used for design and construction of storm drain improvements in the vicinity of the Project.
- Prior to the issuance of the first grading/building permit for Phase 3 (Planning Areas 3,3,6,7,8 and 9), the Master Developer shall donate $750,000 to the City of Reno which shall be used for design and construction of storm drain improvements in the vicinity of the Project.

Figure 9 – Proposed 100 Year Flood and Major Drainageway

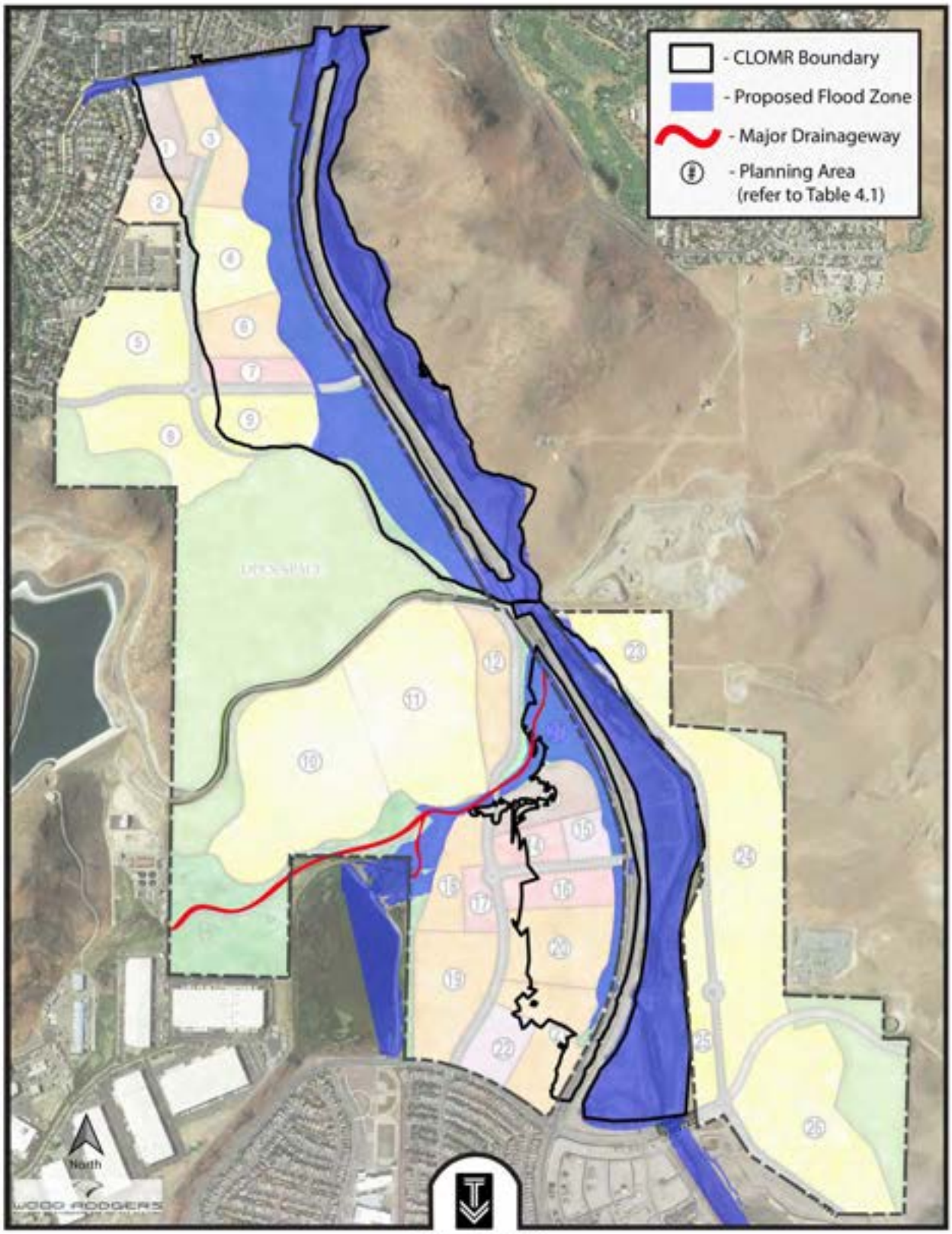
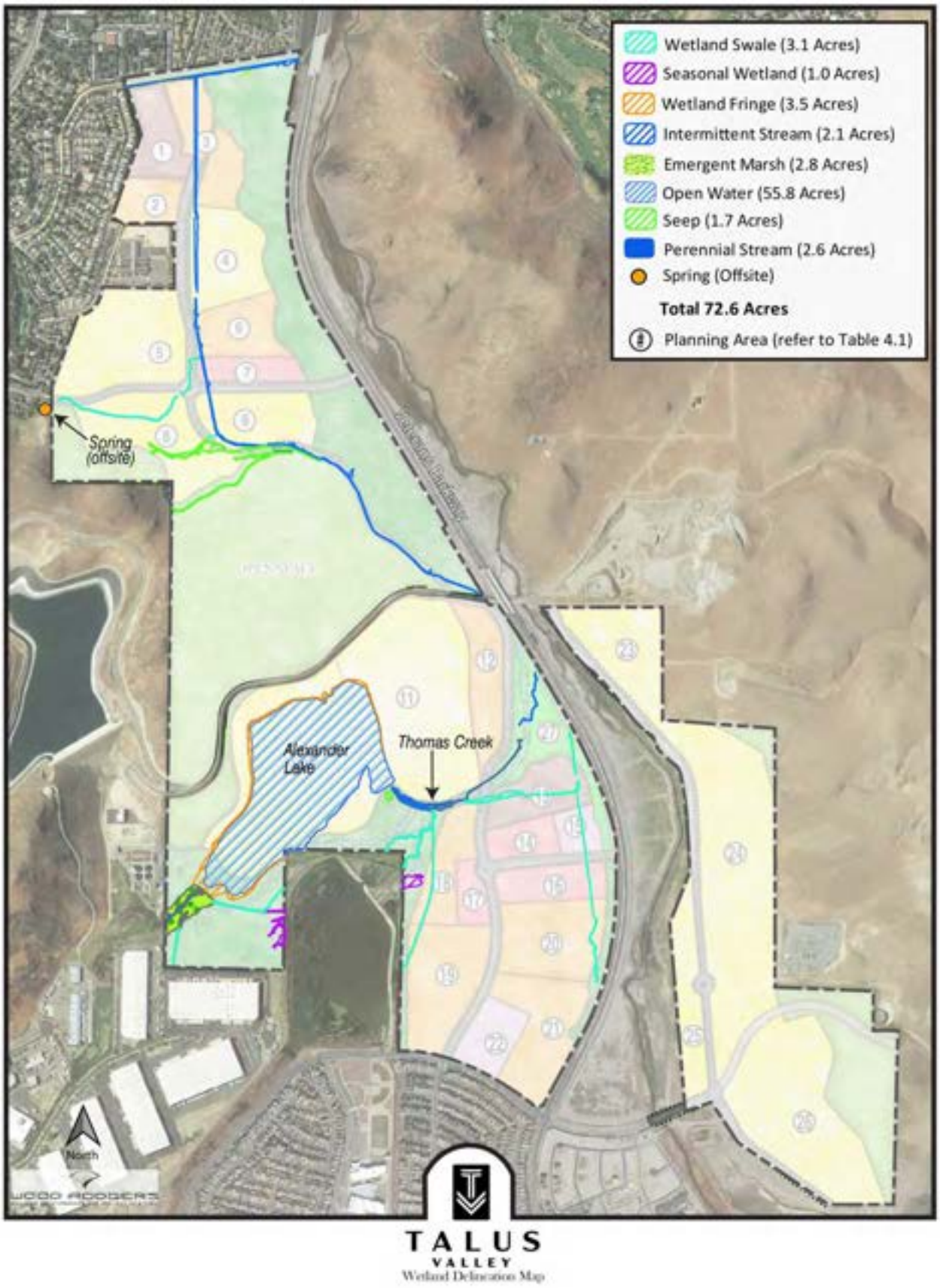


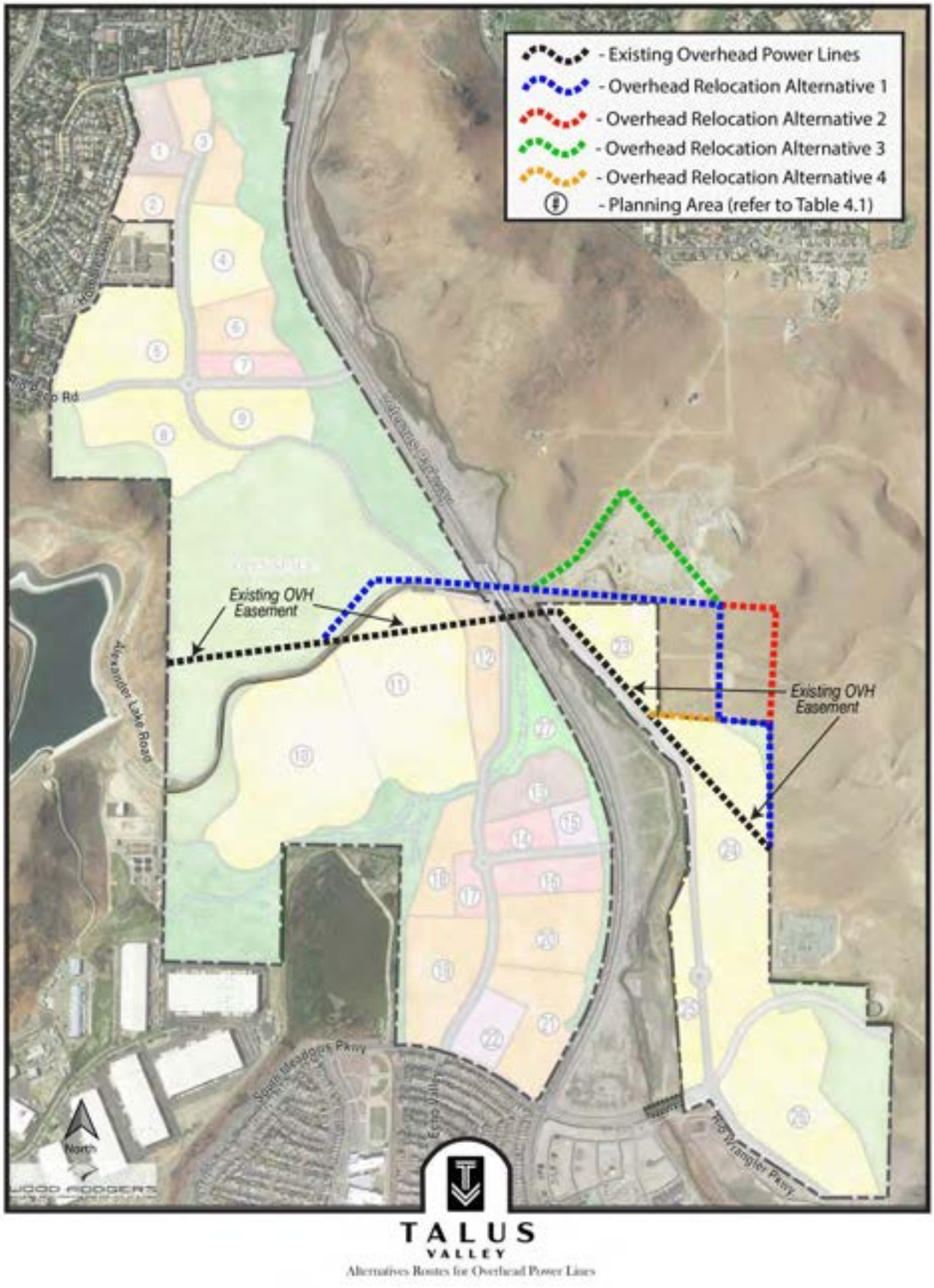
Figure 10: Wetland Delineation Map



3.6 Overhead Powerlines

There is an existing double circuited overhead transmission line and easement within the central portion of the site that is located within a Regional Utility Corridor. Within the easement NV Energy identifies the facilities as 120kV #110 line, 120kV #173 line, and 25kV #290 line. A portion of this alignment may need to be relocated, and according to NV Energy any relocation will need to remain above ground. Any relocation of regional utility lines shall require, at a minimum, approval of a Regional Plan amendment, a Special Use Permit for major utilities, and approval by NV Energy prior to relocation. Conceptual relocation routes, which have been coordinated with and studied by NV Energy, are provided in Figure 11. An alternatives analysis, final alternative selection, and actual relocation will be completed by the Master Developer and NV Energy. In no instance shall the building setbacks from existing or proposed utility corridors be less than ten feet and all uses within established setbacks shall be limited to passive uses including, but not limited to, parks, trails, parking, landscaping and fencing.

Figure 11: Overhead Power Line Relocation Alternatives



3.7 Schools

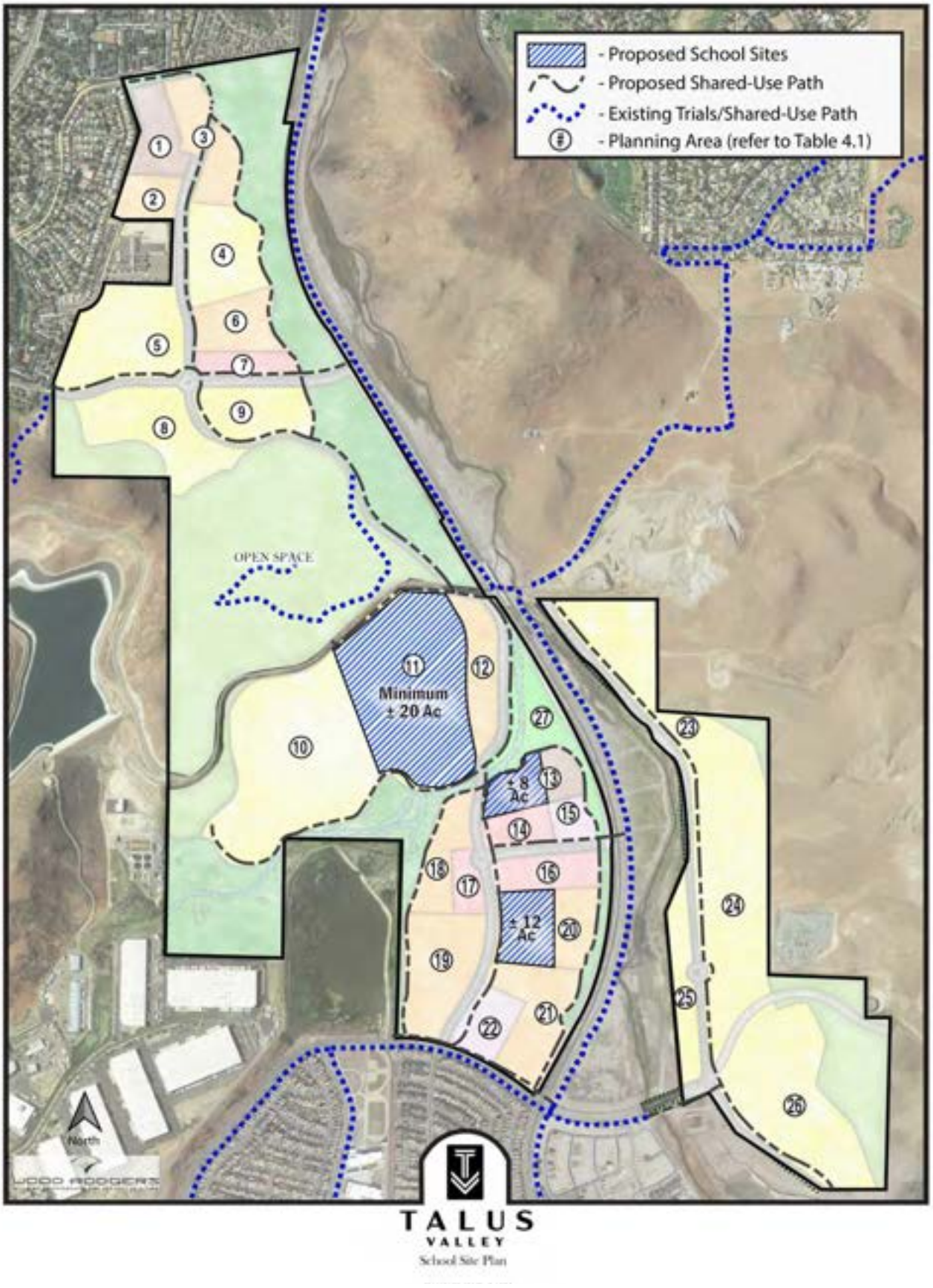
Washoe County School District (WCSD) has indicated the Talus Valley PUD will generate approximately 680 elementary students, 240 middle school students, and 360 high school students. There are currently 40± acres of identified School Sites (Figure 12) depicting potential locations for future K-12 schools, whether public or private. Schools are allowed in all land use categories with a site plan review. A minimum of 8± acres will be reserved for a public elementary school, which the final school site will be agreed upon by the Master Developer, and the Washoe County School District. A public elementary school site shall be dedicated during the time of a tentative map at such time the need for the school site has been agreed to by the Master Developer and WCSD. The Master Developer is planning for a K-12 charter school, which approximately 12 acres would be sold to an interested charter school in the future. The Master Developer has also identified a minimum 20-acre site in Planning Area 11 that the Master Developer could sell to WCSD should WCSD determine it is required.

School site design considerations:

- ✓ Public elementary school(s) shall not be located on arterials, or the Community Collectors.
- ✓ Safe Routes to School shall be analyzed during site selection.
- ✓ The community trail network shall provide connectivity to the future school sites.

The agreement between the Master Developer and WCSD (Parties) identifies that the Parties will cooperate to identify the specific sizes, configurations and locations of the School Sites. Conceptual locations are provided in Figure 12, and are subject to change with agreement between the Master Developer and the WCSD. The Parties will also cooperatively identify requisite utility sizing, traffic circulation and plan designs for the School Sites to facilitate and be compatible with Master Developer's broader infrastructure planning and development of the Project. The Master Developer will give notice to WCSD of their intent to submit its application for each tentative subdivision map in the Project phase in which a School Site is to be located identifying the proposed School Site for WCSD review and approval. The Master Developer will continue to coordinate with WCSD as the Project progresses.

Figure 12: Proposed School Sites



3.8 Parks, Greenways, and Open Space

The Parks, Greenways and Open Space is the second largest land use making up almost one third of the entire project. Open space will be dedicated to provide buffers between uses, protect slopes greater than 30%, establish neighborhood or community parks, etc. This land use category will be used to preserve the intrinsic qualities of the Project Site including enhanced floodways, major drainageways, and wetland areas and to incorporate into the project the environmental amenities that are unique to the South Reno area. Parks, Greenways, and Open Space shall be addressed with each adjacent tentative map or building permit.

- ✓ **Reimagine Reno GP 7 – Quality Places & Outdoor Recreation Opportunities**
  - ➢ **7.1: Protect Reno's Natural Resources**
    - Restore and enhance wetland areas, stream environments/major drainage ways, add flood storage, preserve cultural resources, and protect steep slopes
  - ➢ **7.2: Interconnected Network of Open Space, Greenways, and Trails**
    - Enhanced wetland and stream areas, extensive trail network linking the community to parks, open space, and the greenways
- ✓ **Reimagine Reno GP 6 – Safe, Healthy, and Inclusive Community**
  - ➢ **6.3: Support Active Lifestyles Among Residents of all Ages**
    - New parks, and trails connected to existing trails and parks
  - ➢ **6.7: Successful Education System**
    - School sites tied to trail network

Talus Valley is located in an area that has many existing active and passive recreation facilities within close proximity that will serve the PUD. These facilities include a Regional Park (Hidden Valley Regional Park) within 2 miles of the site, a Community Park (Mira Loma Park) within 1 to 2 miles from the site, three neighborhood parks to the south (Cyan, Double Diamond, and Horizon View), a City Golf Course (Rosewood Lakes) nearby, and a trailhead (Huffaker Hills) with access to surrounding open space all within a one-mile radius of the site. All of these facilities will be connected to the Talus Valley PUD through future trails and/or sidewalks.

In addition to the adjacent parks surrounding the Talus Valley PUD, the Master Developer will construct the Talus Valley Community Park. The Master Developer will begin the planning process of the park with the first tentative map of Phase 2, and will begin construction no later than the final building permit of Phase 2. The infrastructure to service the park may be constructed at any time prior to construction of the park. The RCT Agreement between the Master Developer and the City of Reno outlines the design, construction, ownership and maintenance, and use of RCT funds for the proposed ±11 acre Community Park.

Figure 13: Surrounding Parks and Trails

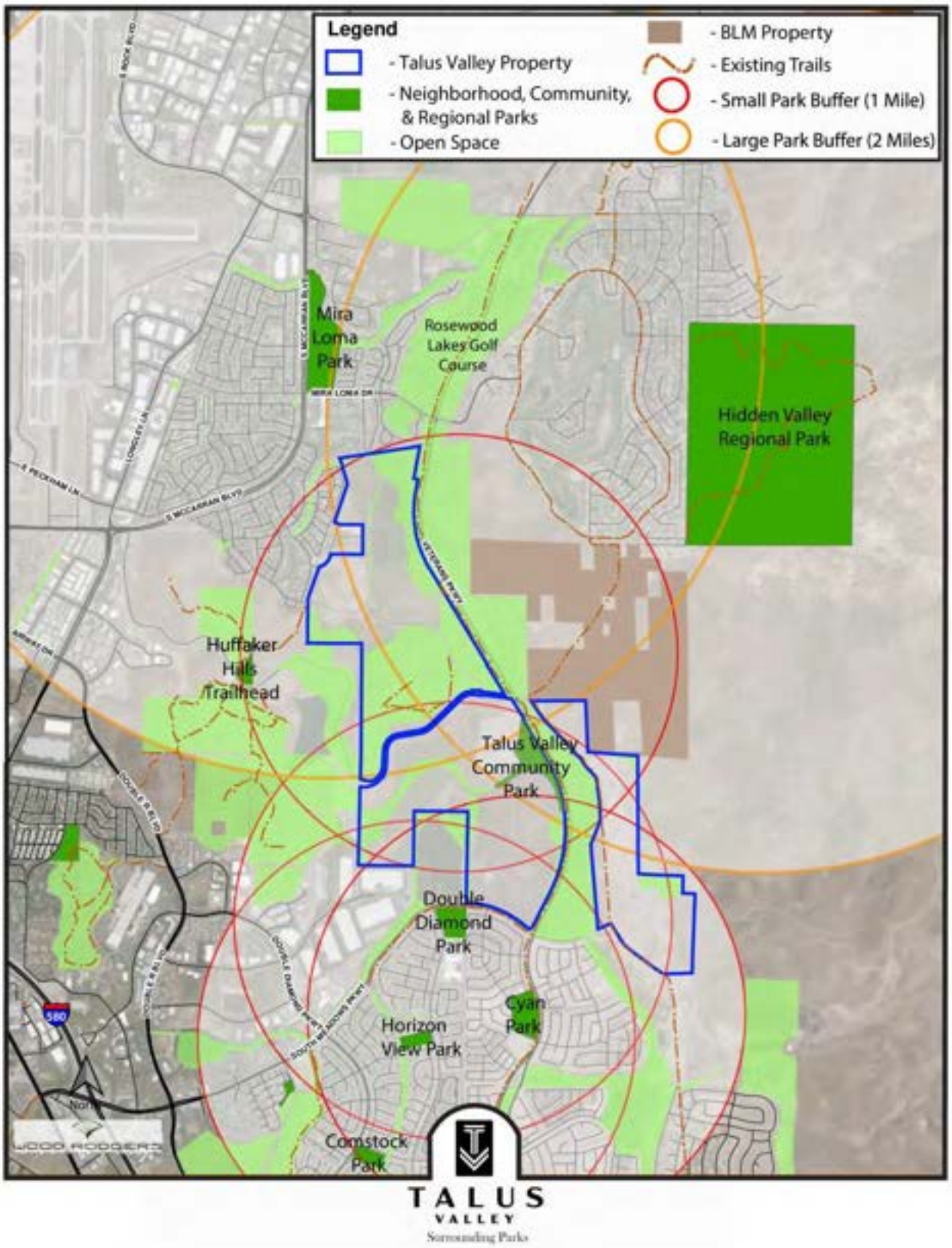
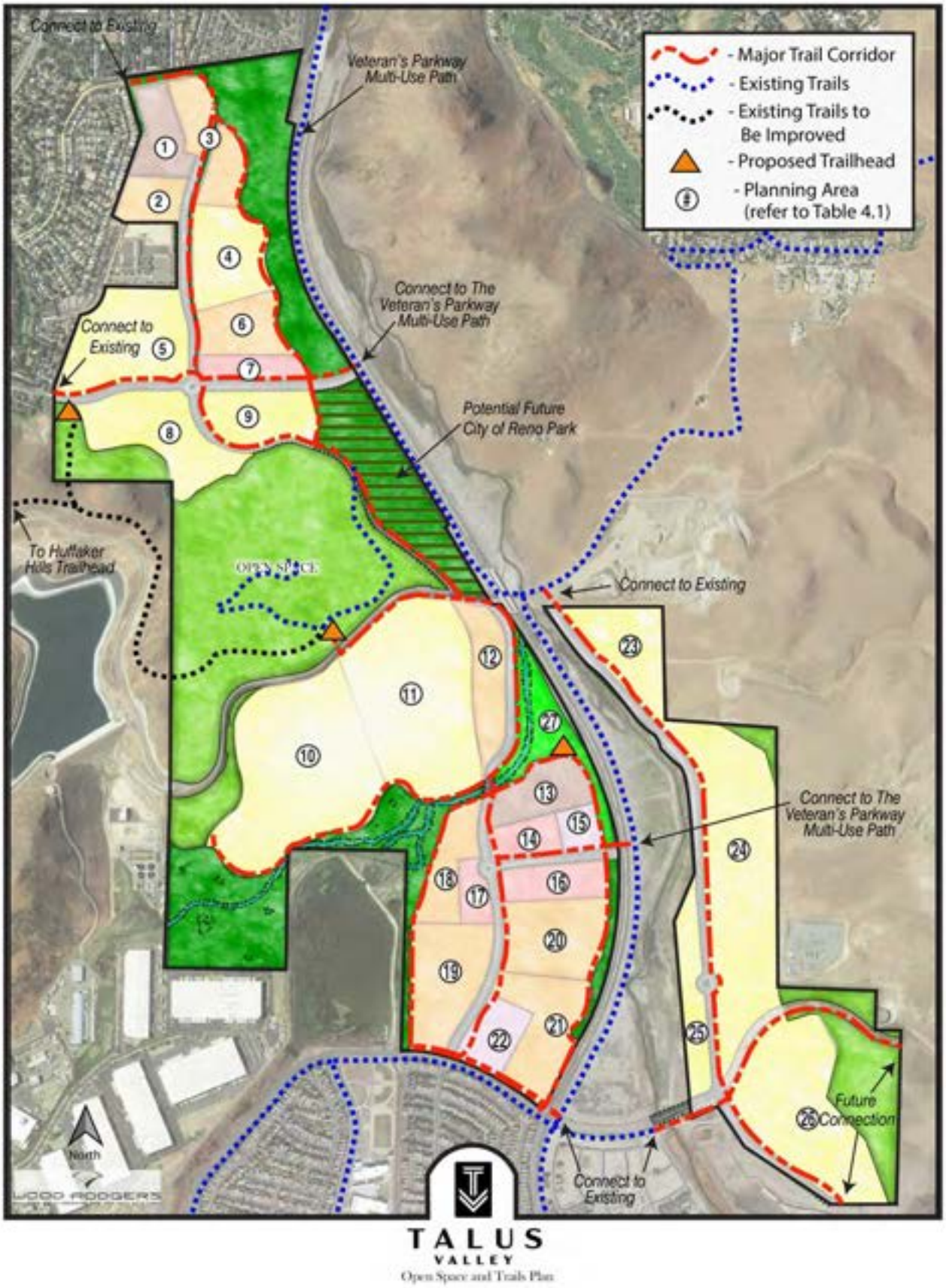


Figure 14: Talus Valley Trails and Open Space



Permitted Uses in Greenways and Open Space:

- Agricultural
- Crop production
- Existing accessory structures
- Livestock pasture
- Trails/Trailheads
- Parks and recreation amenities, public and private (City of Reno may construct additional athletic flat fields in the area identified in Figure 14 should they determine them to be necessary in the future)
- Art and Interpretive signage

Community Park (Plan Area 27):

A community park, approximately ±11 acres, is planned for the central portion of the PUD linked to the villages through a well-connected trail network. The community park will be constructed by the Master Developer and dedicated to the City of Reno upon the completion of the park and an executed maintenance agreement. The maintenance agreement will be between the City of Reno and a Master Maintenance Association setup by the Master Developer. The Master Developer shall work with the City of Reno Parks department to design the actual park features to meet City of Reno standards. The community park should include the following:

- ±6 Acres Flat Fields (approximately 3 multi-purpose field areas)
- Should be designed to meet Americans with Disabilities Act (ADA) requirements
- Play Structure (ages 2-5)
- Play Structure (ages 5 to 12)
- Bike and Pedestrian amenities such as benches and bike racks
- 1 group shelter with 10 tables or 2 shelters with 6 tables each
- 1 Double Restroom
- 2 courts (basketball, tennis, volleyball, pickleball, horseshoes)
- Trail connectivity
- A trailhead with six (6) parking spaces
- Interpretive signage along the trails (messages to be approved by the City of Reno)
- Parking shall be determined at time of design based on City of Reno code or the ITE Manual.

The Community Park design and amenities included shall be approved by the City of Reno.

Potential Future City of Reno Park:

The City of Reno has an option to acquire the area north of Alexander Lake Road identified as "Potential Future City of Reno Park" in Figure 14-Open Space and Trails Plan; provided, however, that in the event the City exercises the option, the final terms of any purchase agreement shall be subject to the review and approval of the Master Developer or their assignee, and the Master Developer's successors and assigns, in its sole and absolute discretion. The option for the City of Reno to acquire the Potential Future City of Reno Park area shall expire on December 31, 2030 which coincides with the schedule for Phase 3 of this PUD.

Neighborhood Parks (Pocket Parks):
There shall be a minimum of three (3) neighborhood parks (pocket parks), between ±3 and ±5 acres in size, each serving development up to a 1/2 mile radius. At a minimum, there shall be a neighborhood park located in the north, one in the south, and one within the eastern portion of the PUD. Neighborhood parks may be constructed by the Master Developer or individual village builders and will be owned and maintained by a home owners association (HOA). Neighborhood parks may either be included within a single village or serve multiple villages with at least two (2) of the neighborhood parks open to the public and connected with the trail network. Amenities shall serve as the focal point, including gathering places for residents, community garden(s), turf areas, and other recreation amenities as deemed appropriate based on the development(s) they serve. Recreation amenities may include a recreation center, an open turf area with trails and pedestrian amenities, court sports, or other activities to promote the outdoors and an active lifestyle.

Commercial Plaza:
Outdoor public gathering space shall be incorporated within the proposed Town Center (Plan Areas 14, 15, 16, 17, and 22). This space may include turf area for "Farmers Markets", outdoor concerts, and other temporary community events, seating areas for pedestrians covered or uncovered, art and other attractive elements, and should complement the aesthetics of the Town Center and nearby architecture. Samples of this space can be found in Chapter 5 – Commercial Architecture Styles.

Art and Interpretive Signage:
Art incorporated into community spaces, such as open space, parks, roundabouts, common area, trails, and the town center are highly encouraged.

Interpretive signage for wetland areas, historical opportunities, and other unique area characteristics shall be provided along trails and other community spaces. Interpretive signage shall be designed per City of Reno or Washoe County Parks standards.

Youth Sports:
The Master Developer or its assignee will make a donation of up to $50 per dwelling unit to be donated to the City of Reno at the time of issuance of building permit and used for public sports facilities in the City of Reno for youth sports.

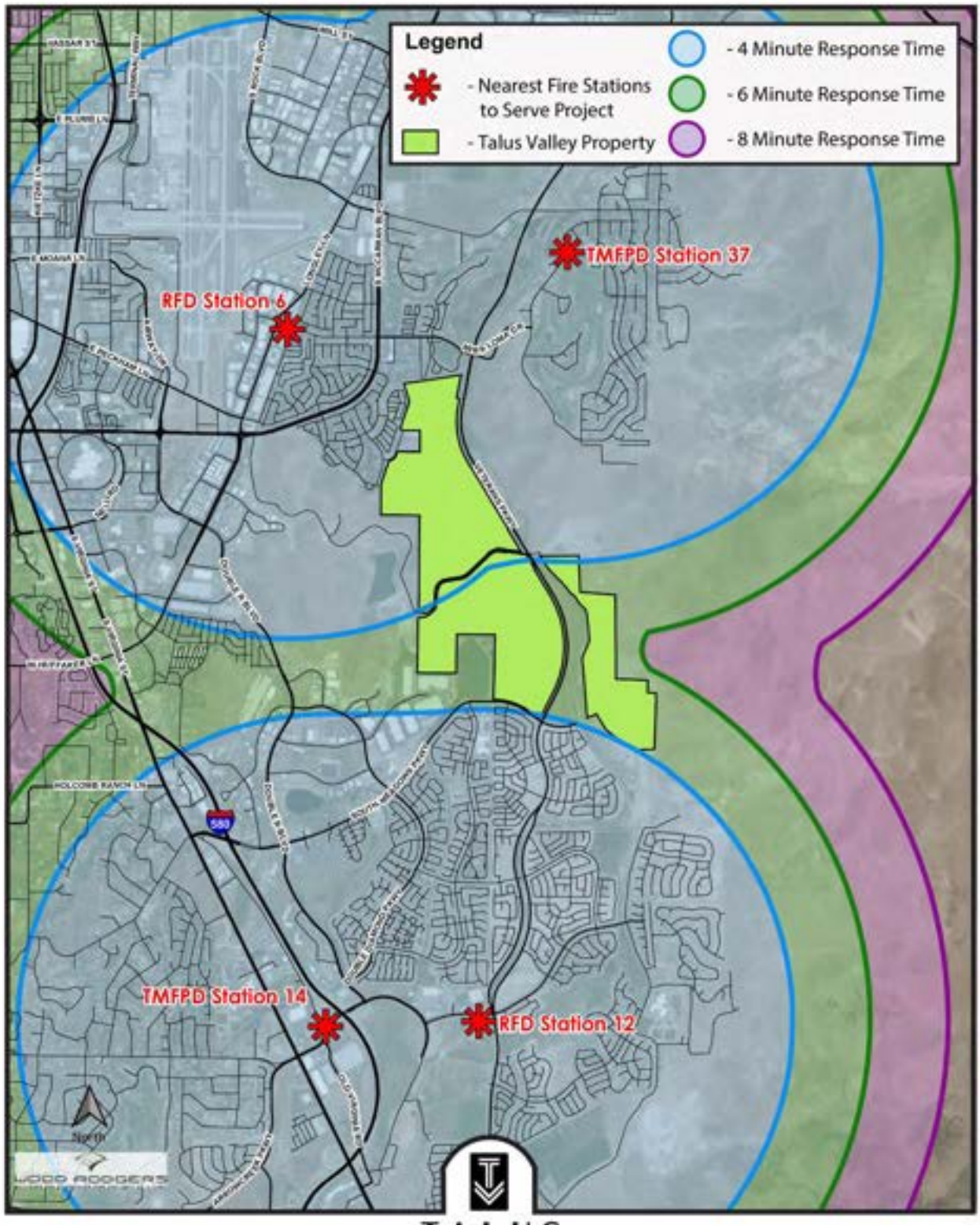
3.9 Emergency Services

The Project Site is currently served and will continue to be served by the City of Reno Police and Fire Departments. The new Veteran's Parkway runs along the entire eastern portion of the Project Site giving emergency responders direct access to both the north and south portions of the PUD. Fire service works as a system and service may not be dispatched from the nearest resource. Fire Station 6 (Mira Loma) is located approximately 2 miles northwest from the Project Site via Mira Loma Drive to Veteran's Parkway. Fire Station 12 (Damonte Ranch) is located approximately 2 miles south of the Project Site via Steamboat Parkway to Veteran's Parkway.

Response times from either station would be within the 6 minute 30 second response time (85 percent of the time) target for a suburban area as identified in the Reimagine Reno Master Plan. Figure 15 provides the location of the nearby stations and estimated response times.

The Master Developer has worked with the City of Reno to determine voluntary mitigation fees necessary for emergency responders to effectively serve the proposed development. The Master Developer or its assignee will provide a Public Safety charitable donation of i) up to $150 per dwelling unit for police and rescue first response services provided by the City of Reno; ii) up to $500 per dwelling unit for fire stations, fire protection equipment or to support the provision of fire protection services within the City of Reno. Such donations will be made to the City of Reno at the time of issuance of building permit for a residential unit. Development of the Project in accordance with this PUD Handbook shall be deemed to satisfy the finding set forth in NRS 278.349(3)(j) for purposes of future entitlement reviews.

Figure 15: Emergency Services



Chapter 4
Land Use Categories

4.1 Land Use Introduction

The following chapter addresses the allowed uses and regulations for the Talus Valley PUD Development Plan. Addressed within each land use area are the allowed uses, building height, setbacks, and regulations that will guide future development of the Talus Valley PUD. Additional protective covenants may be addressed by a separate CC&R document for these areas.

The mix of uses identified in the Development Plan support the following Reimagine Reno Master Plan objectives:

- ✓ **Vibrant neighborhoods and centers:** A town center is proposed in the southern portion of the site surrounded by a mix of density to promote a walkable community space with neighborhood retail connected to the trail system.
- ✓ **Safe, healthy, and inclusive community:** The development plan promotes a mix of housing units ranging from single family detached to small lot town house products to multi-family, covering cost options for a wide variety of income levels. The mix of land use provides something for everyone, well connected to trails and open space. The development plan and PUD are intended to create a model community for the City of Reno; a community that is open and well connected, not walled off.
- ✓ **Attainability/Affordability:** The development plan promotes a mix of housing, with an emphasis on "missing middle" housing products, which provides much needed housing supply that is not prevalent in the greater Reno/Sparks housing market. By virtue of the diverse housing mix, including higher density single family detached and attached housing products, a more attainable housing stock will be created within the Talus Valley development ("Affordability by Design"). Additionally, to address an overall affordable housing strategy for the project and the City of Reno, the Master Developer or its assignee, will provide an Affordable Housing charitable donation of up to $500 per dwelling unit, to be donated at the time of building permit on each residential unit in the Project to the Reno Land Trust or its designee for affordable housing projects in the City of Reno.
- ✓ **Quality places and outdoor recreation opportunities:** The development plan offers ample open space, enhancement of wetland and flood storage areas, parks, trails, and preservation of historical elements within the community. Interpretive opportunities to highlight this area are intended to be incorporated as part of the parks and trail system.

Setbacks (General):
For all non-residential, multi-family, and mixed neighborhood land use categories, provided the minimum setbacks can be met from the exterior project boundary, there are no minimum lot sizes required.

Uses (General):
Any use not listed in the land use category is not allowed unless it is considered accessory to a listed permitted use or is considered to be similar and/or compatible with a listed permitted use, to the satisfaction of the Zoning Administrator, per RMC 18.08.201(a)(4), as amended.

All uses shall comply with the General Development and Design Standards per RMC 18.12 unless a variation is specifically listed in this PUD.

Development Application Submittals for Tentative Maps, Special Use Permits, Site Plan Reviews, Minor Deviations, PUD Amendments, and other development related applications shall have a letter of approval from the Master Developer prior to submittal to the City of Reno. Following Master Developer approval, the submittal would follow the City of Reno process as identified in the City of Reno Municipal Code.

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Talus Valley Development Plan

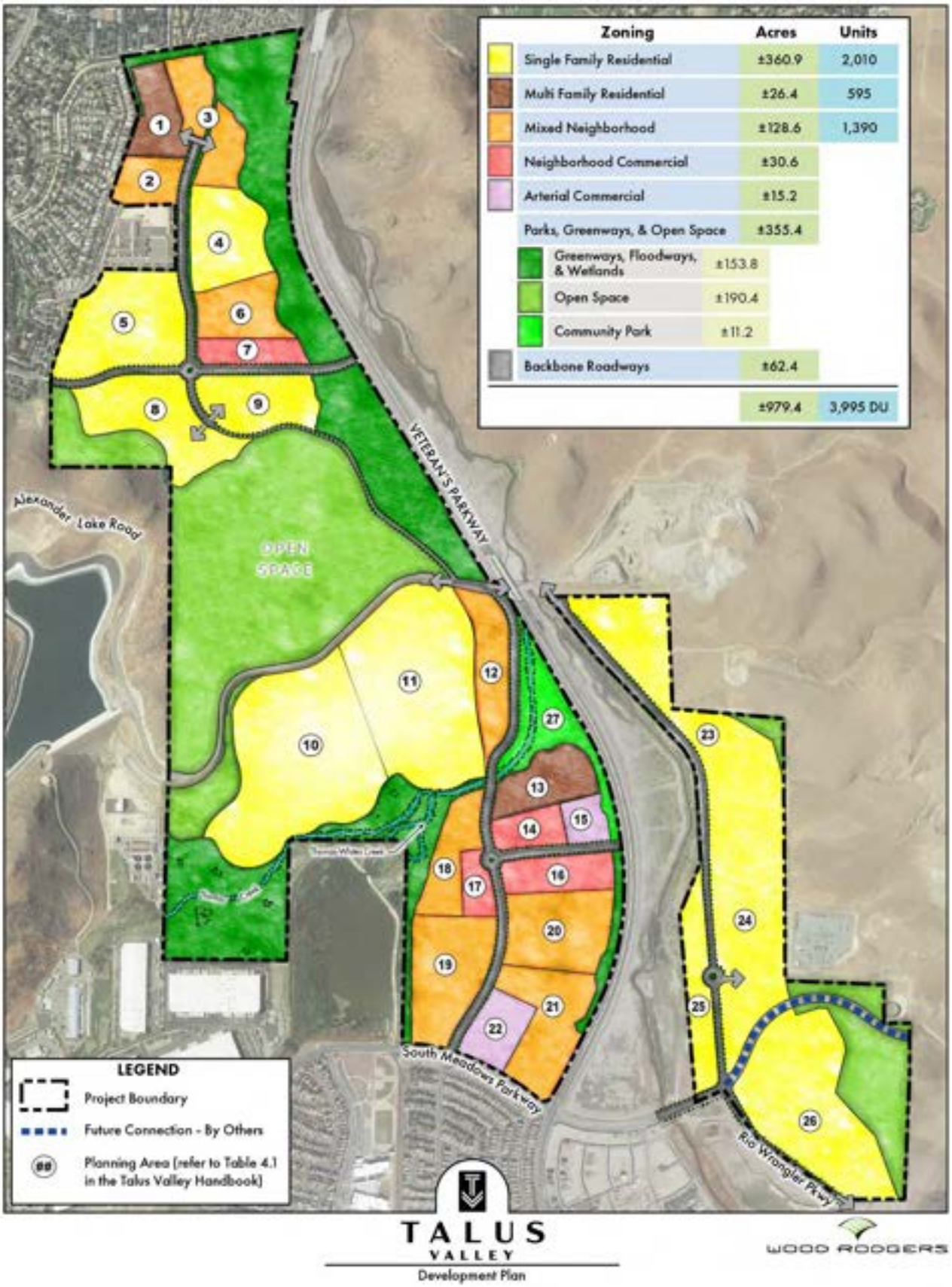


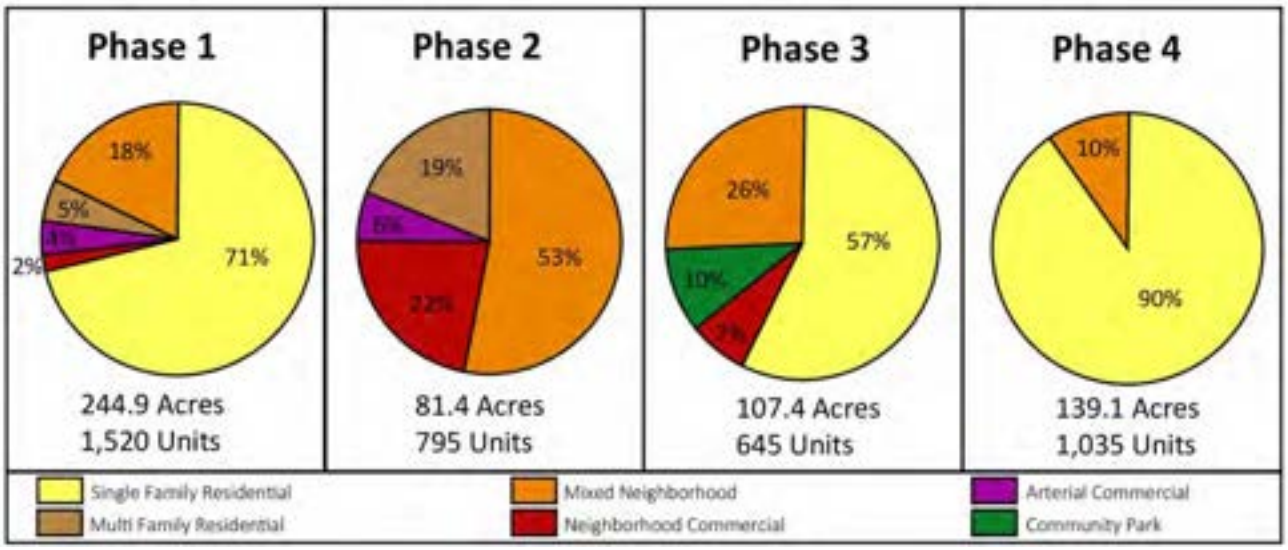
Table 4.1: Plan Area Statistics

Plan Area	PUD Land Use Category	Acreage[2]	Min. Net Density[5]	Max. Gross Density[6]	Approx. Dwelling Units[1]	Approx. Du/Ac
1	Multi-Family Residential	11.4	15 du/ac	30 du/ac	280	24.6
2	Mixed Neighborhood	8.1	8 du/ac	30 du/ac	85	10.5
3	Mixed Neighborhood	15.0	8 du/ac	21 du/ac	150	10.0
4[4]	Single-Family Residential	18.9	6 du/ac	21 du/ac	130	6.9
5	Single-Family Residential	30.2	4 du/ac	8 du/ac	180	6.0
6	Mixed Neighborhood	12.6	8 du/ac	N/A	120	9.5
7	Neighborhood Commercial	7.6	N/A	N/A	0	N/A
8	Single-Family Residential	25.3	3 du/ac	8 du/ac	135	5.3
9[4]	Single-Family Residential	16.8	6 du/ac	21 du/ac	110	6.5
10[4]	Single-Family Residential	65.5	6 du/ac	21 du/ac	440	6.7
11	Single-Family Residential	59.3	3 du/ac	8 du/ac	425	7.2
12	Mixed Neighborhood	14.3	8 du/ac	21 du/ac	170	11.9
13	Multi-Family Residential	15.0	15 du/ac	N/A	315	22.0
14	Neighborhood Commercial	7.2	N/A	N/A	0	N/A
15	Arterial Commercial	5.2	N/A	N/A	0	N/A
16	Neighborhood Commercial	10.8	N/A	N/A	0	N/A
17	Neighborhood Commercial	5.0	N/A	N/A	0	N/A
18	Mixed Neighborhood	11.6	8 du/ac	N/A	130	11.6
19	Mixed Neighborhood	23.8	8 du/ac	N/A	255	10.7
20	Mixed Neighborhood	21.7	8 du/ac	N/A	255	11.6
21	Mixed Neighborhood	21.5	8 du/ac	N/A	225	10.5
22	Arterial Commercial	9.9	N/A	N/A	0	N/A
23	Single-Family Residential	42.5	3 du/ac	8 du/ac	170	4.0
24	Single-Family Residential	42.6	3 du/ac	8 du/ac	170	4.0
25	Single-Family Residential	13.2	3 du/ac	8 du/ac	55	4.2
26	Single-Family Residential	46.6	3 du/ac	8 du/ac	195	4.2
27	Community Park	11.2	N/A	N/A	0	N/A
	Total Units Allowed:				**3,995[1]**	

Notes:

1. *The total amount of residential dwelling units by Plan Area may vary and shall not exceed 3,995 units.*
2. *Individual Plan Area acreages may vary from the above assumptions such that they comply with the underlying Master Plan designations and/or are within the limitations of the PUD.*
3. *An accounting of the actual acreages and unit count shall be provided with each tentative map or building permit as applicable.*
4. *Plan Areas 4, 9, and 10 are identified in the Talus Valley PUD as Single Family within the Mixed Neighborhood land use category of the City of Reno Master Plan. Detached Single Family uses in these areas are intended to achieve higher single family densities and shall be designed to small lot or SF4 lot standards (per RMC), or shall include single family attached product types.*
5. *Minimum Net Density is calculated by dividing the total number of lots by the total acreage of lot area.*
6. *Maximum Gross Density is calculated by dividing the total number of lots by the total Plan Area acreage.*

Phasing Mix



4.2 Land Use Descriptions

Arterial Commercial

Arterial Commercial allows a mix of retail, commercial, office, or other uses in a less intense or more suburban context with uses appropriate near main arterials. The mix of uses will serve both existing and future development and will be connected to the surrounding residential areas via the regional trail network.

- ✓ **Reimagine Reno GP 4 - Vibrant Neighborhoods and Centers**
  - ➢ **4.4: Walkable Community/ Neighborhood Centers**
    - Live/Work, Mix of Uses

Characteristics:

- Buildings are oriented along the main arterials
- Bike and Pedestrian connectivity should be provided through the site with connections to the larger trail network
- Signage facing Veteran's Parkway shall be monument style only
- Architecture defined in Section 5.10



Arterial Commercial

Neighborhood Commercial

Neighborhood commercial allows a mix of retail, commercial, office, or other uses in a less intense or more suburban context creating town centers for the surrounding development. The mix of uses will serve the existing and future development. Neighborhood commercial areas are situated near open space areas, along entrances to the heart of the development, and connected to the residential areas via the regional trail network serving as the "Town Center".

- ✓ **Reimagine Reno GP 4 - Vibrant Neighborhoods and Centers**
  - ➢ **4.4: Walkable Community/Neighborhood Centers**
    - Live/Work, Mix of Uses, Community Gathering Spaces

Characteristics:

- Buildings are oriented along the perimeters and main street, but provide open gaps to promote a continuous feel of the town center
- Bike and Pedestrian connectivity should be provided through the site with connections to the larger trail network
- Community gathering spaces shall be incorporated into the site layout, which can be used for events such as farmers markets, concerts, etc.
- Architecture defined in Section 5.10
- Signage should primarily be provided on the buildings with smaller monument signage provided



Neighborhood Commercial

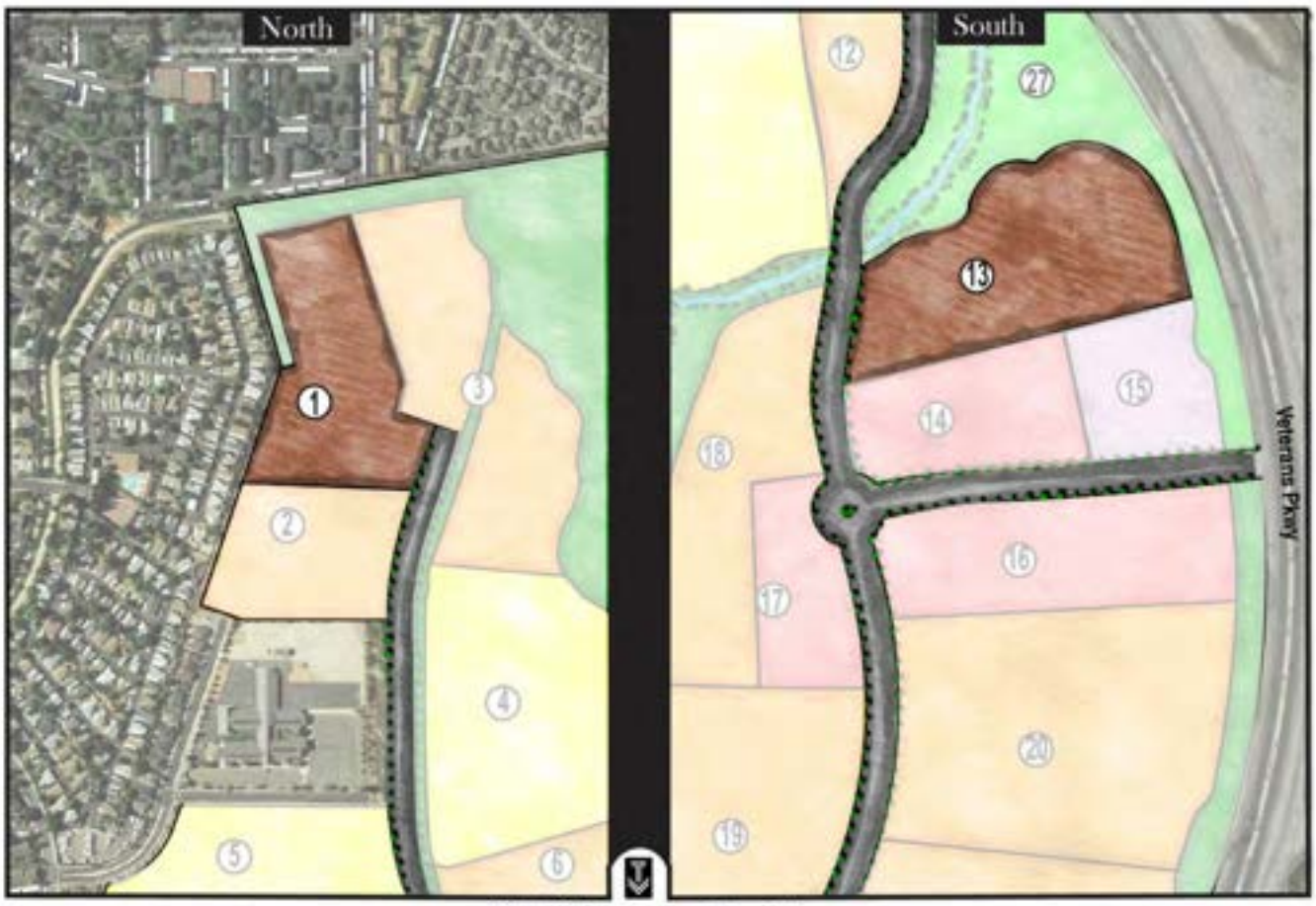
Multi-Family Residential

The Multi-Family Residential land use category is intended to provide for a higher density mix of multi-family residential products.

- ✓ **Reimagine Reno GP 4 - Vibrant Neighborhoods and Centers**
  - ➢ **4.2: Mix of Housing Options**
    - Provides for mixture of housing products, multi-generational, community amenities
  - ➢ **4.4: Walkable Community/Neighborhood Centers**
    - Density to support town center

Characteristics:

- Multi-family complexes designed with their own community amenities
- Located either adjacent to the town center or to existing multi-family and close to schools
- Architecture defined in Section 5.10 and should complement the surrounding developments



Multi-Family Residential

Mixed Neighborhood

The Mixed Neighborhood land use category includes a mix of lower density multi-family, single family attached, alley loaded, townhomes, condos, and small lot detached single family residential.

- ✓ **Reimagine Reno GP 4 - Vibrant Neighborhoods and Centers**
  - ➢ **4.2: Mix of Housing Options**
    - Provides for mixture of housing products, multi-generational, innovative design, community amenities
  - ➢ **4.4: Walkable Community/Neighborhood Centers**
    - Mix of uses, mix of density/intensity surrounding the town center and provides a transition between commercial to lower intensity uses

Characteristics:

- Encourage a mix of housing types
- Typically located within walking distance to amenities such as the town center, parks or schools
- Open neighborhoods with trail connectivity to nearby amenities
- Eclectic mix of Architecture as defined in Section 5.10 that blends with the single family detached products, but also offers opportunity for more modern designs



Mixed Neighborhood

Single-Family Residential

The Single Family Residential land use category includes a mix of residential, both detached and attached products.

- ✓ **Reimagine Reno GP 4 - Vibrant Neighborhoods and Centers**
  - ➢ **4.2: Mix of Housing Options**
    - Provides for mixture of housing products, multi-generational

Characteristics:

- Primarily Single Family Detached with a mix of 4,000 to 6,000 square foot lots, with some larger 7,000 to 10,000 square foot lots located in the southeast
- Opportunity for smaller attached single family or clustered single family detached housing products where appropriate
- Open neighborhoods with cul-de-sacs abutting the backbone roadways providing connections to the trail network
- Eclectic mix of Architecture as defined in Section 5.10
- Appropriate location for an elementary school with trail connectivity
- With each tentative map for plan areas 4, 9, 10, and 11, the developer shall demonstrate compliance with the Mixed Neighborhood Master Plan intent. This may include a combination of strategies, including but not limited to: mix of attached and detached housing products, small lot standards, cluster development, narrative of site constraints resulting in limited density, typical housing product envelope intended to meet typical SF4 lot standards, etc.



Single-Family Residential

4.3 Permitted Uses

Uses Permitted in the Talus Valley PUD					
P = Permitted by Right *SPR = Site Plan Review Required* *SUP = Special Use Permit Required* *A = Permitted as Accessory Use*					
Use Category/ Specific Use Type	**Development Plan Land Use**				
	AC	**NC**	**MFR**	**MN**	**SFR**
Residential					
Congregate Care Facility	P	P	P	P	
Multi-Family	P	P	P	P	
Nursing Home/Assisted Living Facility	P	P	P		
Senior Housing				P	
Single Family Attached/ Condominium/Town House	P	P	P	P	P
Single Family Detached				P	P
Single Family Zero Lot Line				P	P
Cluster Development				P	P
Active Adult Communities			P	P	P
Commercial Sales and Services					
Animal Clinic (No Shelters, Commercial Boarding/Kennels)	P				
Antique/Collectible Store	P	P			
Bakery, Retail	P	P			
Bar	SUP	SUP			
Barber/Beauty Shop	P	P			
Carwash	P				
Child Care Center	P	P			
Cleaners Commercial	P				
Convenience Store	P				
Copy Center	P	P			
Custom & Craft Work	P	P			
Drive-Through Facility	P				
Financial Institution	P	P			

Uses Permitted in the Talus Valley PUD					
P = Permitted by Right *SPR = Site Plan Review Required* *SUP = Special Use Permit Required* *A = Permitted as Accessory Use*					
Use Category/ Specific Use Type	**Development Plan Land Use**				
	AC	**NC**	**MFR**	**MN**	**SFR**
Freestanding Automated Teller Machine	P	P			
General Personal Service	P	P			
General Retail Store	P	P			
Household Goods, Light Service, Repair & Assembly	P				
Laboratory	SUP				
Laundry, Drop-off/Pickup	P	P			
Medical Facility, Day Use Only	P	P			
Office Other Than Listed	P	P			
Plant Nursery/Garden Supply	P				
Restaurant with Alcohol Service	P	P			
Restaurant without Alcohol Service	P	P			
Sale of Low Volume Bulky Goods	P	P			
Recreation, Entertainment, and Amusement					
Commercial Amusement/ Recreation (Inside only)	P				
Fitness Center	P	P	P	P	P
Sports Arena, Stadium, or Track (Inside only)	P				
Theatre (No Drive-in)	P				
Parks, Greenways, & Open Space	P	P	P	P	P
Trails	P	P	P	P	P

Uses Permitted in the Talus Valley PUD					
P = Permitted by Right *SPR = Site Plan Review Required* *SUP = Special Use Permit Required* *A = Permitted as Accessory Use*					
Use Category/ Specific Use Type	**Development Plan Land Use**				
	AC	**NC**	**MFR**	**MN**	**SFR**
Lodging					
Hotel (without non-restricted gaming operation)	P				
Institutional, Public, and Community Service					
Church/House of Worship	P	P			
Communication Facility, Equipment Only	SUP	SUP	SUP		
Art Gallery	P	P			
Public Transit or School Bus Shelter	P	P	P	P	P
Utility Box/Well House, Backup Generator, Pumping or Booster Station	P	P	P	P	P
School, Primary or Secondary (Public or Private)	SPR	SPR	SPR	SPR	SPR
School, Vocational/Trade	SPR				
Industrial, Manufacturing, Wholesale, Distribution and Transportation					
Mini-warehouse	SPR	SUP			
Rental Store, w/Outdoor Storage	SUP				
Brewery/Distillery	P	P			
Food Processing/Wholesale Bakery	P				
Accessory Uses					
Accessory Dwelling Unit (ADU)					A - SPR
Caretaker Quarters	A	A	A		
Child Care, In Home (1-6 Children)			A	A	A

Uses Permitted in the Talus Valley PUD					
P = Permitted by Right *SPR = Site Plan Review Required* *SUP = Special Use Permit Required* *A = Permitted as Accessory Use*					
Use Category/ Specific Use Type	**Development Plan Land Use**				
	AC	**NC**	**MFR**	**MN**	**SFR**
Child Care, In Home (7-12 Children)			A - SUP	A - SUP	A - SUP
Community Center, Private		A	A	A	A
Drive Through Facility	A				
Home Occupation		A	A	A	A
Gaming Operation, Restricted	A	A			
Indoor Storage	A	A			
Sidewalk Cafes	A	A			
Parking Structures	A-SUP	A-SUP	A-SUP		

Notes and additional use requirements:

- *Primary Uses not listed in the Table above are not allowed, unless approved by the Master Developer and City of Reno Zoning Administrator.*
- *Allowed Temporary Uses are as defined in RMC Section 18.08.201 Table 18.08-5 under the associated zoning districts.*
- *For AC and NC districts, buffering shall be provided when adjacent to residentially zoned property and should include one of the following: a 6-foot-tall masonry wall, a 6-foot decorative wall, or a combination of a 15-foot landscape strip and 2 to 4-foot berm with trees. For purposes of this PUD, right of way and*
- *An SUP is required for uses that open before 6am or stay open past 11pm.*
  An SUP is required for uses that require deliveries before 6am or past 11pm.

4.4 Setbacks & Lot Size Standards

Dimensional Standards					
	AC	**NC**	**MFR**	**MN**	**SFR**
Density	Densities shall be consistent with Table 4.1: Plan Area Statistics				
Min. Lot Size	None				2,400 sf
Min. Lot Width (ft.)	None				30
Min. Front Yard (ft.)	10		15	10	10
Min. Garage Setback (face of garage)	N/A		N/A	3 or 20	3 or 20
Min. Side Yard (ft.)	0 or 10		5	0 or 5	0 or 5
Min. Rear Yard (ft.)	0 or 10		10	10	15
Max. Stories	4			3	3
Max. Building Height (ft.)	55*			45*	35
Building Separation**	20		20 (10 if less than 50 units)	10	10

** Plan Areas 1, 2, 21, and 22 shall have an additional 1 foot of setback along property lines adjacent to existing residential for every 1 foot of height over 35 feet.*

*** A reduced Building Separation may be approved with a tentative map, special use permit, or site plan review to address unique housing products.*

General Notes:

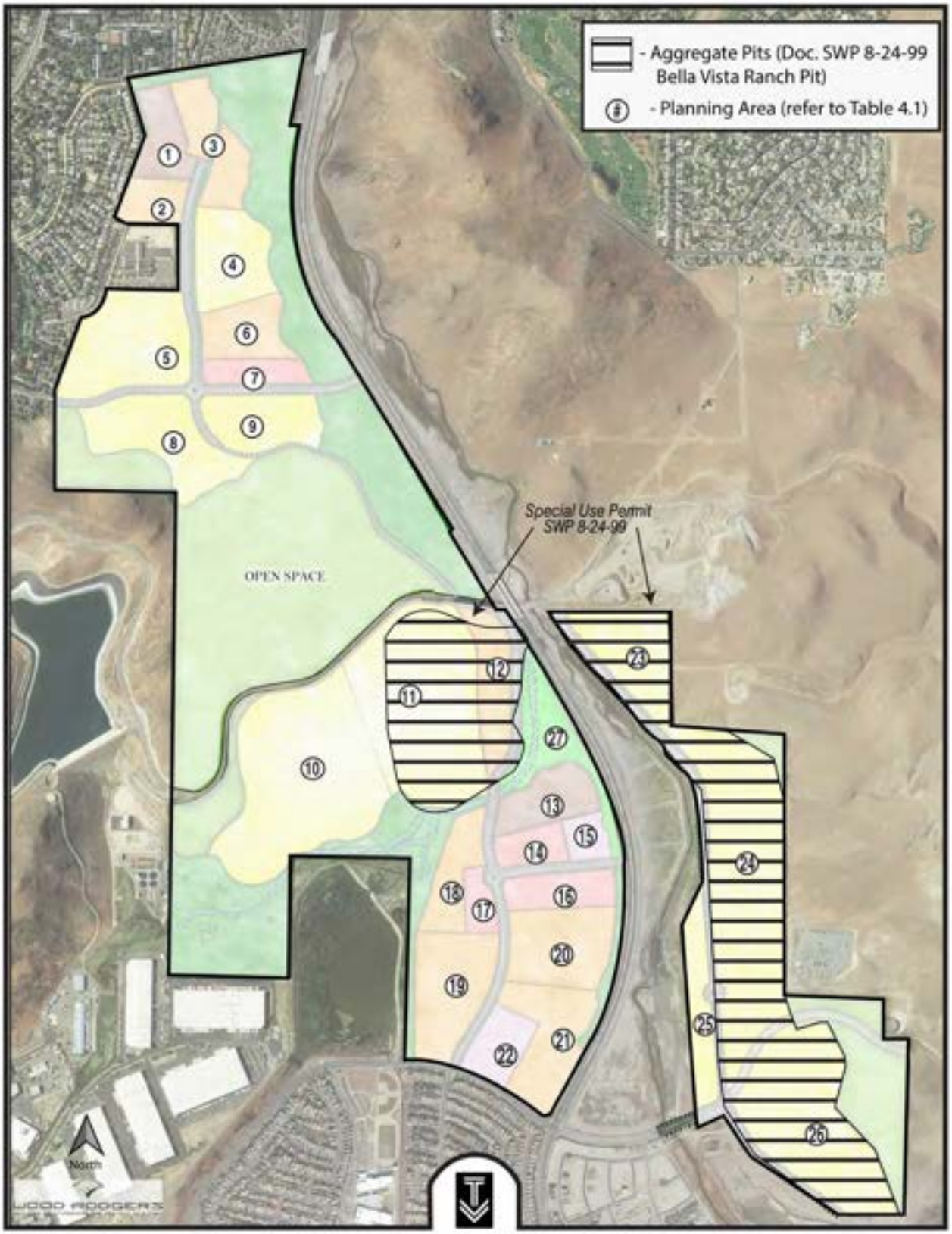
- *Small Lot standards can be utilized per RMC Section 18.12.102.*
- *Setbacks for Mixed Neighborhood and Single Family Residential may be modified with a tentative map or special use permit to address unique housing products.*

4.5 Existing Uses

There are two identified Aggregate Pits within the Project Site as depicted in Figure 16, which currently hold a Special Use Permit SWP8-24-99, originally through Washoe County and have since been taken over by the City of Reno. The primary haul route utilized is Alexander Lake Road. The Talus Valley PUD will allow these pits and haul road to remain active until such time they are no longer needed. Once the pits and haul road are no longer active, the land will be utilized for future development as depicted in the Talus Valley Development Plan, Figure 3. As the pits remain active, any future home builders will be required to disclose that the pits are active to their home buyers. Once the pits are inactive the disclosure statements will no longer be required.

The property also has current ranching and agricultural activities taking place, which are planned to continue as the first phases of the PUD are built out. These activities are allowed to continue under the Talus Valley PUD.

Figure 16 – Aggregate Pit Locations



Chapter 5
Design Standards

5.1 Street Design

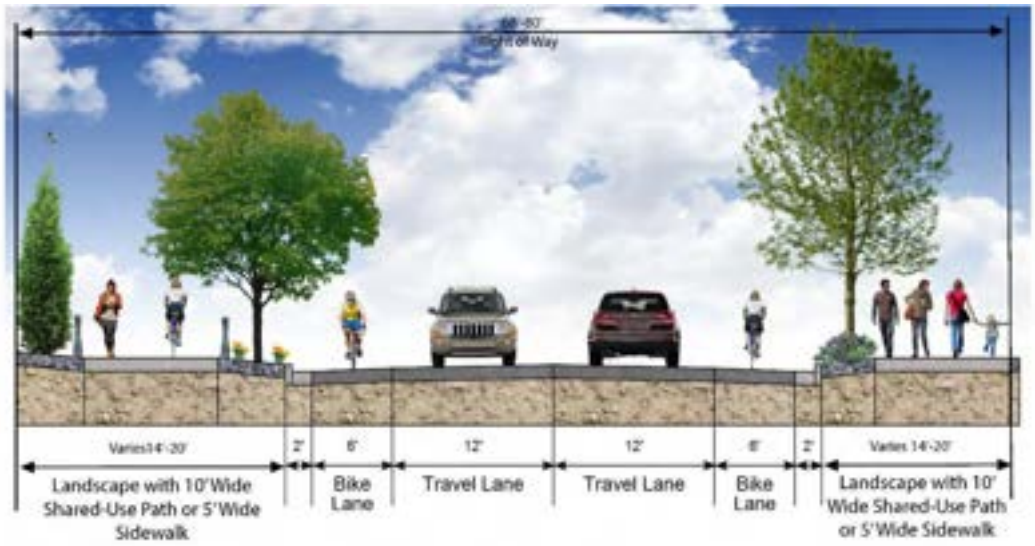
The Master Developer or their authorized designee shall be responsible for constructing all Community, Neighborhood, and Park Collectors, and Local Streets to the satisfaction of the Administrator. Upon completion and approval by City of Reno, the Master Developer or their authorized designee shall dedicate the right of way and street improvements to the City of Reno. Street sections may be modified by the Administrator if required for final design. All landscape and shared use paths included within Right-of-Way shall be maintained by a Master Maintenance Association.

Community Collectors (4 lanes):
The Community Collectors include the extension of Echo Valley Parkway and Bella Vista Ranch Road and generally includes the future extensions connecting to Veterans Parkway, or the other Plan Areas. Community Collector right-of-way will vary based on use but will generally range from 110 feet to 115 feet in width.



Community Collector

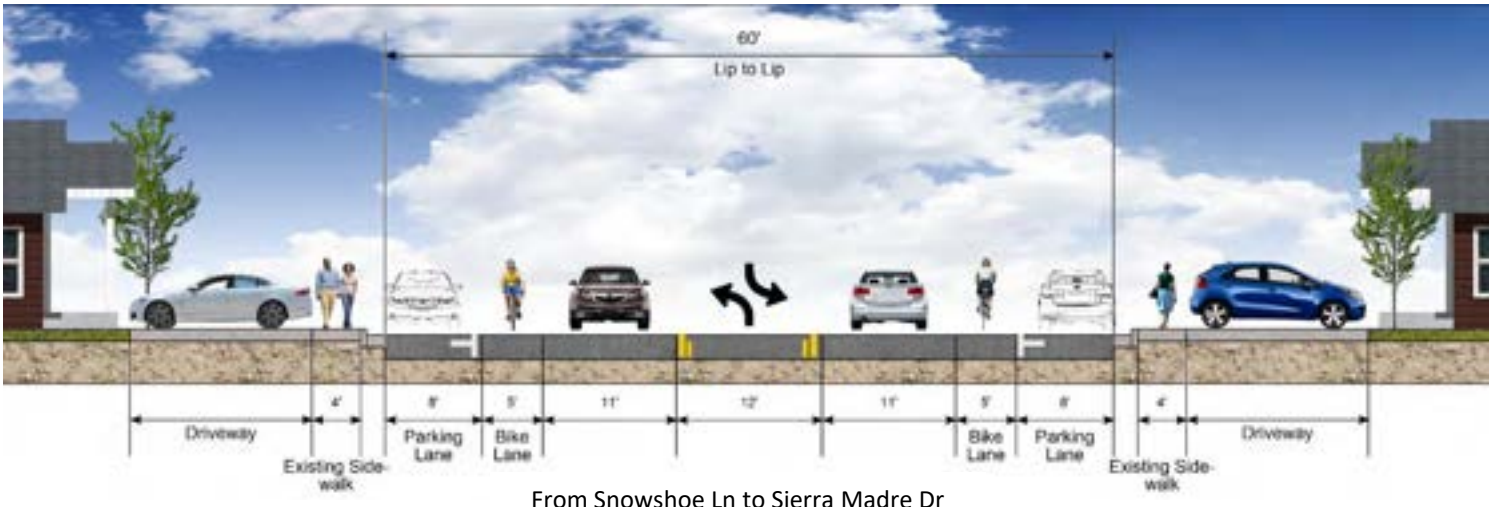
Neighborhood Collector (2 lanes):
Neighborhood Collectors provide access from Community Collectors to the individual neighborhoods. The Community Collector right-of-way will generally range from 68 feet to 92 feet in width.



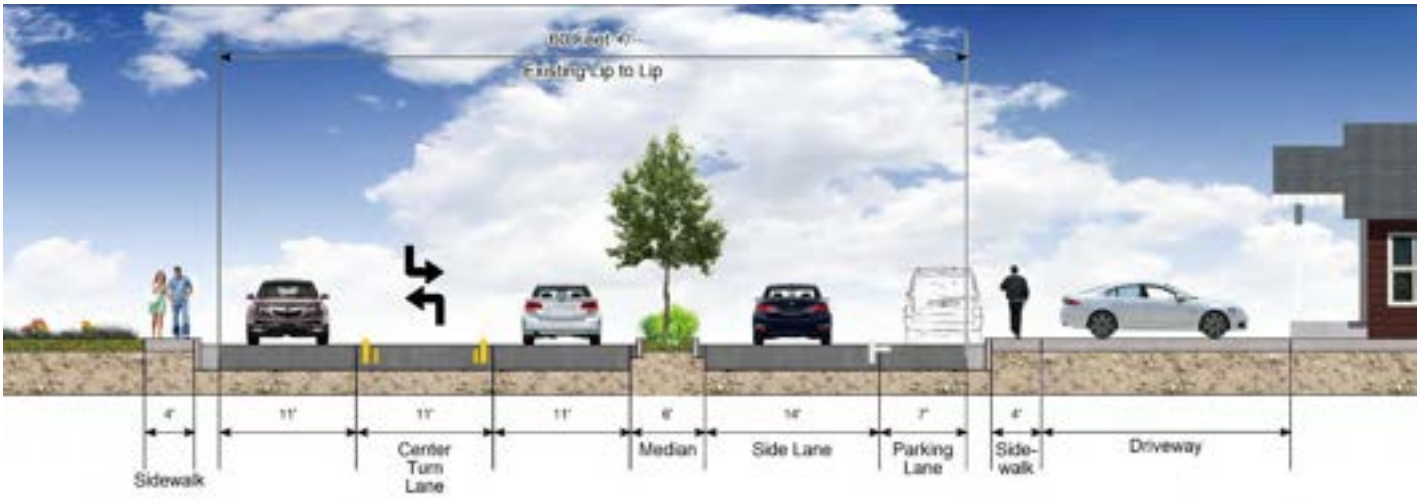
Neighborhood Collector

Rio Poco Road Improvements:

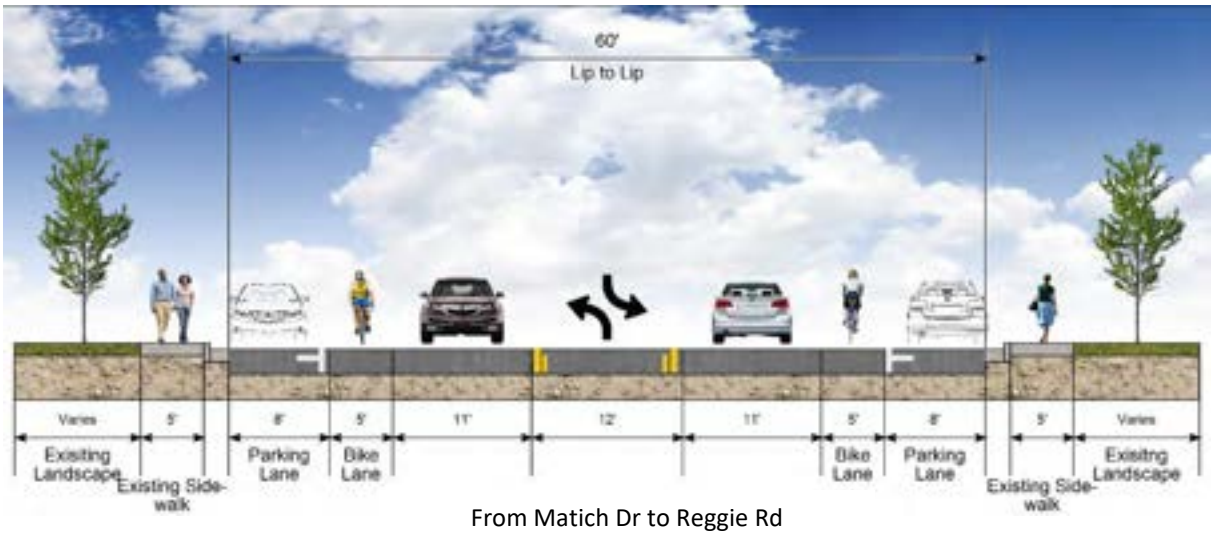
The following modifications will be made to Rio Poco Road as identified in the Traffic Impact Analysis in Appendix 2.



From Snowshoe Ln to Sierra Madre Dr



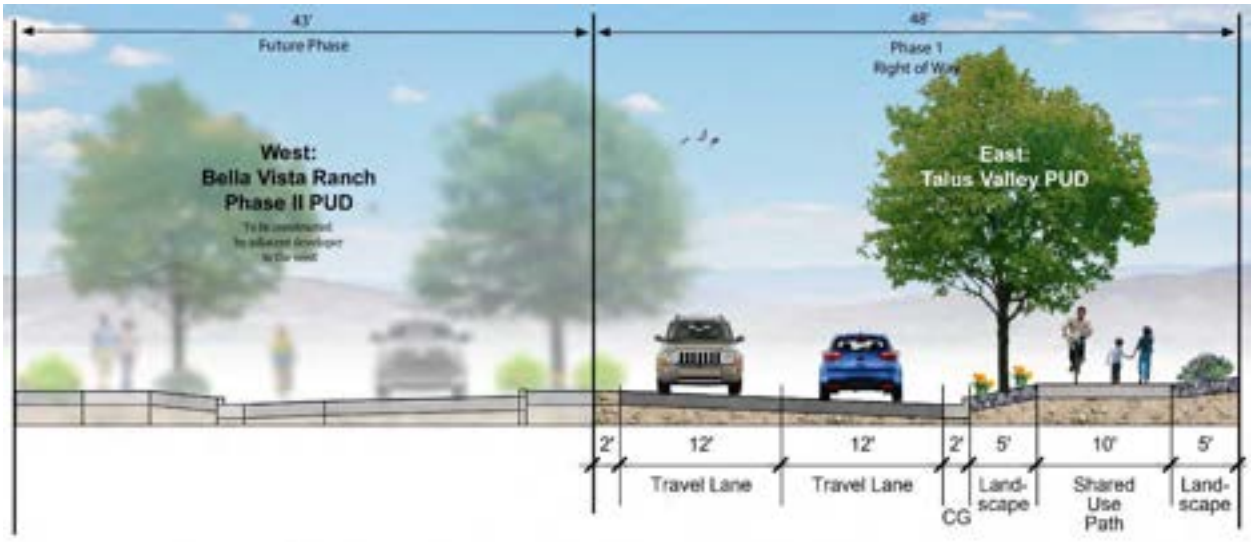
From Sierra Madre Dr to Matich Dr



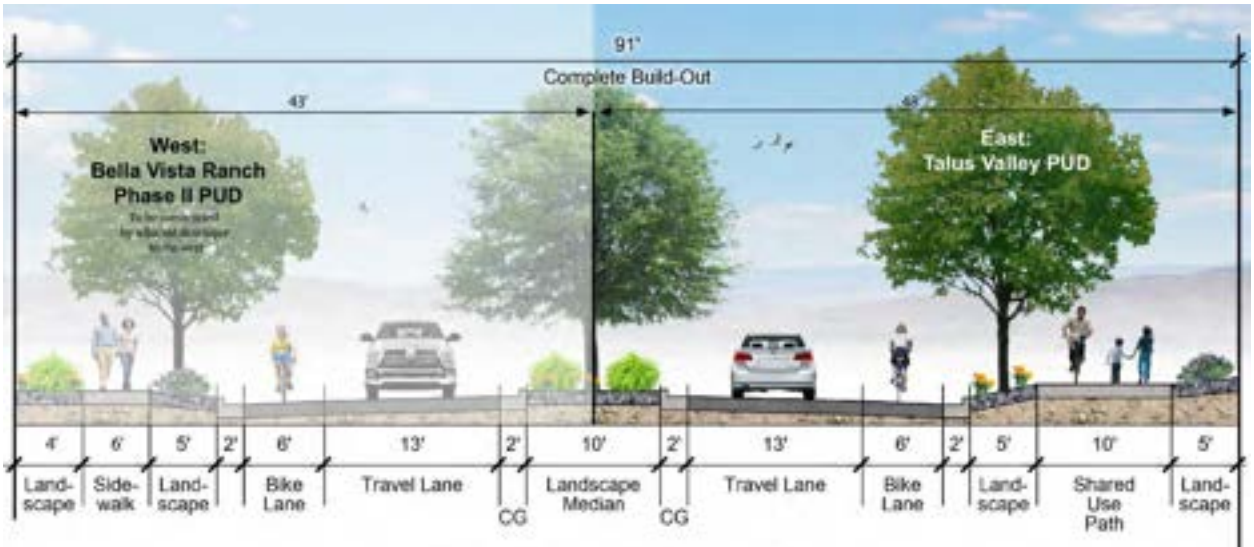
From Matich Dr to Reggie Rd

Rio Wrangler (South of South Meadows Parkway) Road Improvements:

Rio Wrangler Parkway south of South Meadows Parkway is proposed to be constructed in two phases pending the development of the adjacent property to the west. This section of Rio Wrangler Parkway will have the centerline located on the Talus Valley Property Line. Talus Valley shall include the dedication of 48-foot Right of Way. Prior to the development of the adjacent property, Phase 1 will include a 26-foot wide two lane road with a landscape strip including a 10-foot wide shared use path on the east side. With the development of the adjacent property, the Complete Build Out will include the west portion of Rio Wrangler Pkwy, to be constructed by others, and will create a total 91-foot wide right of way with a two lane road, bike lanes on both sides, a landscaped median, landscape and a sidewalk on the west side, and landscape and a 10-foot wide shared use path on the east side.



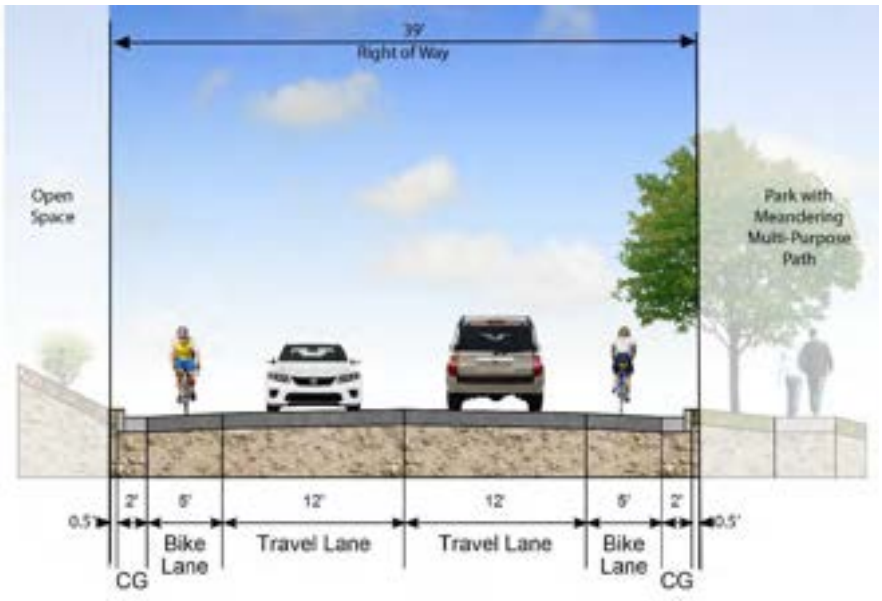
Phase 1: Rio Wrangler Parkway (South of S. Meadows Pkwy)



Rio Wrangler Parkway (South of S. Meadows Pkwy)

Park Collector:

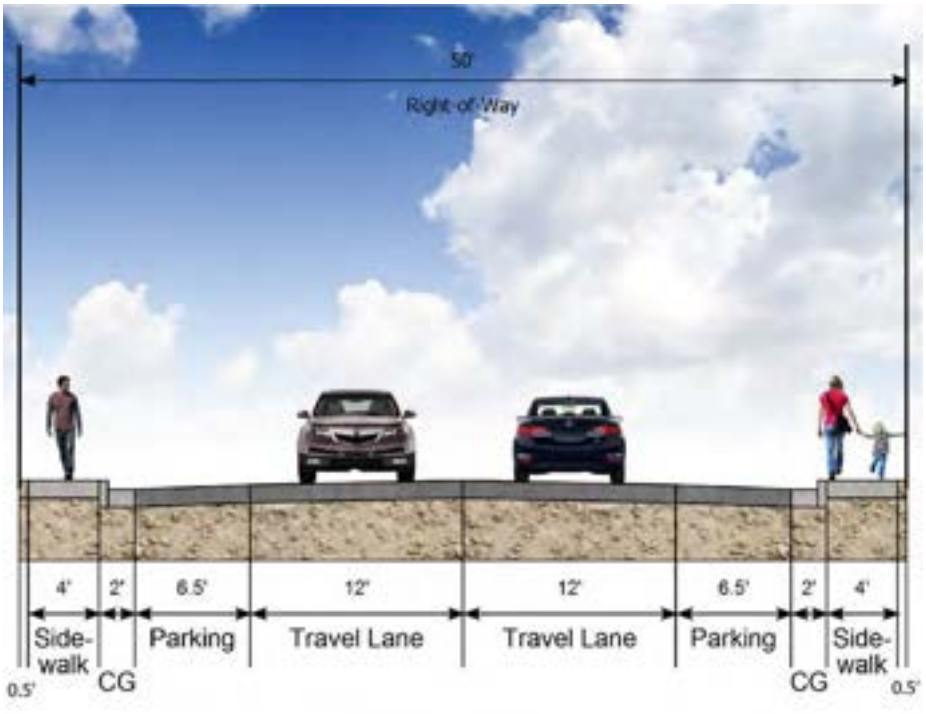
The Park Collector provides connectivity between the north and south portions of the PUD. The right of way is narrow as it will be surrounded by open space on both sides. Posted speed limits should consider pedestrian activity along this roadway.



Park Collector

Local Streets:

Local Streets are located within individual neighborhoods. On-street parking may be omitted with a subdivision plan that includes off-street parking pockets at the time of Tentative Map. Parking pockets shall be provided and constructed in accordance with RMC 18.12.1101-1105, as amended. Max Posted Speed 25 MPH.



Local Street

Alleyways:

Alleys may be proposed in individual subdivisions, depending on the residential product type at time of building permit.



Midblock Pedestrian Crossings:

Midblock pedestrian crossings shall be designed to City of Reno standards and include a crosswalk with pedestrian activated Rectangular Rapid Flash Beacons (RRFB).



Water/Wetland Crossings:

All water crossings will include a bridge or box culverts with a decorative façade, which shall be similar to existing crossings in the area and shall meet all City of Reno standards.





5.2 Parking Standards

Parking for all land use categories within this PUD shall be provided and constructed in accordance with RMC 18.12.1101, as amended, unless expressly modified within the PUD development standards. Documentation of compliance with parking and parking lot landscape requirements shall be provided at the time of building permit.

Minimum Parking Required:

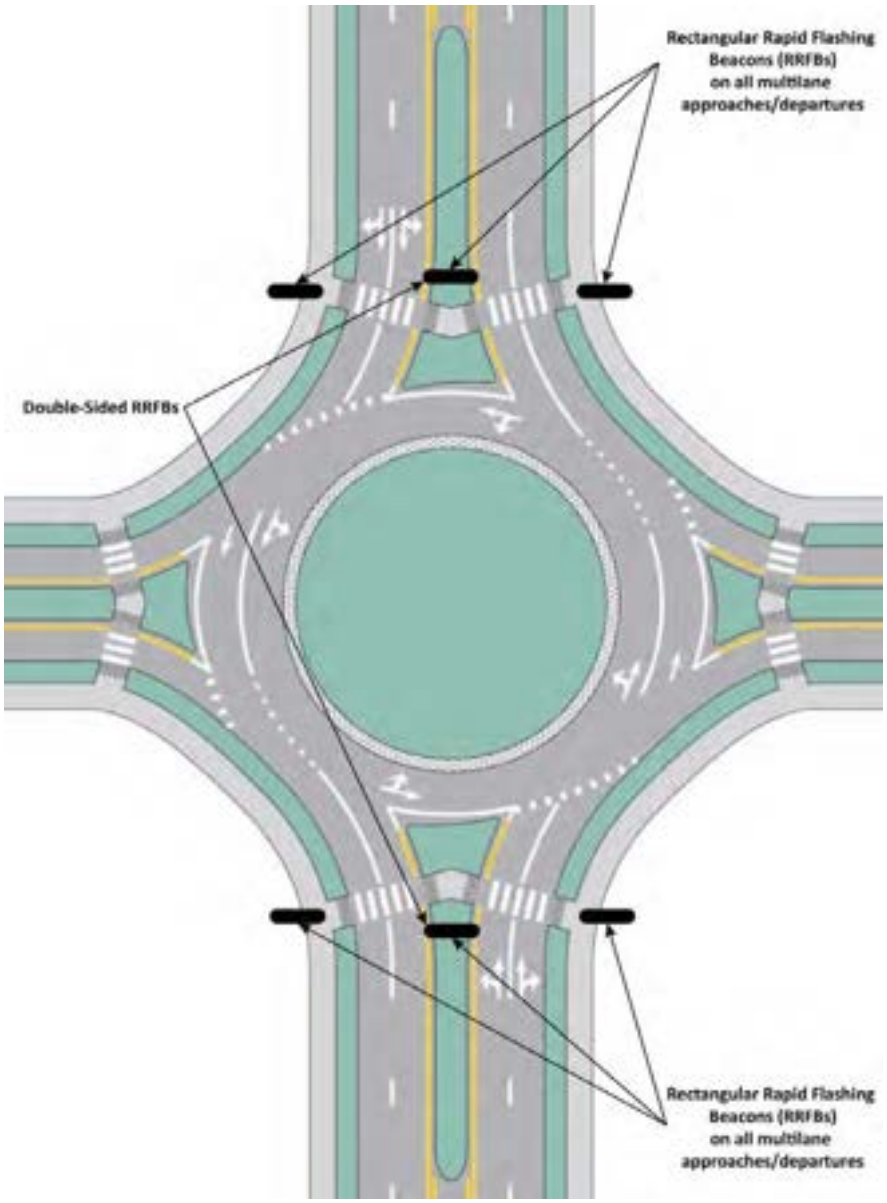
Single Family Detached	1 space/bedroom
Single Family Attached/ Multi Family	1 space/1-bedroom units 2 spaces/2 & 3+ bedroom units 1 space/10 units for guest parking
Commercial (AC/NC) & Other Uses	See RMC Section 18.12.1102

Notes:

- *Single Family Detached – should local street sections be modified for smaller lot product and on street parking is not provided, parking pockets with 1 space per 10 units shall be provided for guest parking in addition to the parking standard.*
- *The Administrator may allow a parking reduction or allow a different parking standard for all uses with a parking justification letter.*
- *Accessory Dwelling Unit (ADUs) should be considered in the bedroom count for parking requirements if applicable.*

5.3 Roundabouts

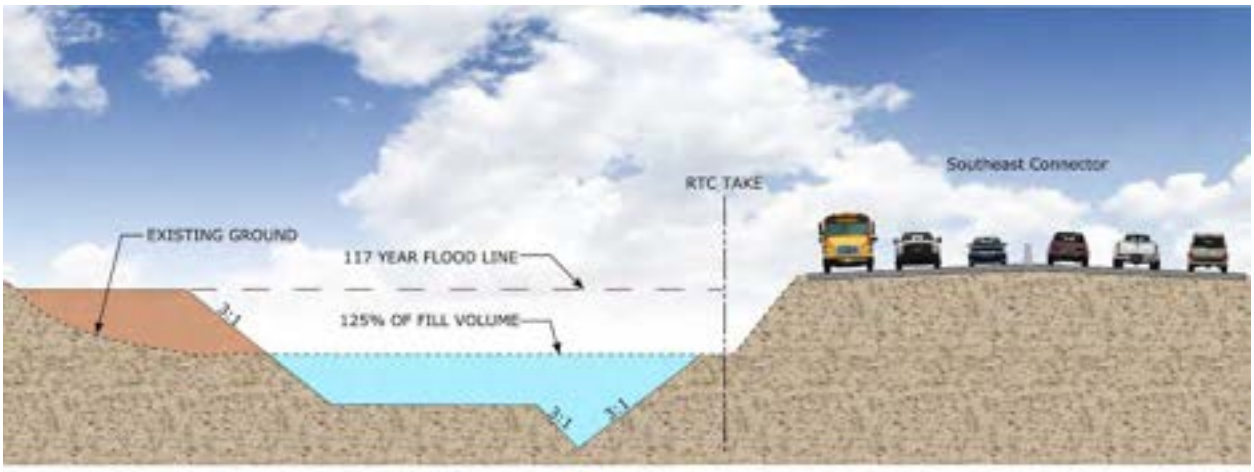
Three roundabouts are planned for the development, as depicted in the Development Plan (Figure 3). These roundabouts will provide traffic calming, and intersection safety improvements greatly reducing conflict points compared to traditional intersections. On 4 lane approaches, rapid flashing beacons to provide advance warning for pedestrian safety shall be provided as depicted in the illustrations to the right and below. The roundabouts also serve as gateway points for the development and shall incorporate landscaping, and art to enhance the surrounding communities.





5.4 Grading Standards

Grading shall conform to the City of Reno Municipal Code, and Public Works Design Manual. A Preliminary mass grading plan has been prepared for the Project Site for flood mitigation purposes per Figure 17: Mass Grading Plan. The Master Developer will submit the mass grading plan to FEMA in order to receive a conditional Letter of Map Revision (CLOMR). Special Use Permits for cuts and fills shall not be required for future development plans (tentative maps, and building permits), as long as the grading is consistent with the Mass Grading Plan associated with the future CLOMR (Figure 17). Flood storage volume mitigation within the Mass Grading will be designed based on the detail below:

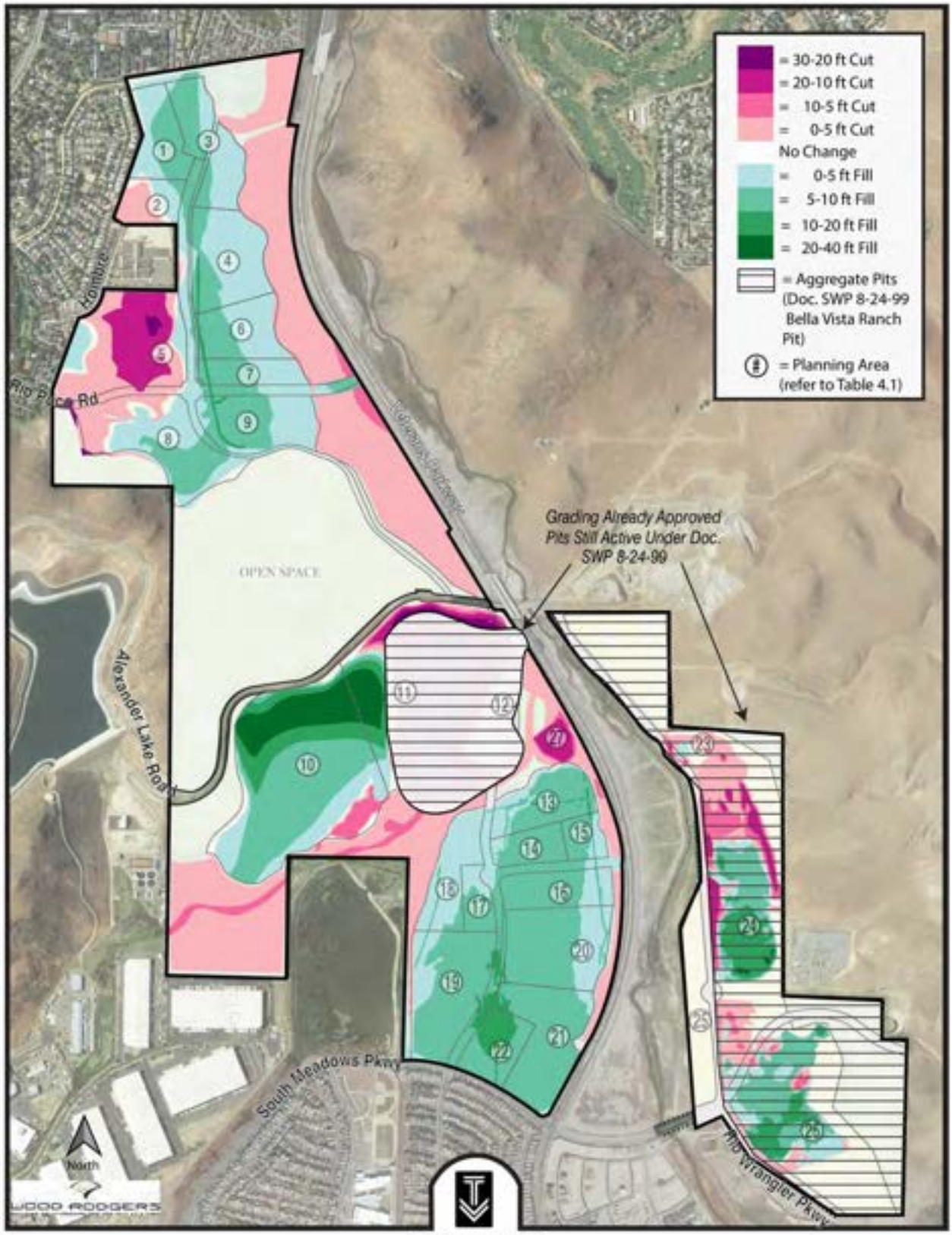


TALUS VALLEY

FLOOD STORAGE VOLUME MITIGATION

Realignment of Alexander Lake Rd and its connection to the future Park Collector, and final grading of the aggregate pit (approved Doc. SWP 8-24-99) will require grading activities within the Hillside of Villages 10, and 11. Tentative Maps for Village 10 and 11 shall address City of Reno Hillside Development requirements but will not require an additional Special Use Permit.

Figure 17: Mass Grading Plan Cuts and Fills



5.5 Wetland Disturbance and Mitigation Plan

The Aquatic Resource Mitigation Plan being prepared by *Salix Consulting, Inc.,* a biological consulting firm, will be submitted to the Army Corps of Engineers for future approval. The proposed development plan (Figure 3) would result in direct impacts to approximately ±55 acres of WOUS, comprised of ±2 acres of Wetland areas, and ±53 acres of "Other Waters". To minimize the impacts to the WOUS within the PUD, and in efforts to enhance and restore the wetlands that will be impacted, the PUD will follow several methods that have been introduced to the Army Corps of Engineers including avoidance, minimization, and mitigation.

Avoidance: The PUD is designed to avoid the aquatic resources with the highest function and services. The PUD will avoid approximately 1± acre of WOUS (Figure 18).

Minimization: Methods include Low-Impact Development (LID) features that will further reduce long-term, adverse impacts to WOUS and will maintain water quality in Thomas Creek, the main drainage through the PUD. The Project incorporates the practical application of LID strategies and treatments for stormwater quality. The PUD proposes site-based strategies to collect storm flows and manage the quantity and quality of stormwater runoff, which will mimic the natural hydrologic function of the site. Stormwater quality will be managed through source, runoff, and treatment controls applied to land uses covered by the Talus Valley Section 404 Permit. Best Management Practices (BMPs) will be used to maintain water quality and protect preserved resources during construction.

Mitigation: To compensate for the impacts to the WOUS, the PUD is providing 89.2± acres of mitigation preserve, 54.5± acres are within the Project Site, identified in Figure 19: Wetland Mitigation Plan. The preserve will include the existing Thomas and Whites Creeks which will be enhanced to improve functions and services of the streams.

Nearly 80% of the impacted WOUS within the PUD include 41± acres of impacts to open water (Alexander Lake). Alexander Lake was man-made by damming Thomas Creek to create an irrigation water storage pond for the ranching activities. To compensate for this loss of open water, the Thomas Creek stream channel will be re-created and enhanced just south of the existing lake. The new stream channel will include a low-flow channel, with a "mosaic" wetland fringe along the stream. This mosaic of wetland area will resemble the existing emergent marsh habitat located upstream of the lake and will have higher functions and services than the open water habitat that the lake is currently providing. These improvements will be essential to wildlife and will build upon other improvements that have been enhanced, improved and expanded with the construction of the Veterans Parkway around Steamboat Creek.

The Talus Valley PUD will utilize similar methods as other projects located throughout the southeastern portion of the Truckee Meadows, to improve and enhance the wetland areas found

throughout the Project Site. This includes improving the wetland conditions that will not only improve water quality but also include the removal of invasive weeds such as tall white top (perennial pepperweed), that is found throughout the Talus Valley PUD. Final development plans shall not be required to submit a Special Use Permit for the disturbance of a major drainageway, including wetlands, as long as the plans meet the requirements of the Final Wetland Mitigation Plan as approved by the Army Corps of Engineers and is consistent with this PUD. A Site Plan Review shall be submitted to the City of Reno to verify compliance with the Wetland Mitigation Plan, if not incorporated with a Tentative Map of an adjacent Village.

Figure 18: Wetland Impacts

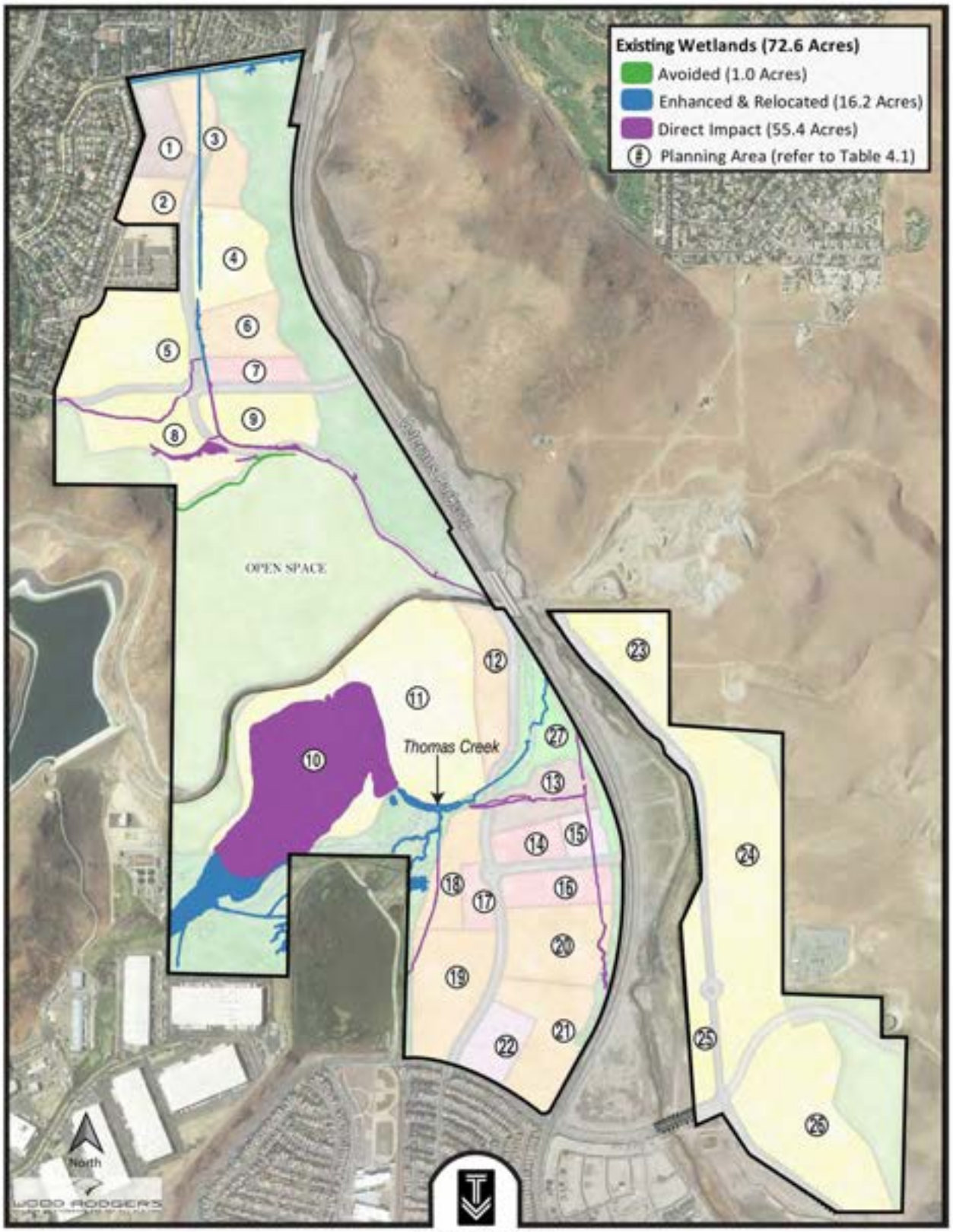
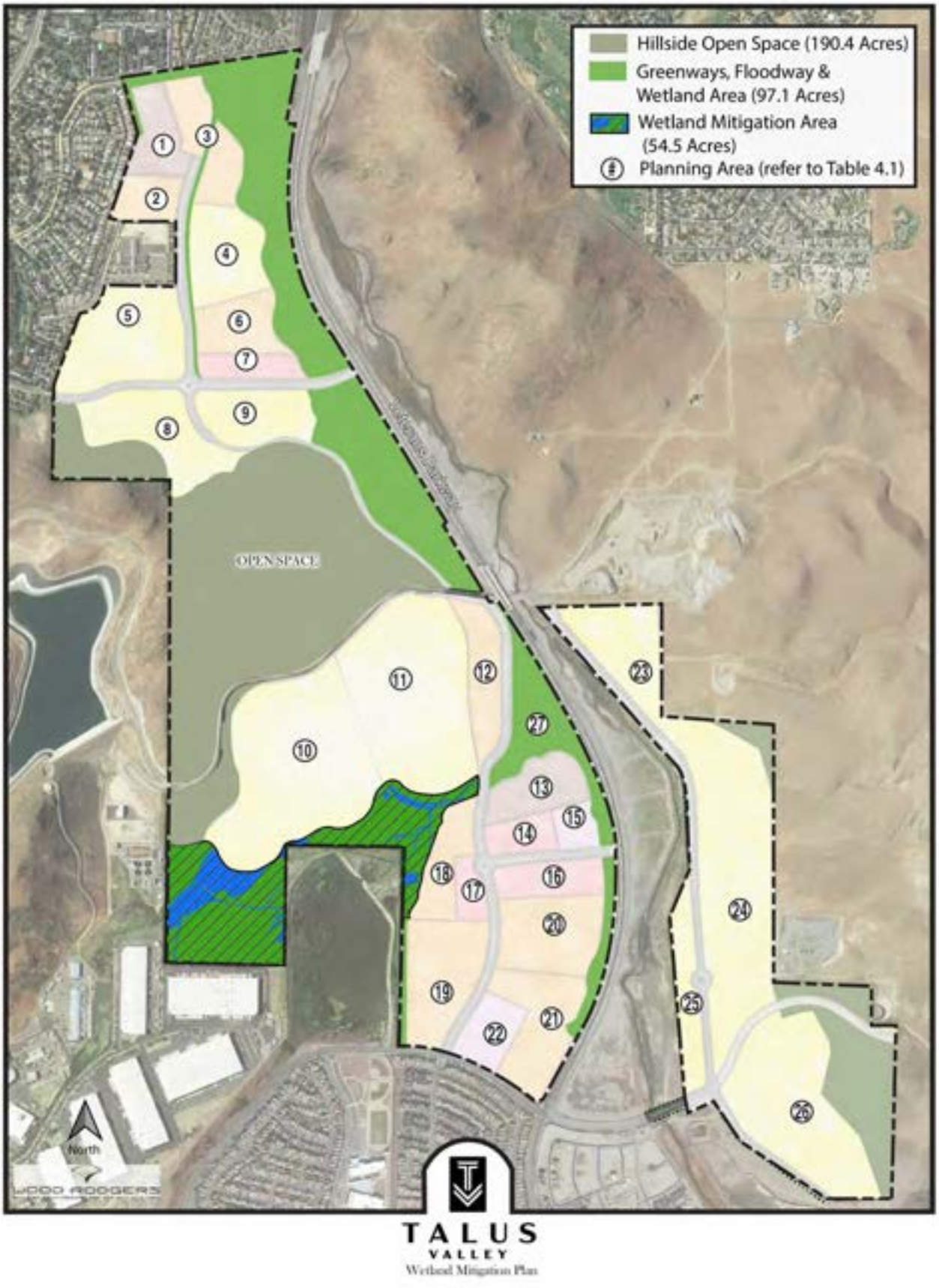


Figure 19: Wetland Mitigation



5.6 Environmental Site Assessment and Remedial Action Plan

Environmental assessments conducted by the Regional Transportation Commission of Washoe County (RTC) for the Southeast Connector Roadway Project resulted in awareness of mercury-impacted soil in the vicinity of the proposed development. Therefore, an environmental site assessment was initiated for mercury concentrations within the soils proposed for development. The mercury-impacted soil at the site is believed to be related to legacy gold milling activities from the historic Comstock Lode mining era. The mercury is generally contained in the stream channel of Steamboat Creek, but decades of flood-irrigation of the property with water from Steamboat Creek allowed mercury-impacted sediment to be deposited on the irrigated areas of the property.

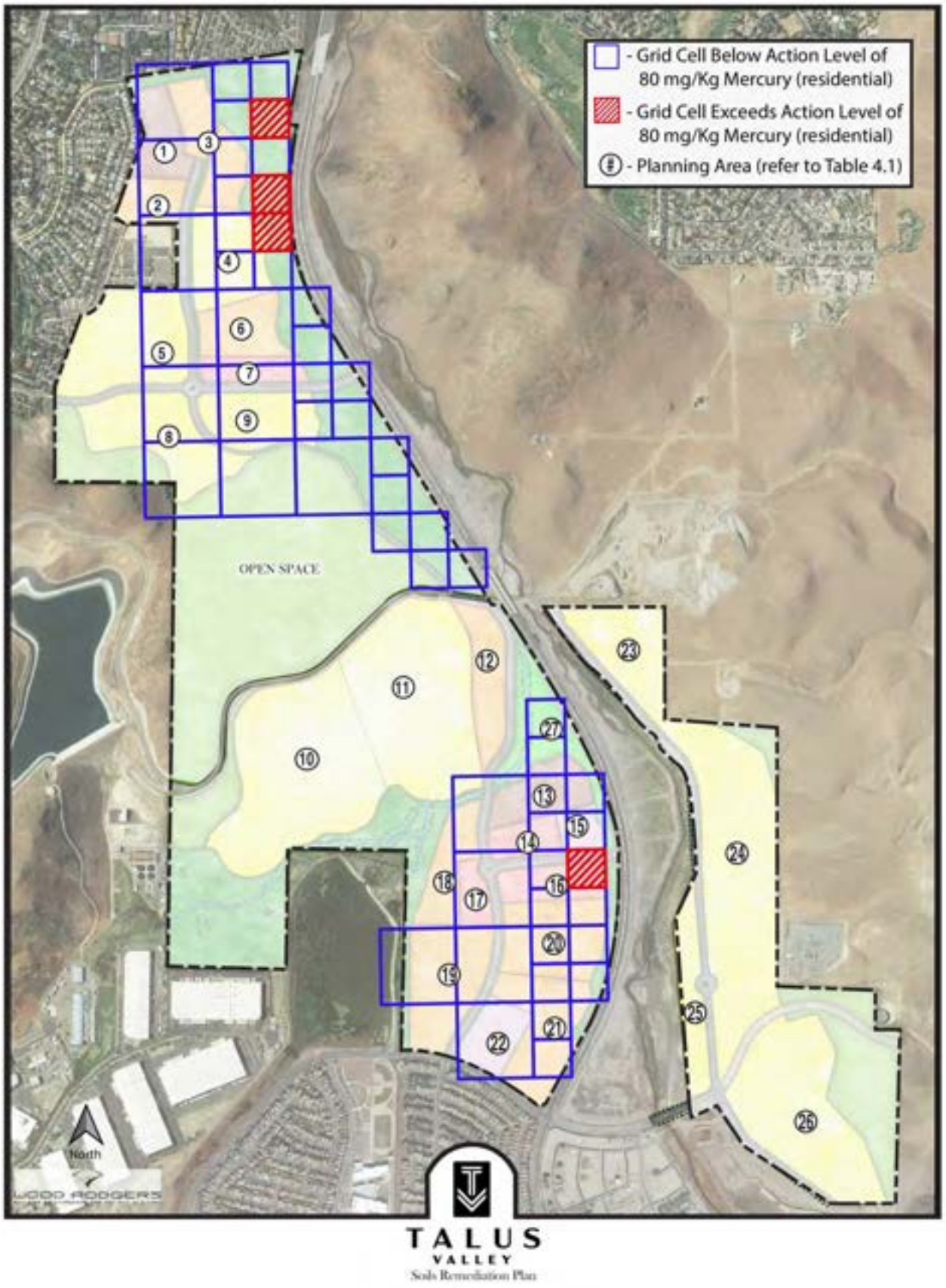
During initial site assessment activities, composite soil samples were collected from a total of 55 grid cells at the property. Additionally, a total of 19 discrete soil samples were collected from proposed borrow material in two nearby pits that will be used as fill within the project area, to demonstrate that there were no mercury impacts in the borrow material. Detectable concentrations of mercury in the collected composite samples ranged from 0.0669 to 84.7 milligrams per kilogram (mg/kg). Detectable concentrations of mercury in the discrete samples collected from the two borrow pits ranged from 0.00535 to 0.124 mg/kg.

Based on discussions with the Nevada Division of Environmental Protection, this corrective action case will be administered in accordance with the Carson River Mercury Superfund Site, which has a residential remedial action level of 80 mg/kg for mercury in soil. Based on site assessment activities, four sample grid cells were identified with mercury concentrations exceeding the action level of 80 mg/kg that will require remedial action. Remediation of the mercury impacted soil in these areas will be accomplished by covering the mercury-impacted material with at least two feet of clean fill during site grading activities to eliminate the potential exposure pathway.

After the site has achieved final grade, confirmation soil samples will be collected to demonstrate that no mercury impacts above 80 mg/kg are present within the top two feet of soil in the residential areas where cut and fill activities from the floodplain occurred. The areas that were subject to remedial activities will also be assessed during the confirmation sampling, this will be the responsibility of the Master Developer. A complete copy of the site assessment report and remedial action plan is provided in Appendix 6 of this document. Figure 20 depicts the soil remediation areas.

The Master Developer or assignee will be responsible for providing additional mercury testing south of Alexander Lake Road in Planning Area 12. The results of the additional testing will need to be provided prior to the first tentative map or building permit submitted for Planning Area 12.

Figure 20: Soils Remediation Plan



5.7 Cultural Resources

Archaeologists and architectural historians have completed a survey and National Register eligibility evaluation of all cultural resources that appear on private lands in Washoe County, Nevada slated for the future housing and commercial development "Talus Valley", located in south Reno, sited on either side of the soon-to-be completed Veteran's Parkway.

The cultural resources survey and resource evaluation has been completed by cultural resource specialists from Kautz Environmental Consultants, Inc., of Reno under the direction of Dr. Bob Kautz. As a result of the survey seven historic and prehistoric isolated finds have been located and recommended not eligible for the National Register of Historic Places. Additionally, 23 archaeological sites have been located, 10 of which have been recommended eligible for the National Register, due to the likelihood that they will yield information important in history or prehistory, while 13 have been recommended not eligible. Also, a separate architectural evaluation has been conducted of the Bella Vista ranch complex by ZoAnn Campana, M.P.S. That study has resulted in the identification of 15 architectural resources, 13 of which have been recommended eligible for the National Register and two not eligible. Reports outlining details of these activities have been prepared and will be made available to qualified agency personnel.

All sites and buildings determined eligible for inclusion in the National Register of Historic Places will be treated as per regulation specified in Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. § 300101 et seq.). This may include the preferred action of avoidance of direct and indirect effects or, where necessary, mitigation. The Master Developer will prepare a preservation plan and be responsible for the implementation of the plan.

5.8 Wildlife Habitat & Interface

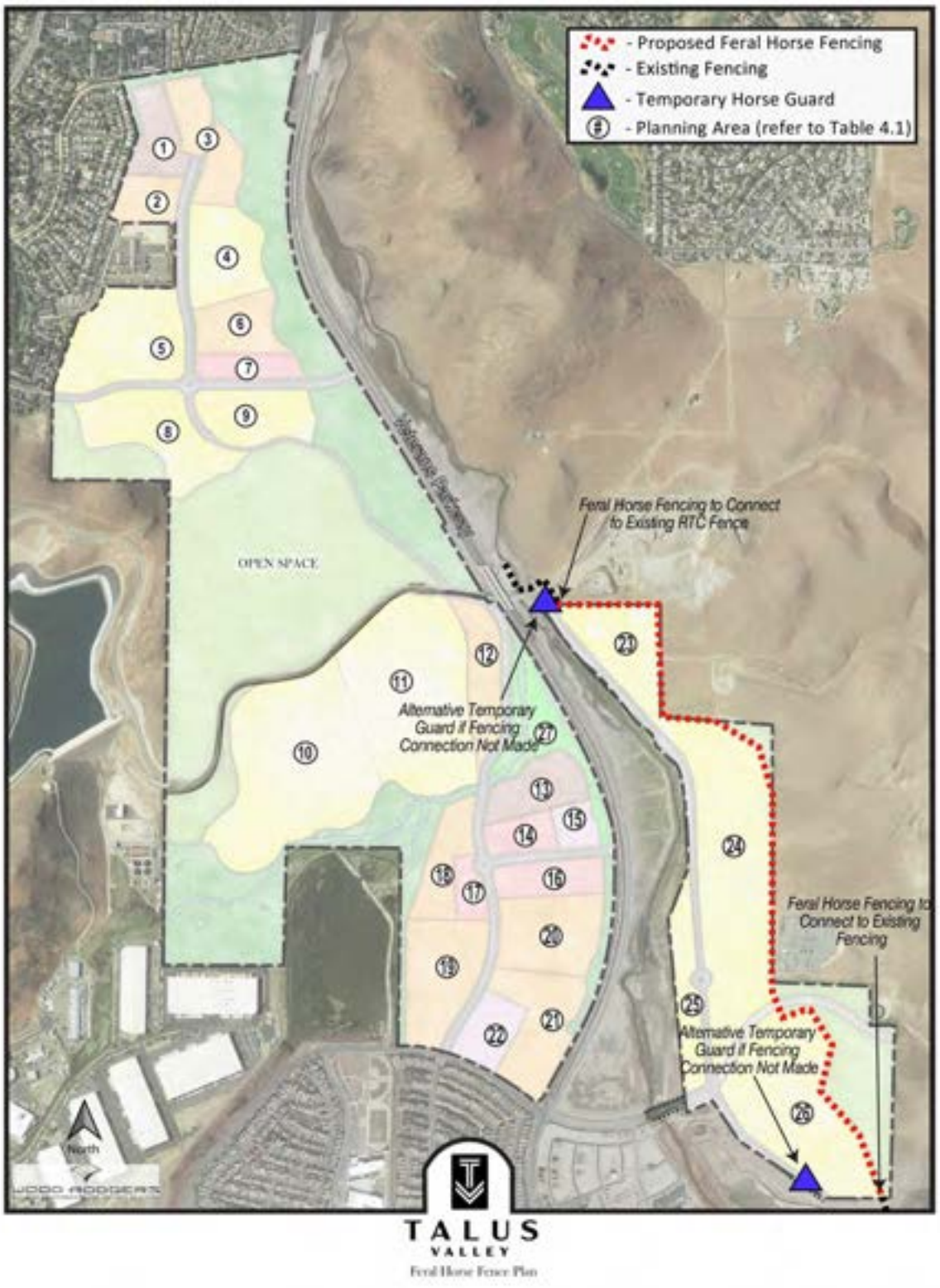
The Talus Valley PUD will maintain and enhance the natural wildlife habitat as identified in the development plan through preservation of 355.4± acres Open Space and enhancement of wetland areas per the Wetland Mitigation Plan found in section 5.4.

As part of this PUD, Enviroscientists Inc. prepared an Environmental Species Act (ESA) documentation (Appendix 7) for the Talus Valley PUD. Data requests were also submitted to the Nevada Department of Wildlife (NDOW), and the Nevada Natural Heritage Program (NNHP). Based on these consultations, there is no potential for any federally listed species or their habitat to occur within the Talus Valley PUD.

The Virginia Range is located on the eastern portion of the site where feral horses are known to be located. To promote the safety of future residents as well as the feral horses, and in accordance with NRS 569.431 the Master Developer or their assignee will erect a preconstruction legal fence to prevent the feral/estray livestock from entering the construction area. If the construction fence cannot connect to the existing fence, a temporary horse guard (double cattle guard) shall be provided at the north and south end of the proposed neighborhood collector for the eastern villages. Final Map submittals will include a permanent fencing plan that incorporates

typical residential fencing and horse fencing for areas identified in Figure 21: Feral Horse Fence Plan. Horse guards shall be installed per City of Reno requirements on the backbone roadway only, and not within or at entrances to subdivisions.

Figure 21: Feral Horse Fence Plan



5.9 Architecture

Talus Valley presents an eclectic architectural style that offers the opportunity for innovative design and reinterpretation of the "American Heritage" throughout the PUD. Architectural character imagery is provided to demonstrate the various architectural elements that may be appropriate for the Talus Valley PUD. The Master Developer will be responsible for creating more detailed builder design guidelines for future residential and commercial builders to follow. The design manual will be provided to the City of Reno for review and comment prior to the first tentative map.

Architectural Standards:

- Building articulation and exterior interest shall be provided.
- All new buildings shall conform to RMC Section 18.12.301(a), as amended for multifamily, office and commercial uses.
- RMC Section 18.12.306 shall not apply to future developments within the Talus Valley PUD.
- Loading areas should not face public roadways. In the event that loading areas are adjacent to public roadways, the loading area must be screened and provide visual interest and be incorporated into the architectural style of the building and/or screening.
- Architectural elements must not end at the corner of a building and shall wrap around the corner and extend to a logical terminus point that is incorporated into the overall architectural design.
- Commercial developments shall include between 30% and 50% building frontage along main streets.
- Four (4) sided color elevations shall be provided at the time of each building permit for non-residential and at the time of master housing plan approval for residential.
- Solar that is part of the architectural standards should be considered for residential and commercial buildings. Use of Solar shall be integrated effectively as to not stand out or be obtrusive to the street scape and surrounding architecture.

Single Family Residential Architectural Styles:



Single Family Attached Sample Products:



Rowtown



A-ELEVATION

Mansion Town



PLAN 1 (SPANISH ELEVATION) PLAN 2 (COTTAGE ELEVATION) PLAN 3 (FARMHOUSE ELEVATION)

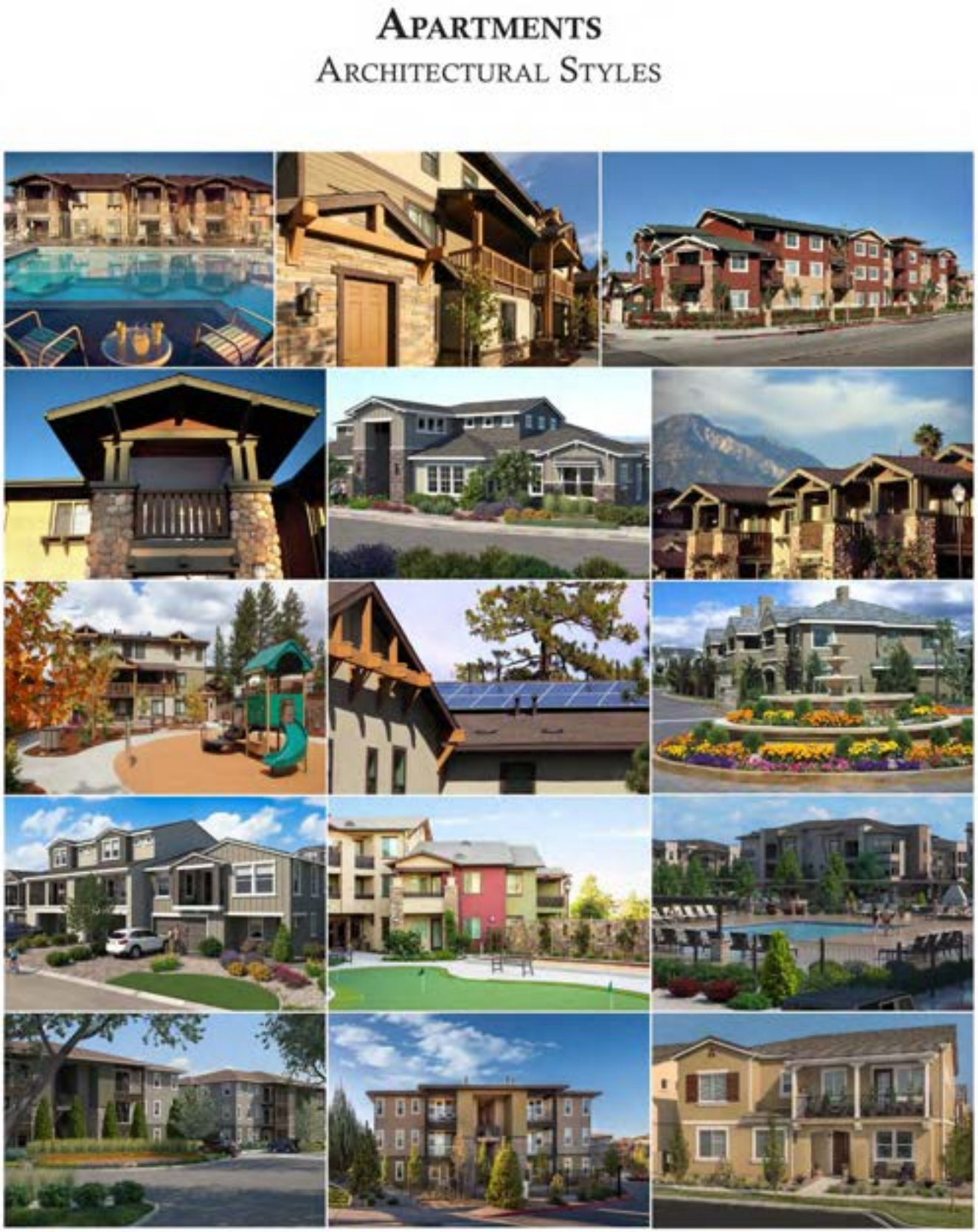
Six Pack



PLAN 1 (COTTAGE ELEVATION) PLAN 2 (SPANISH ELEVATION) PLAN 3 (FARMHOUSE ELEVATION)

Villas

Multi-Family Architectural Styles:



Commercial Architectural Styles:



5.10 Landscaping

Landscaping for new development within the Talus Valley PUD shall conform to RMC 18.12.1205 through 18.12.1211, as amended, except as expressly identified with the following standards.

Minimum Required Landscape Area:

Arterial Commercial	15%
Neighborhood Commercial	15%
Multi-Family Neighborhood	15%
Mixed Neighborhood	Refer to RMC 18.12.1205
Single-Family Residential	Refer to RMC 18.12.1205

The minimum front yard setback, excluding driveways and sidewalks, shall be comprised entirely of landscape, which shall be credited toward the percent of required landscape area identified in the table above.

The land uses with frontages located adjacent to South Meadows Parkway shall be required to provide landscaping within the right of way between the property line and the developed portion of the street. The landscaping shall be consistent with the right of way landscaping found within the area (see street landscape samples below). This landscaping is in addition to the required on-site landscaping and shall be reviewed and approved with the first building permit for each parcel and installed prior to the issuance of the first certificate of occupancy.

Turf:

Turf area in front yards and landscapes (excluding parks) shall not exceed 50% of total landscape. Turf shall not be used in landscape medians, and minimal to no turf use in right of ways.

Screening:

Screening of utilities, equipment, and outdoor service areas (i.e. trash enclosures) shall conform to RMC 18.12.1208, as amended. Screening of commercial parking areas shall conform to RMC 18.12.1205(e), as amended.

Screening Between Land Uses:

Screening between residential and commercial land uses shall conform to RMC 18.12.1207, as amended.

Right of Way Landscape Examples:



5.11 Lighting

Lighting within the Talus Valley PUD is intended to be unobtrusive and add to the nighttime aesthetics of the surrounding neighborhood. New lighting fixtures shall be consistent with the architectural design of the existing fixtures to the north and south, and conform to RMC 18.12.304(e), as amended. An alternative light standard complementary to the architectural standards may be used in the Arterial and Neighborhood Commercial categories, to the approval of the Administrator. Further, lighting within Talus Valley shall meet the following standards:

- Light poles shall be limited to 20 feet and meet NV Energy Standards
- South Meadows Parkway and Veterans Parkway shall meet the RTC Standards
- Lighting shall use cut-off fixtures, refractors, or housing shields to eliminate light spillover.
- Landscape lighting shall be soft, unobtrusive and directed and/or shielded to prevent glare. A final site lighting photometric plan shall be submitted reviewed and approved by the Zoning Administrator prior to the issuance of each building permit.

5.12 Signage

Signage within the Talus Valley PUD shall conform to City of Reno RMC Sections 18.16.101 through 701, as amended, with the following modifications noted below. For purposes of translation, the following table shall establish the comparable City of Reno zoning designation to the land use categories defined within this PUD handbook.

Signage Equivalency Table (*Reference RMC Table 18.16-1)*

Talus Valley Land Use Category	**RMC Sign Standard (RMC Table 18.16-1)**
Arterial Commercial	Neighborhood Commercial
Neighborhood Commercial	Neighborhood Commercial
Multi-Family Residential	Residential
Mixed Neighborhood	Residential
Single-Family Residential	Residential

Signage Modifications:

- All signs shall incorporate natural materials such as stone or rock and augment the surrounding architecture. Alternative materials may be approved by the Zoning Administrator if coordinated with the adjacent Architecture.
- All monument signs located on South Meadows Parkway shall be limited to a maximum of 8-feet in height, 60 sq. ft. in size with indirect illumination.
- Any signage facing residential uses shall have indirect lighting with illumination restricted to the hours of 7:00 a.m. to 7:00 p.m.
- A schematic design of the monument and wall signage program shall be submitted to the Zoning Administrator for review and approval prior to issuance of the building permit.
- Letter height for wall signs shall not exceed 4-feet in the commercial land use category.
- Directional signage for village advertising is permitted and shall be controlled by the Master Developer.
- Animated Signs and Billboards are prohibited.

5.13 Walls and Fencing

A screening wall shall be provided adjacent to the western boundary of Plan Areas 1 and 2 and be designed in accordance with RMC 18.12.1401. All other Plan Areas will contain a mix of wall and fencing types and materials should be used throughout the Talus Valley PUD and apply to the general standards found in RMC 18.12.1401. Appropriate fencing treatments will be provided in the builder design guidelines and reviewed and approved through the tentative map or building permit process.

All Fence Types: Installing gates along the rear and side yards adjacent to open space, roadways, and other common area are prohibited.

APPENDIX 1
Legal Description

LEGAL DESCRIPTION FOR
DAYBREAK PUD

PARCEL 1:

Parcel 2A as shown on Record of Survey Map No. 5840, entitled Court Ordered Map Creating Legal Parcels for Bella Vista Ranch Company, LLC, a Nevada limited liability company, according to the map thereof, filed in the office of the County Recorder of Washoe County, State of Nevada, on June 16, 2017, as File No. 4714803, Official Records.

APN: 021-270-48

PARCEL 2:

Parcel 2B as shown on Record of Survey Map No. 5840, entitled Court Ordered Map Creating Legal Parcels for Bella Vista Ranch Company, LLC, a Nevada limited liability company, according to the map thereof, filed in the office of the County Recorder of Washoe County, State of Nevada, on June 16, 2017, as File No. 4714803, Official Records.

APN: 021-270-49

PARCEL 3:

Parcel A as shown on Record of Survey Map No. 6011, entitled Record of Survey in Support of a Boundary Line Adjustment for NPLC BV Investment Company and Washoe County School District, according to the map thereof, filed in the office of the County Recorder of Washoe County, State of Nevada, on November 9, 2018, as File No. 4865576, Official Records.

APN: 021-270-50

PARCEL 4:

Parcel 4A as shown on Record of Survey Map No. 5840, entitled Court Ordered Map Creating Legal Parcels for Bella Vista Ranch Company, LLC, a Nevada limited liability company, according to the map thereof, filed in the office of the County Recorder of Washoe County, State of Nevada, on June 16, 2017, as File No. 4714803, Official Records.

APN: 165-011-34

PARCEL 5:

Parcel 4B as shown on Record of Survey Map No. 5840, entitled Court Ordered Map Creating Legal Parcels for Bella Vista Ranch Company, LLC, a Nevada limited liability company, according to the map thereof, filed in the office of the County Recorder of Washoe County, State of Nevada, on June 16, 2017, as File No. 4714803, Official Records.

APN: 165-011-35

LEGAL DESCRIPTION FOR
DAYBREAK PUD

PARCEL 6:

Parcel 5A as shown on Record of Survey Map No. 5840, entitled Court Ordered Map Creating Legal Parcels for Bella Vista Ranch Company, LLC, a Nevada limited liability company, according to the map thereof, filed in the office of the County Recorder of Washoe County, State of Nevada, on June 16, 2017, as File No. 4714803, Official Records.

APN: 165-011-31

PARCEL 7:

Parcel 5B as shown on Record of Survey Map No. 5840, entitled Court Ordered Map Creating Legal Parcels for Bella Vista Ranch Company, LLC, a Nevada limited liability company, according to the map thereof, filed in the office of the County Recorder of Washoe County, State of Nevada, on June 16, 2017, as File No. 4714803, Official Records.

APN: 165-011-32

PARCEL 8:

All that certain real property situated within a portion of Section Thirty-three (33), and a portion of the Southwest one-quarter (1/4) of Section Thirty-four (34), Township 19 North, Range 20 East, Mount Diablo Base & Meridian, City of Reno, County of Washoe, State of Nevada, being a portion of Annexation Parcel 3 North" as shown on that "Map to Support Annexation of Certain Lands to the City of Reno", filed in the office of the Washoe County Recorder, December 31, 2002, as Annexation Tract Map No. 4157, Document No. 2783925, Official Records of Washoe County, Nevada, more particularly described as follows:

BEGINNING at the South one-quarter (1/4) corner of said Section 33;
Thence, N 00°20'55" E, 2588.36 feet;
Thence, N 88°58'46" W, 1312.91 feet;
Thence, N 00°46'19" E, 550.70 feet;
Thence, S 89°18'18" E, 1832.61 feet;
Thence, N 00°41'42" E, 84.51 feet;
Thence, S 63°58'08" E, 145.86 feet;
Thence, S 82°22'13" E, 589.93 feet;
Thence, S 58°40'01" E, 514.40 feet;
Thence, S 47°21'31" E, 207.74 feet;
Thence, S 24°00'46" E, 643.98 feet;
Thence, S 57°47'56" E, 347.00 feet;
Thence, S 45°53'01" E, 344.14 feet;
Thence, S 66°31'56" E, 612.15 feet, to the Northwesterly line of Alexander Lake Road as described in that "Final Order of Condemnation", as described by deed conveyed in the office of the Washoe County Recorder, March 27, 1980, in Book 1489, Page 159, as Document No. 664652, Official Records of Washoe County, Nevada;
Thence, along said Northwesterly line of Alexander Lake Road the following eleven (11) arcs, courses and distances:
1) Thence, N 81°51'38" W, 343.66 feet;

LEGAL DESCRIPTION FOR
DAYBREAK PUD

2) Thence, N 08°08'22" E, 20.00 feet;
3) Thence, N 81°51'38" W, 54.05 feet;
4) Thence, along a tangent curve to the left having a radius of 560.00 feet, a central angle of 19°13'16", and an arc length of 187.86 feet;
5) Thence, S 11°04'54" E, 20.00 feet;
6) Thence, along a non-tangent curve to the left, from a tangent which bears S 78°55'06" W, having a radius of 540.00 feet, a central angle of 32°05'33", and an arc length of 302.46 feet;
7) Thence, S 46°49'33" W, 938.75 feet;
8) Thence, along a tangent curve to the right having a radius of 560.00 feet, a central angle of 34°34'11", and an arc length of 337.88 feet;
9) Thence, S 81°23'44" W, 482.77 feet;
10) Thence, along a tangent curve to the left having a radius of 440.00 feet, a central angle of 77°14'04", and an arc length of 593.12 feet;
11) Thence, S 04°09'40" W, 79.32 feet, to the South line of said Section 33;
Thence, leaving said Northwesterly line, along said South line of Section 33, N 89°02'41" W, 536.55 feet, to the POINT OF BEGINNING.

BASIS OF BEARINGS: The Basis of Bearings for these descriptions is that "Map to Support Annexation of Certain Lands to the City of Reno" filed in the office of the Washoe County Recorder, December 31, 2002, as Annexation Tract Map No. 4157, Document No. 2783925, Official Records of Washoe County, Nevada.

APN: 021-270-37

PARCEL 9:

All that certain real property situated within a portion of the Northwest one-quarter (1/4) of the Northeast one-quarter (1/4) of Section Four (4), Township 18 North, Range 20 East, Mount Diablo Base & Meridian, City of Reno, County of Washoe, State of Nevada, being a portion of "Annexation Parcel 3 North" as shown on that "Map to Support Annexation of Certain Lands to the City of Reno" filed in the office of the Washoe County Recorder, December 31, 2002, as Annexation Tract Map No. 4157, Document No. 2783925, Official Records of Washoe County, Nevada, more particularly described as follows:

BEGINNING at the North one-quarter (1/4) corner of said Section 4;
Thence, along the North line of said Section, S 89°02'41" E, 536.55 feet, to the Northwesterly line of Alexander Lake Road as described in that "Final Order of Condemnation", by Deed conveyed in the office of the Washoe County Recorder, March 27, 1980, in Book 1489, Page 159, as Document No. 664652,Official Records of Washoe County, Nevada;
Thence, along said Northwesterly line of Alexander Lake Road, S 04°09'40" W, 293.50 feet, to a point on the North line of Parcel Two conveyed by Deed in the office of the Washoe County Recorder, February 20, 1991, in Book 3215, Page 253, as Document No. 1460906, Official Records of Washoe County, Nevada;
Thence, leaving said Northwesterly line of Alexander Lake Road, along the North line of said Parcel Two, along a tangent curve to the right having a radius of 364.87 feet, a central angle of 46°44'53", and an arc length of 297.70 feet;
Thence, continuing along said North line of Parcel Two, N 39°05'28" W, 10.00 feet;

LEGAL DESCRIPTION FOR
DAYBREAK PUD

Thence, continuing along said North line of Parcel Two, along a non-tangent curve to the right, from a tangent which bears S 50°54'32" W, having a radius of 354.87 feet, a central angle of 06°40'06", and an arc length of 41.30 feet, to said Northwesterly line of Alexander Lake Road;
Thence, along said Northwesterly line, N 42°56'14" W, 8.60 feet;

Thence, along a non-tangent curve to the right, from a tangent which bears S 47°03'49" W, having a radius at 410.00 feet, a central angle of 05°13'27", and an arc length of 37.38 feet, to the North line of Parcel One of said Document No. 1460906;
Thence, leaving said Northwesterly line of Alexander Lake Road, along said North line of Parcel One, along a non-tangent curve to the right, from a tangent which bears S 63°57'05" W, having a radius of 354.87 feet, a central angle of 20°05'10", and an arc length of 124.41 feet;
Thence, continuing along said North line of Parcel One, N 67°18'15" W, 216.25 feet, to the West line of said Section 4;
Thence, leaving said North line of Parcel One, along said West line of Section 4, N 01°11'23" E, 543.44 feet, to the POINT OF BEGINNING.

BASIS OF BEARINGS: The Basis of Bearings for these descriptions is that "Map to Support Annexation of Certain Lands to the City of Reno" filed in the office of the Washoe County Recorder, December 31, 2002, as Annexation Tract Map No. 4157, Document No. 2783925, Official Records of Washoe County, Nevada.

APN: 165-012-02

PARCEL 10:
All that certain real property situated within a portion of the North one-half (1/2) of Section Thirty-three (33), Township 19 North, Range 20 East, Mount Diablo Base & Meridian, City of Reno, County of Washoe, State of Nevada, being a portion of an Annexed Parcel as shown on that "Map to Support Petition for Annexation of Land to The City of Reno, Nevada" filed in the office of the Washoe County Recorder, October 24, 1989, as Annexation Tract Map No. 2615, Document No. 1358117, Official Records of Washoe County, Nevada, more particularly described as follows:

BEGINNING at the Southwest corner of said Annexed Parcel;
Thence along its Westerly line, N 00°24' W, 574.30 feet, more or less, to the Easterly line of Donner Springs Subdivision as shown on that "Official Plat of Donner Springs Unit No.7", filed in the office of the Washoe County Recorder, October 10, 1979, as Subdivision Tract Map No. 1890, Document No. 634796, Official Records of Washoe County, Nevada;
Thence, along the Easterly line of said Subdivision Tract Map No. 1890, N 18°20' E, 808.14 feet, more or less, to the Southeasterly line of Parcel "E" as described in that Order of Condemnation of Real Property as described by deed conveyed in the office of the Washoe County Recorder, January 2, 1996, in Book 4466, Page 759, as Document No. 1955105, Official Records of Washoe County, Nevada;
Thence, leaving said Easterly line of Subdivision Tract Map No. 1890, along said Parcel "E", along a non-tangent curve to the left, from a tangent which bears N 78°59'05" E, having a radius of 335.00 feet, a central angle of 25°12'43", and an arc length of 147.41 feet, to the North line of said Annexed Parcel;
Thence, along said North line, East, 1448.45 feet;

LEGAL DESCRIPTION FOR
DAYBREAK PUD

Thence, South, 1,400 feet;
Thence, West 1832.61 feet, to the POINT OF BEGINNING.

APN: 021-760-06

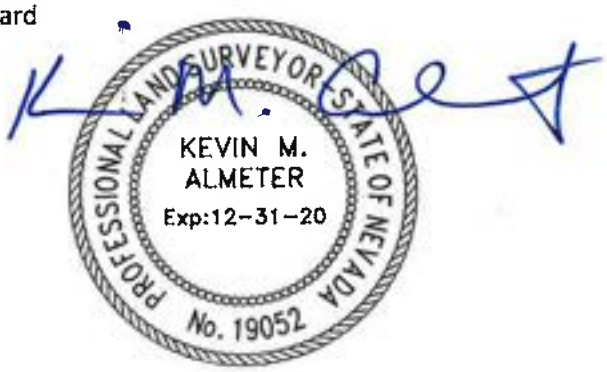
PARCEL 11:

All that certain real property situated within a portion of the Southwest 1/4 of the Northwest 1/4 of Section Thirty-three (33), Township 19 North, Range 20 East, Mount Diablo Base & Meridian, City of Reno, County of Washoe, State of Nevada, more particularly described as follows:

BEGINNING at a point from which the Section corner common to Sections 28, 29, 32 and 33, Township 19 North, Range 20 East, M.D.B.&M., a 2 inch iron pipe bears North 40°18'20" West 2011.31 feet;
Running thence South 18°20' West 32.30 feet;
Thence South 75°05'30" East 10.75 feet;
Thence North 00°24' West 33.43 feet to the POINT OF BEGINNING.

APN: 021-441-15

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



6-17-20

Kevin M. Almeter, P.L.S.
Nevada Certificate No. 19052

APPENDIX 2

Traffic Impact Analysis

Prepared by Headway Transportation (Previously Traffic Works)

September 27, 2019

Brooklyn Oswald
Community Development - Planning
City of Reno
1 East First Street
Reno, NV 89505

Traffic Study Update - Daybreak Planned Unit Development

Dear Mr. Oswald,

This letter presents an update to the *Transportation Impact Study for Daybreak Planned Unit Development* dated August 27, 2018 by Traffic Works. The analysis and findings summarized in this letter have been provided to update the trip generation estimates, levels of traffic impact, improvements and mitigation measures corresponding to a 15% reduction in residential units within the Daybreak project. The total number of residential units within the overall project site has decreased from 4,700 dwelling units to 3,995 dwelling units.

Updated Land Use Quantities

With the 15% reduction in residential units, the total number and type of units has been modified to the following for the purposes of trip generation estimating and traffic impact analysis:

- 2,400 single-family units
- 1,495 multi-family units
- 600 student elementary school (overlay zone)
- 500 student charter school (overlay zone)
- 450,000 square feet of commercial/retail space

The prior traffic study and this newer traffic analysis both assume 100 fewer single-family units and roughly 5 acres less commercial land use compared to the land use plan shown in **Figure 1,** which illustrates 3,995 total residential units. The school sites are overlay zones rather than reserved sites, and therefore if constructed, would replace an estimated 100 homes and 5 acres of retail/commercial land. The schools have higher trip generation rates per land area than single-family homes and morning retail activity, and would generate higher traffic volumes and stronger peaks in the school overlay vicinity. Therefore, the higher (with schools) volume scenario was used in the studies and is the basis of the trip generation estimates.

Updated Trip Generation

The same general assumptions and methodologies used in estimating trip generation for the Traffic Impact Study were used in this update as well. A significant portion of the retail/commercial land uses within the project are planned to primarily serve the residents of Daybreak. Considering the locations are within the community, 35% of the trips generated by retail/commercial land uses are anticipated to be made by project residents. 100% of the elementary school trips and 50% of the charter school trips are anticipated to remain internal to the Daybreak community. The percentage of internal trips to the charter school was reduced from 75% in the original Traffic Impact Study to 50% in this update due to the overall reduction in residential units (fewer internal students). Again, this update letter assumes that 100 single-family units and approximately 5 acres of commercial use would be replaced with the elementary school and charter school land uses.

Trip generation rates for this analysis were obtained from the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 9th *Edition* consistent with the prior study. **Table 1**, shows the Daily, AM peak hour, and PM peak hour trip generation estimates for the updated land use quantities.

Table 1. Updated Trip Generation Estimate

Land Use	Size	Weekday			AM Peak			PM Peak		
		Total	Entry	Exit	Total	Entry	Exit	Total	Entry	Exit
210 - Single-Family Detached Housing	2,400 Dwelling Units	19,518	9,774	9,744	1,690	423	1,267	1,835	1,156	679
Internal		5,054	2,527	2,527	435	171	264	403	211	192
Pass-by		0	0	0	0	0	0	0	0	0
External		14,464	7,247	7,217	1,255	252	1,003	1,432	945	487
220 - Apartment	1,495 Dwelling Units	9,184	4,592	4,592	736	147	589	840	546	294
Internal		2,374	1,187	1,187	172	79	93	183	92	91
Pass-by		0	0	0	0	0	0	0	0	0
External		6,810	3,405	3,405	564	68	496	657	454	203
536 - Private School (K-12)	500 Students	1,240	620	620	405	247	158	85	37	48
Internal	50% Internal	620	310	310	202	123	79	43	19	24
Pass-by		0	0	0	0	0	0	0	0	0
External		620	310	310	203	124	79	42	18	24
520 - Elementary School	600 Students	774	387	387	270	149	121	90	44	46
Internal	100% Internal	774	387	387	270	149	121	90	44	46
Pass-by		0	0	0	0	0	0	0	0	0
External		0	0	0	0	0	0	0	0	0
820 - Shopping Center	450,000 Sq. Feet Gross Leasable Area	19,216	9,608	9,608	390	242	148	1,641	788	853
Internal		6,034	3,017	3,017	135	85	50	453	220	233
Pass-by		2,176	989	989	0	0	0	320	153	167
External		11,006	5,602	5,602	255	157	98	868	415	453
Total		**49,932**	**24,981**	**24,951**	**3,491**	**1,208**	**2,283**	**4,491**	**2,571**	**1,920**
Total Internal		14,856	7,428	7,428	1,214	607	607	1,172	586	586
Total Pass-by		2,176	989	989	0	0	0	320	153	167
Total External Trips		**32,900**	**16,564**	**16,534**	**2,277**	**601**	**1,676**	**2,999**	**1,832**	**1,167**

Source: Headway Transportation, 2019

The updated land use mix is estimated to generate 32,900 Daily external trips, 2,277 AM Peak Hour external trips, and 2,999 PM Peak Hour external trips.

Comparison to Prior Traffic Study

The original land use mix in the Traffic Impact Study was estimated to generate 38,106 Daily external trips, 2,423 AM Peak Hour external trips, and 3,484 PM Peak Hour external trips. The updated land use mix is estimated to generate 32,900 Daily external trips, 2,277 AM Peak Hour external trips, and 2,999 PM Peak Hour external trips. External trips are estimated to decrease by 13.7% on a daily basis and decrease 13.9% in the highest peak hour (PM Peak) compared to the prior land use mix.

Evaluation of Potential Impacts

Since the number of Daily, AM peak hour, and PM peak hour external trips evaluated in the Traffic Impact Study were all higher than the number of external trips estimated for the updated project, the prior traffic impact study is conservative and states slightly higher levels of impact than what is anticipated to occur.

The proposed internal roadway network, connections to external roadways, proposed traffic and multi-modal improvements, and off-site mitigation measures stated in the traffic study are all still valid and recommended. The "Improvements List & Timing" table on page 3 of the *Transportation Impact Study*, dated August 27,2018, is appropriate for the revised (reduced) level of development and should be carried forward in the updated PUD Handbook. The project revisions would not create any new traffic impacts, therefore, no additional improvements or mitigation measures are warranted.

Please do not hesitate to contact us with any questions or requests for additional information.

Sincerely,

HEADWAY TRANSPORTATION, LLC

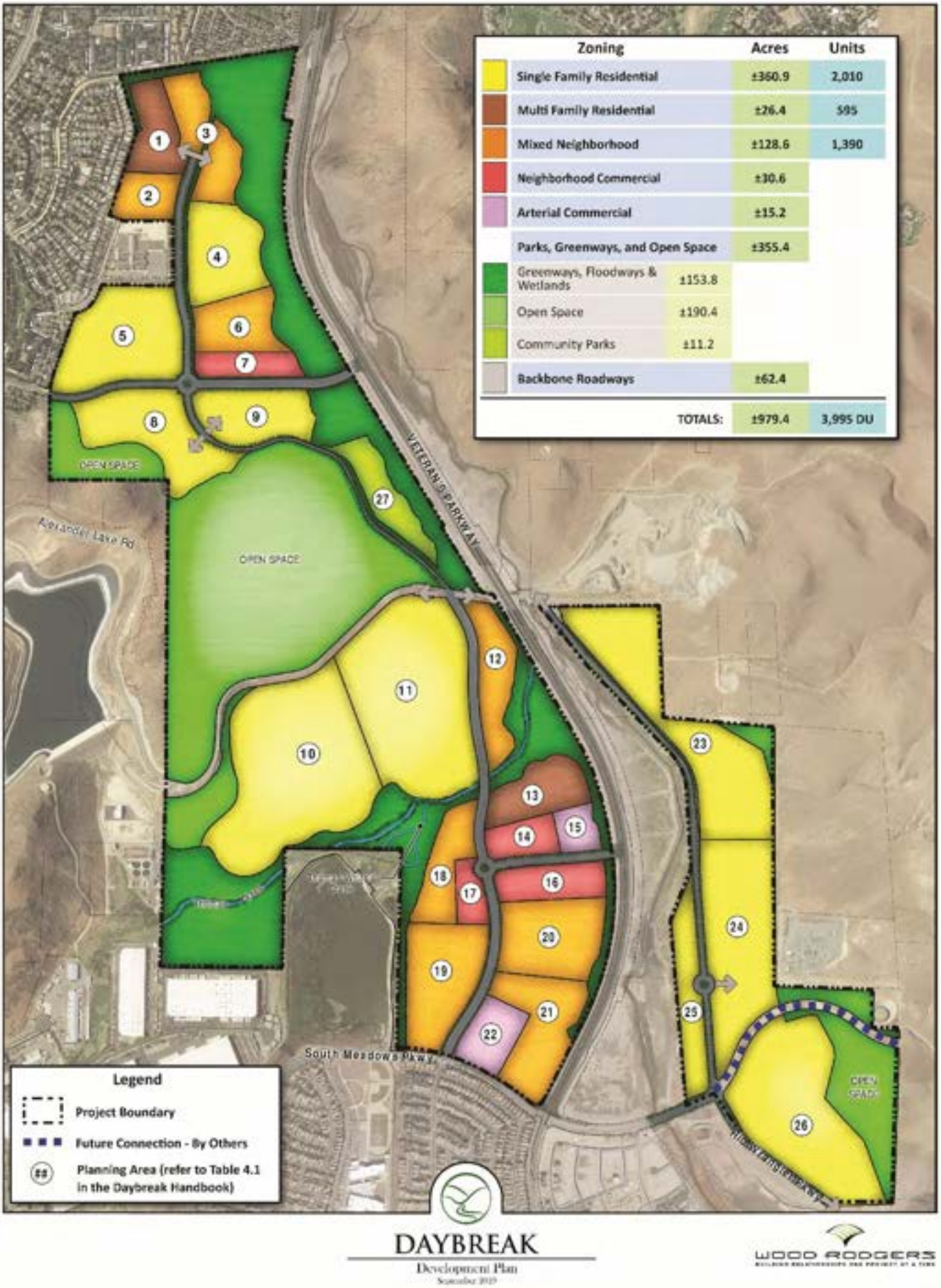


Loren E. Chilson, PE

Principal

Attachments: Figure 1 – Daybreak Development Plan, September 2019

Figure 1. Daybreak Development Plan



TRANSPORTATION IMPACT STUDY

for

DAYBREAK

Planned Unit Development

August 27, 2018

PREPARED FOR:

Bristol Land Company LLC

PREPARED BY:

TRAFFIC WORKS LLC



TRAFFIC WORKS, LLC
5482 Longley Ln, Suite B, Reno, NV 89511
775.322.4300
www.Traffic-Works.com

YOUR QUESTIONS ANSWERED QUICKLY

Why did you perform this study?

This Transportation Impact Study evaluates the potential impacts associated with, and provides traffic management recommendations for the Daybreak project.

What does the project consist of?

The Daybreak project is proposed to be a mixed-use development including approximately the following land uses:

- 3,000 single-family housing units
- 1,600 multi-family apartment units
- 39.7 acres of commercial use @ 0.25 floor to area ratio (432,330 square feet)
- 600 student elementary school
- 500 student charter school

The traffic study assumes 100 fewer single-family units and 5 acres less commercial area when compared to the development plan shown in **Figure 2**. For the purposes of this analysis, these land uses are replaced with an elementary school and charter school, which would generate higher traffic volumes in the school overlay vicinity. The land use mix in this analysis is conservative and provides an evaluation of higher traffic volumes than what is shown in the land plan.

How much traffic will the project generate?

The project is estimated to generate 38,106 external daily trips, 2,423 external AM peak hour trips, and 3,484 external PM peak hour trips. Any project land use or quantity mix generating less than the number of external trips shown above is considered equivalent from a traffic analysis and impact perspective so long as the planned roadway network is not significantly revised.

How were the internal roadways sized?

Roadways were sized for build-out of the project based on the land plan and traffic assignment. The proposed land configurations are:

- Road A – 4-lanes between South Meadows Parkway and the road to the west just south of the creek. The rest of the Road A will be a two-lane roadway.
- Road 1 - 4-lane roadway between Road A and the SouthEast Connector.
- Rio Poco Road - 4-lane roadway between Road A and the SouthEast Connector and a two-lane roadway west of Road A.
- Alexander Lake Road - 2-lane roadway

How is the Rio Poco Road connection addressed?

Traffic calming is proposed on Rio Poco Road to improve livability and safety for current residents with increased traffic volumes.

- Between Snowshoe Lane and Sierra Madre Drive – Stripe a center turn lane, an 8 foot parking lane, and a 5 foot bike lane on both sides of the roadway.
- Between Sierra Madre Drive and Matich Drive - Construct a 7 foot parking lane and 14 foot side drive lane on the north/east side of Rio Poco Drive where driveways exist. To further improve safety, the side drive lane will be buffered from the travel lane with a new 6 foot median. This segment will also have a center turn lane.
- Between Matich Drive and Reggie Road – Stripe a center turn lane, an 8 foot parking lane, and a 5 foot bike lane on both sides of the roadway.

How will the study intersections and roadways operate with the project?

With the proposed improvements, all the study intersections and roadway segments will operate at acceptable levels of service under the 2030 Background Plus Project scenario.

Are off-site improvements needed?

The following table lists the off-site improvements required for the build-out of the project and timing of the recommended improvements. At current market absorption rates, it would take approximately 10 to 20 years for the project to be fully built and occupied. Hence, improvements should be constructed incrementally.

Improvements List & Timing

Location	Improvement	Trigger
SouthEast Connector/Rio Poco Rd	Build a Signal and turn-lanes	When the connection is made
SouthEast Connector/Road 1	Build a Signal and turn-lanes	When the connection is made
South Meadows Pkwy/Road A	Build a Signal and turn-lanes and a westbound acceleration lane Restripe the northbound approach to include one left-turn pocket, one through lane, and one right-turn pocket	When the connection is made
South Meadows Pkwy/Rio Wrangler Pkwy	Construct intersection	When the connection is made
Rio Poco Rd	Traffic Calming Measures and Safety Improvements	When the daily traffic volume on Rio Poco Road reaches 6,900 vehicles per day (LOS C upper limit)
Rio Poco Rd/McCarran Blvd	Restripe Rio Poco northbound approach to have two left-turn lanes and one shared through-right lane. Change side-street left-turn phasing to "Protected"	
Road 1	Build a connection to the SouthEast Connector	Prior to traffic volumes on Road A north of South Meadows Pkwy reaching 13,400 vehicles per day (LOS D upper limit)
South Meadows Parkway between SouthEast Connector and Rio Wrangler Pkwy	Extension of the 4-lane arterial including Steamboat Creek Crossing	When the connection is made
South Meadows Parkway between Rio Wrangler Pkwy and east project boundary	Reserve right of way for a 4-lane arterial	With the Tentative Map for that village
All Internal Intersections	Varies	Construct intersections and turn lanes with roadway construction
Bicycle and Pedestrian Facilities (all internal roads)	Per PUD Handbook	With adjacent roadway construction
Pedestrian Facilities along South Meadows Parkway frontage	Construct sidewalk along project frontage	With Road A connection to South Meadows Parkway
Project frontage	Build a transit stop if required by RTC	When a transit route serves the project

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2. Land Use Plan
3. 2030 Background Lane Configurations
4. 2030 Background AM Peak Hour Traffic Volumes
5. 2030 Background PM Peak Hour Traffic Volumes
6. AM Peak Hour Project Trips
7. PM Peak Hour Project Trips
8. Intersection Configurations – Panel 1
9. Intersection Configurations – Panel 2
10. Intersection Configurations – Panel 3
11. Rio Poco Road Traffic Calming Concepts – Panel 1
12. Rio Poco Road Traffic Calming Concepts – Panel 2
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14. Rio Poco Road Cross-section A
15. Rio Poco Road Cross-section B
16. 2030 Background Plus Project AM Peak Hour Traffic Volumes
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B. 2030 Background Conditions LOS Calculations
C. 2030 Background Plus Project Conditions LOS Calculations

INTRODUCTION

This report presents the findings of a Transportation Impact Study completed to assess the potential impacts on local intersections associated with construction of the proposed Daybreak project. This impact study has been prepared to describe 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 is located along the SouthEast Connector (Veterans Parkway) generally between Mira Loma Drive and South Meadows Parkway in Reno, NV. The project location and study intersections are shown in **Figure 1** and the land use plan is provided in **Figure 2**. The following intersections were analyzed:

- Mira Loma Drive/McCarran Boulevard
- Mira Loma Drive/SouthEast Connector
- Rio Poco Drive/McCarran Boulevard
- Rio Poco Drive/Road A
- Rio Poco Extension/SouthEast Connector
- Road A/Alexander Lake Road
- Road A/Road 1
- Road 1/ SouthEast Connector
- Road A/South Meadows Parkway/Echo Valley Parkway
- South Meadows Parkway/SouthEast Connector
- Rio Wrangler Parkway/South Meadows Parkway

This study includes analysis of both the weekday AM and PM peak hours as these are the periods of time in which peak traffic conditions are anticipated to occur. The evaluated development scenarios are:

- 2030 Background Conditions
- 2030 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 LOS for a Two-Way STOP Control (TWSC) intersection is defined by the worst movement delay. The complete methodology is established in the Highway Capacity Manual (HCM), 2010, published by the Transportation Research Board.

Signalized and Un-signalized Intersections

Table 1 presents the delay thresholds for each level of service grade at un-signalized and signalized intersections. Level of service calculations were performed for the study intersections using the Synchro and SIDRA software packages with analysis and results reported in accordance with the 2010 HCM methodology.

Table 1: Level of Service Definition for Intersections

Level of Service	Brief Description	Un-signalized Intersections (average delay/vehicle in seconds)	Signalized Intersections (average delay/vehicle in seconds)
A	Free flow conditions.	< 10	< 10
B	Stable conditions with some affect from other vehicles.	10 to 15	10 to 20
C	Stable conditions with significant affect from other vehicles.	15 to 25	20 to 35
D	High density traffic conditions still with stable flow.	25 to 35	35 to 55
E	At or near capacity flows.	35 to 50	55 to 80
F	Over capacity conditions.	> 50	> 80

Source: Highway Capacity Manual (2010), Chapters 16 and 17

Roadway Segments

Table 2 shows the level of service thresholds for roadway segments as established in the Washoe County Regional Transportation Plan. The 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 2040 Regional Transportation Plan (2040 RTP) establishes level of service criteria for regional roadway facilities in Washoe County, the City of Reno, and City of Sparks. The current Level of Service policy is:

- "All regional roadway facilities projected to carry less than 27,000 ADT at the latest RTP horizon – LOS D or better."
- "All regional roadway facilities projected to carry 27,000 ADT or more at the latest RTP horizon – LOS E or better."
- "All intersections shall be designed to provide a level of service consistent with maintaining the policy level of service of the intersecting roadways".

According to the "*SE Connector Traffic Review (FINAL)*" technical memorandum dated October 11, 2013, the SouthEast Connector is anticipated to carry a daily volume in excess of 27,000 vehicles per day. Hence, the 2040 RTP stated level of service threshold for intersections along the SouthEast Connector is LOS "E".

According to the travel demand model data obtained from the Regional Transportation Commission (RTC) of Washoe County online database, all other roadways within the study area are projected to carry less than 27,000 ADT. Hence, the 2040 RTP stated level of service threshold for all other intersections is LOS "D".

Table 2. Average Daily Traffic LOS Thresholds by Facility Type

Facility Type	Maximum Service Flow Rate (daily for given service level)				
# 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 RTP Table 3-4.					

Level of service "E" is applicable to the following study intersections:

- Mira Loma Drive/SouthEast Connector
- Rio Poco Extension/SouthEast Connector
- Road 1/ SouthEast Connector
- South Meadows Parkway/SouthEast Connector

Level of service "D" is applicable to the following study intersections:

- Mira Loma Drive/McCarran Boulevard
- Rio Poco Drive/McCarran Boulevard
- Rio Poco Drive/Road A
- Road A/Alexander Lake Road
- Road A/Road 1
- Road A/South Meadows Parkway/Echo Valley Parkway
- Rio Wrangler Parkway /South Meadows Parkway

EXISTING TRANSPORTATION FACILITIES

Major Roadways

A brief description of the key roadways in the study area is provided below.

SouthEast Connector (Veterans Parkway) is a four to six-lane north-south major arterial roadway with two or three travel lanes in each direction depending on the segment; it is currently under construction and is expected to open in mid-2018. It is classified as a "High Access Control Arterial" in the 2040 RTP. The posted speed limit will be 55 miles per hour (mph) within the project area after completion. It is a 4-lane roadway south of South Meadows Parkway and a 6-lane roadway north of South Meadows Parkway.

S. Meadows Parkway is a four-lane east-west roadway in the project area with two travel lanes in each direction plus turn lanes. It is classified as a "*Moderate Access Control Arterial*" in the 2040 RTP. The posted speed limit is 35 mph within the project area. The existing average daily traffic on this roadway just east of Echo Valley Parkway is 2,700 vehicles per day.

Rio Poco Road is 60 foot wide and currently terminates at the west project boundary, intended to serve the subject property. It is a two-lane roadway west of project site that generally runs north-west to south-east with one travel lane in each direction. It is classified as a "*Low Access Control Collector*" in the 2040 RTP. The posted speed limit is 25 mph within the project area. The existing average daily traffic on this roadway is 5,600 vehicles per day.

Mira Loma Drive east of McCarran Boulevard is generally a three-lane roadway with one lane in each direction and a center turn-lane. It is planned to be widened to a 4-lane roadway plus turn-lanes at its intersection with the SouthEast Connector. It will be a 4-lane roadway at McCarran Boulevard and SouthEast Connector, with a 3-lane cross-section in between. The existing average daily traffic on this roadway is 9,900 vehicles per day. Widening of the roadway to 4 lanes is programmed in the 2040 RTP during the 2027-2040 timeframe.

Pedestrian, Bicycle, and Transit Facilities

Sidewalk exists on the south side of South Meadows Pkwy, on both sides of Rio Poco Road, and on both sides of Mira Loma Drive. Dedicated bike lanes exist on South Meadows Parkway and Mira Loma Drive.

Pedestrian and bicycle paths will be constructed along the SouthEast Connector as part of that project. Currently there are no public transit routes that operate within the project area. Per the SouthEast Connector website, "RTC is researching opportunities to provide transit service along the new roadway corridor, including new bus routes and intercity service to Carson City."

2030 BACKGROUND CONDITIONS

The year 2030 was chosen for Background Conditions analysis because the most detailed and conservative traffic volume forecasts for the SouthEast Connector and intersections along the SouthEast Connector are available for that scenario. These are the volumes that were developed and used by RTC consultants to design the roadway and intersection configurations along the SouthEast Connector.

Traffic Volumes

2030 Background AM and PM peak hour traffic volumes were obtained from the "*SE Connector Traffic Review (FINAL)*" technical memorandum dated October 11, 2013 prepared by Atkins for the RTC. The RTC travel demand model includes 1,550 housing units in the Butler Ranch North PUD. Since this proposed project replaces Butler Ranch North completely, the Butler Ranch North traffic volumes (1,550 units) were deducted from the "*SE Connector Traffic Review (FINAL)*" traffic projections to obtain 2030 Background traffic volumes. The 2030 Background lane configurations and intersection controls are shown in **Figure 3** and the 2030 Background AM and PM peak hour intersection traffic volumes are shown on **Figure 4** and **Figure 5**, respectively. The Background condition lane configurations along the SouthEast Connector were obtained from the SouthEast Connector project plans. These lane configurations are shown in **Appendix A**, attached.

Level of Service Analysis

Level of service calculations were performed using the 2030 Background traffic volumes, lane configurations, and traffic controls. The traffic signal timings were optimized for the 2030 Background traffic volumes using 90-180 second cycle lengths and proper pedestrian crossing times. The results are presented in **Table 3** and the calculation sheets are provided in **Appendix B**, attached.

Table 3: 2030 Background Conditions Level of Service Summary

Intersection	Intersection Control	AM Peak		PM Peak	
		LOS	Delay	LOS	Delay
Mira Loma Dr / McCarran Blvd	Signal	C	24.3	C	27.7
Mira Loma Dr/SouthEast Connector	Signal	C	30.9	C	29.7
Rio Poco Dr/McCarran Blvd	Signal	C	32.3	D	35.6
South Meadows Pkwy/Echo Valley Pkwy	Side Street STOP	F	>100	E	43.2
South Meadows Pkwy/SouthEast Connector	Signal	D	43.8	C	28.8

As shown in **Table 3**, all study intersections will operate at acceptable level of service conditions except for the South Meadows Parkway/Echo Valley Parkway intersection northbound approach. The South Meadows Parkway/Echo Valley Parkway intersection is anticipated to operate at unacceptable LOS conditions during both the 2030 Background AM and PM peak hours. The northbound left-turn movement at this intersection is anticipated to operate at LOS "F" and LOS "E" during the 2030 Background AM and PM peak hours, respectively. The degradation from current conditions is associated with introduced traffic to/from the SouthEast Connector, unrelated to the subject development.

PROPOSED PROJECT

Project Location

The Daybreak PUD project is located along the SouthEast Connector generally between Mira Loma Drive and South Meadows Parkway in Reno, NV. The project location is shown in **Figure 1** and the land use plan is provided in **Figure 2**.

Project Description

The Daybreak PUD is proposed to be a mixed-use development that is anticipated to include the following land uses:

- 3,000 single-family housing units
- 1,600 multi-family apartment units
- 39.7 acres of commercial uses @ 0.25 floor to area ratio (432,330 square feet)
- 600 student elementary school (overlay zone)
- 500 student charter school (overlay zone)

The traffic study assumes 100 fewer single-family units and 5 acres less commercial use compared to the land use plan shown in **Figure 2**. These land uses are replaced with an elementary school and charter school land uses, which would generate higher traffic volumes and stronger peaks in the school overlay vicinity. Therefore the higher volume scenario was evaluated.

Trip Generation

Trip generation average rates and rate equations for the proposed land uses were obtained from the Trip Generation Manual, 9th Edition, published by the Institute of Transportation Engineers (ITE). The guidelines, techniques, and recommended practices specified in the ITE Trip Generation Handbook, 3rd Edition were followed to accurately estimate the number of vehicle trips generated by the project. **Table 4** provides the Daily, AM Peak Hour, and PM Peak Hour trip generation calculation details for the proposed project.

Internal trip capture is defined as a reduction of trips within a mixed-use development resulting from the proximity of complementary land uses within the development. Internal trips were calculated using the

principles outlined in the ITE Trip Generation Handbook, 3rd Edition. A significant portion of retail/commercial land uses within the project are planned to serve the residents of Daybreak. Considering the location is within the community, 35 percent of the trips generated by retail/commercial land uses are anticipated to be made by project residents.

Based on standard ratios provided by the Washoe County School District (WSCD), the Daybreak community housing mix is anticipated to generate a demand of 1,311 elementary school students, which is greater than the proposed 600 student elementary school within Daybreak. Hence, 100% of the elementary school trips are anticipated to remain internal to the Daybreak community. Similarly, based on standard formulas provided by the Washoe County School District, approximately 75% of the charter school traffic is anticipated to remain internal to the project. These numbers are not an indication of school capacity needs, but simply an explanation of trip internalization.

Table 4: Trip Generation Estimates

Land Use	Size	Weekday			AM Peak			PM Peak		
		Total	Entry	Exit	Total	Entry	Exit	Total	Entry	Exit
210 - Single-Family Detached Housing	3,000 Dwelling Units	24,001	12,001	12,000	2,110	528	1,582	2,243	1,413	830
Internal		5,048	2,524	2,524	578	227	351	406	214	192
Pass-by		0	0	0	0	0	0	0	0	0
Non-pass-by		18,953	9,477	9,476	1,532	301	1,231	1,837	1,199	638
220 - Apartment	1,600 Dwelling Units	9,820	4,910	4,910	788	158	630	898	584	314
Internal		2,068	1,034	1,034	193	88	105	161	80	81
Pass-by		0	0	0	0	0	0	0	0	0
Non-pass-by		7,752	3,876	3,876	595	70	525	737	504	233
536 - Private School (K-12)	500 Students	1,240	620	620	405	247	158	85	37	48
Internal		930	465	465	365	222	143	64	28	36
Pass-by		0	0	0	0	0	0	0	0	0
Non-pass-by		310	155	155	40	25	15	21	9	12
520 - Elementary School	600 Students	774	387	387	270	149	121	90	44	46
Internal		774	387	387	270	149	121	89	44	45
Pass-by		0	0	0	0	0	0	0	0	0
Non-pass-by		0	0	0	0	0	0	1	0	1
820 - Shopping Center	432,330 Sq. Feet Gross Leasable Area	18,460	9,230	9,230	392	243	149	1,598	767	831
Internal		5,412	2,706	2,706	136	85	51	414	201	213
Pass-by		1,957	979	978	0	0	0	296	142	154
Non-pass-by		11,091	5,545	5,546	256	158	98	888	424	464
Total		**54,295**	**27,148**	**27,147**	**3,965**	**1,325**	**2,640**	**4,914**	**2,845**	**2,069**
Total Internal		14,232	7,116	7,116	1,542	771	771	1,134	567	567
Total Pass-by		1,957	979	978	0	0	0	296	142	154
Total External Trips		**38,106**	**19,053**	**19,053**	**2,423**	**554**	**1,869**	**3,484**	**2,136**	**1,348**

Internal Trips are reduced from the Total Trips to obtain External Trips, which are then assigned to the external study intersections. Both Internal Trips and External Trips are assigned to the various intersections and roadways within the project.

Pass-by trips are made by drivers already using the adjacent roadway, which enter the site as an intermediate stop on the way to another destination. These trips may not necessarily be “generated” by the land use under study, and thus, are not new trips added to the greater transportation system, only

the project access points. Pass-by trip percentages specified in the ITE Trip Generation Handbook were used to estimate these trip types.

As shown in **Table 4**, the proposed project is estimated to generate 54,295 total daily trips, 3,965 total AM peak hour trips, and 4,914 total PM peak hour trips. These numbers include internal trips, pass-by trips, and external trips. After accounting for the internal capture and pass-by trips, the project is estimated to generate 38,106 external daily trips, 2,423 external AM peak hour trips, and 3,484 external PM peak hour trips. As with any large project to be phased in over a 10 to 20 year period, it is likely that some changes will occur in the overall development plan. For the purposes of evaluating traffic impacts, with future revisions, any project land use or quantity mix generating less than the number of external trips shown above is considered equivalent from a traffic analysis and impact perspective so long as the roadway network, connections, and improvements are consistent with the land plan and recommendations in this report.

Trip Distribution and Assignment

Traffic generated by the project was distributed to the road network based on the location of the project, type of land uses, relative locations of major activity centers, relative locations of major attraction centers, and roadway connections.

The following trip distribution percentages were used for distributing the northern portion of the project (north of Alexander Lake Road):

- 25% travelling to/from the west on McCarran Boulevard
- 20% travelling to/from the north on McCarran Boulevard
- 20% travelling to/from the north on SouthEast Connector
- 10% travelling to/from the south on SouthEast Connector
- 25% travelling to/from the west on South Meadows Parkway

The following trip distribution percentages were used for distributing the southern portion of the project:

- 10% travelling to/from the west on McCarran Boulevard
- 15% travelling to/from the north on McCarran Boulevard
- 20% travelling to/from the north on SouthEast Connector
- 15% travelling to/from the south on SouthEast Connector
- 40% travelling to/from the west on South Meadows Parkway

Project generated trips were assigned to the adjacent roadway system based on the distribution outlined above. The project trip assignment is shown on **Figure 6** and **Figure 7** for the AM and PM peak hours, respectively.

Internal Circulation and Planned Roadways

Figure 2 shows the planned major internal roadways, internal intersections and the project's external connections. Five primary access points are proposed for the development, two located on the SouthEast Connector, two on South Meadows Parkway and one on the Rio Poco Road extension as shown on **Figure 2**.

There are four major roadways within the project (See **Figure 1**). Road A is the backbone roadway that runs north-south and provides a roadway parallel to the SouthEast Connector. Three other main roadways (Road 1, Rio Poco Road Extension, and Alexander Lake Road) intersect perpendicular to Road A, providing east-west connections. Road 1 and the Rio Poco Road Extension provide access to the project via SouthEast Connector. Recommended lane configurations for the study roadways and intersections, at full build-out, are shown in **Figure 8**, **Figure 9**, and **Figure 10**, and are described below.

Road A: Between South Meadows Parkway and the internal road to the west just south of the creek, Road A will be a four-lane roadway with turn-lanes at major driveways. The rest of Road A will be a two-lane roadway with turn-lanes at major driveways. Note that the major intersections on Road A are intended to be roundabouts.

Road 1: This will be a four-lane roadway between Road A and the SouthEast Connector.

Rio Poco Extension Road: This will be a four-lane roadway between Road A and the SouthEast Connector and a two-lane roadway west of Road A, with turn-lanes at major side-street driveways. In order to provide a conservative analysis for Rio Poco Road, all the existing traffic on Rio Poco Road is assumed to follow the existing travel patterns and remain on Rio Poco Road. No diversion of existing traffic through/into the project is accounted for the analysis, which creates the highest volumes on Rio Poco Road near McCarran Boulevard and makes this a conservative analysis.

Alexander Lake Road (internal to the project): This will be a two-lane roadway with turn-lanes at major driveways. Alexander Lake Road is a private Washoe County Road west of the project site and is assumed not to be utilized by the project per County request.

Rio Wrangler Parkway: This will be a two-lane roadway with turn-lanes at major side-street driveways.

South Meadows Parkway: This will be a four-lane roadway west of Rio Wrangler Parkway, with turn-lanes at intersections. The project will be required to construct sidewalk or other pedestrian facilities along the project frontage. Right of way width for a four-lane road will be dedicated east of Rio Wrangler Parkway to serve future development further east.

Road A/Rio Poco Extension: At full build-out, this intersection will be partial 2-lane roundabout with two entering and two exiting lanes on the east leg, two entering and one exiting lane on the north leg, one entering and one exiting lane on the west and south legs. The preliminary layout is shown in **Figure 8**, attached.

Road A/Alexander Lake Road: At full build-out, this intersection will be a single lane roundabout with one entering and one exiting lane on all approaches. The preliminary layout is shown in **Figure 8**, attached.

Road A/Road 1: At full build-out, this intersection will be partial 2-lane roundabout with two entering and two exiting lanes on the east, north, and south legs, one entering and one exiting lane on the west leg. The preliminary layout is shown in **Figure 9**, attached.

South Meadows Parkway/Rio Wrangler Road: At full build-out, this intersection will be a 2-lane roundabout with two entering and two exiting lanes on the south, west, and east approaches, and one entering and one exiting lane on the north leg. The preliminary layout is shown in **Figure 9**, attached.

SouthEast Connector/Rio Poco Extension: At full build-out, this intersection will be a signalized intersection with two entering and two exiting lanes on the west leg. Left and right-turn pockets should be provided on the SouthEast Connector at the intersection. The preliminary layout is shown in **Figure 10**, attached.

SouthEast Connector/Road 1: At full build-out, this intersection will be a signalized intersection with two entering and two exiting lanes on the west leg. Left and right-turn pockets should be provided on the SouthEast Connector at the intersection. The preliminary layout is shown in **Figure 10**, attached.

South Meadows Parkway/Road A/Echo Valley Parkway: At full build-out, this intersection will be a signalized intersection with one left, one through, and one right-turn lane on the north and south legs. The southbound right-turn movement will have a channelized free right-turn lane with its own receiving lane on westbound South Meadows Parkway. The receiving lane will be merged downstream. The striping for the south leg (northbound approach) will be changed to include one left-turn pocket, one through lane, and one right-turn pocket. The preliminary layout is shown in **Figure 10**, attached.

McCarran Boulevard/Rio Poco Road: The project proposes to change the lane configuration on the northbound Rio Poco Road approach to have two left-turn lanes and one shared through-right lane. This increases the capacity for the highest volume movement on Rio Poco Road and significantly improves traffic operations at this intersection. Currently the side-street approaches on Rio Poco Road have permissive phasing for left turns. The project proposes to change the left-turn phasing to “Protected Only”, which would improve the overall safety of the intersection. The proposed lane configurations at this intersection are shown in **Figure 10**, attached.

The build-out traffic volumes on each of these internal planned roadways and appropriate road sizing is summarized in **Table 5**.

Table 5: Internal Roadway Sizing Summary

Roadway	Location	Project Trips	# Lanes	LOS
Road A	North of South Meadows Pkwy	13,317	4	C
Road A	North of Road 1	13,411	4	C
Road A	North of Alexander Lake Rd	4,690	2	C
Road A	South of Alexander Lake Rd	5,732	2	C
Road A	North of Rio Poco	7,961	2	D
Road A	South of Rio Poco	5,478	2	C
Rio Poco Extn	West of Road A	7,196	2	D
Rio Poco Extn	East of Road A	6,418	4	C
Road 1	East of Road A	9,473	4	C

Safety and Traffic Calming Improvements on Rio Poco Road

Significant traffic calming measures including bulb-out, medians, and a side travel lane are proposed along Rio Poco Road which will improve the livability and safety for all users and residents. These traffic calming measures will be constructed on Rio Poco Road prior to the daily traffic volumes exceeding 6,900 vehicles per day (LOS C upper threshold). The main goals of implementing these measures are to make the street multi-modal, slow the vehicular speeds, and create a buffer between the homes/driveways and the travel lanes.

Two different traffic calming and safety enhancing configurations are proposed on Rio Poco Road to fit the specific existing conditions. These concepts are shown in **Figure 11**, **Figure 12**, and **Figure 13**. Between Snowshoe Lane and Sierra Madre Drive, the proposed improvements include striping a center turn lane with an 8 foot parking lane and 5 foot bike lane on both sides. The proposed cross-section in this segment is shown in **Figure 14**. From Sierra Madre Drive to Matich Drive, the proposed improvements include constructing a 7 foot parking lane and 14 foot side drive lane on the north/east side of Rio Poco Drive where driveways front the roadway. To further improve safety, the side lane will be buffered from the main travel lanes with a 6 foot median. This segment will also have a center turn lane. The proposed cross-section in this segment is shown in **Figure 15**. All these improvements will fit within the existing lip to lip width of 60 feet.

Bike and Pedestrian Facilities

A multi-use path will be constructed along the SouthEast Connector on the west side north of the narrows and on the east side south of the narrows, as part of that project. The project proposes to construct pedestrian and bike facilities along major roadways within the project (see typical road sections in the PUD handbook). The project will be required to construct sidewalk and other pedestrian facilities along the project frontage on South Meadows Parkway and Rio Wrangler Parkway.

2030 BACKGROUND PLUS PROJECT CONDITIONS

Traffic Volumes

2030 Background Plus Project traffic volumes were developed by adding the project generated trips to the 2030 Background traffic volumes. The 2030 Background Plus Project AM and PM peak hour traffic volumes are shown on **Figure 16** and **Figure 17**, respectively.

Intersection Level of Service Analysis

Level of service calculations were performed using the 2030 Background Plus Project traffic volumes, proposed lane configurations, and traffic controls. The signal timings were optimized for the 2030 Background Plus Project traffic volumes using 120-180 seconds cycle lengths and appropriate pedestrian crossing times. The Peak Hour Factors (PHF) for all study intersections during the PM peak hour were increased to 0.98 (compared to 0.95 without the project) to account for the longer peaking periods. The results are presented in **Table 6** and the calculation sheets are provided in **Appendix C**, attached.

With the addition of project traffic all study intersections are anticipated to operate at acceptable level of service conditions. The study intersections are anticipated to experience increases in average delay. Even with these delay increases, no significant impacts are anticipated as a result of the project at the study intersections since all function within policy level of service. The significant proposed improvements mitigate the volume increases to acceptable levels. All the internal roundabout intersections are also anticipated to operate at acceptable level of service conditions.

Table 6: 2030 Background Plus Project Conditions Intersection Level of Service Summary

Intersection	Intersection Control	AM Peak			PM Peak		
		LOS	Delay	v/c ratio	LOS	Delay	v/c ratio
Mira Loma Dr / McCarran Blvd	Signal	C	25.0		C	35.0	
Mira Loma Dr/SouthEast Connector	Signal	C	34.2		E	67.3	
Rio Poco Dr/McCarran Blvd	Signal	C	34.0		D	39.7	
Rio Poco Dr/Road A	Roundabout	A	7.1	0.33	B	11.4	0.66
Rio Poco Extension/SouthEast Connector	Signal	B	12.1		C	29.4	
Road A/Alexander Lake Road	Roundabout	A	5.7	0.23	A	5.9	0.26
Road A/Road 1	Roundabout	A	9.9	0.51	A	9.2	0.57
SouthEast Connector/Road 1	Signal	B	10.1		B	11.0	
Road A/South Meadows Pkwy/Echo Valley Pkwy	Signal	C	31.2		D	46.0	
South Meadows Pkwy/SouthEast Connector	Signal	D	47.2		D	50.3	
Rio Wrangler Pkwy/South Meadows Pkwy	Roundabout	A	8.3	0.51	A	7.3	0.52

Roadway Level of Service Analysis

Table 7 summarizes the 2030 Background Plus Project conditions roadway level of service.

Table 7: 2030 Background Plus Project Conditions Roadway Level of Service Summary

Roadway	Location	2030 Background Volume*	Project Trips	Total Volume	# Lanes	LOS
Rio Poco Rd**	East of McCarran	5,600	7,196	12,796	2	D
Mira Loma Dr	East of McCarran	8,988	3,750	12,738	4	C
McCarran Blvd	North of Mira Loma	6,118	5,848	11,966	6	B
McCarran Blvd	West of Rio Poco	19,986	5,098	25,084	6	B
South Meadows Pkwy	East of SouthEast Connector	4,629	5,698	10,327	4	B
South Meadows Pkwy	West of Road A	6,082	13,182	19,264	4	C
SouthEast Connector	South of Mira Loma	16,706	11,193	27,899	6	B
SouthEast Connector	North of South Meadows Pkwy	16,587	8,877	25,464	6	B
*Obtained from 2040 RTC Demand Model Online Database						
** Adjusted to deduct Butler Ranch North traffic from model volume						

As shown in **Table 7**, all the roadway segments are anticipated to operate at acceptable level of service conditions under the 2030 Background Plus Project conditions.

IMPROVEMENTS LIST AND PHASING

All the improvements outlined in previous sections are required when the project is fully built and occupied. At current market absorption rates, it would take approximately 10 to 20 years for the project to be fully completed. Hence, the capacity of the transportation network should also be improved/increased in incremental phases. Roadway and intersection improvements should be built in stages in accordance with the amount of traffic generated by the project through those various phases. **Table 8** lists phasing and timing recommendations for all the proposed improvements.

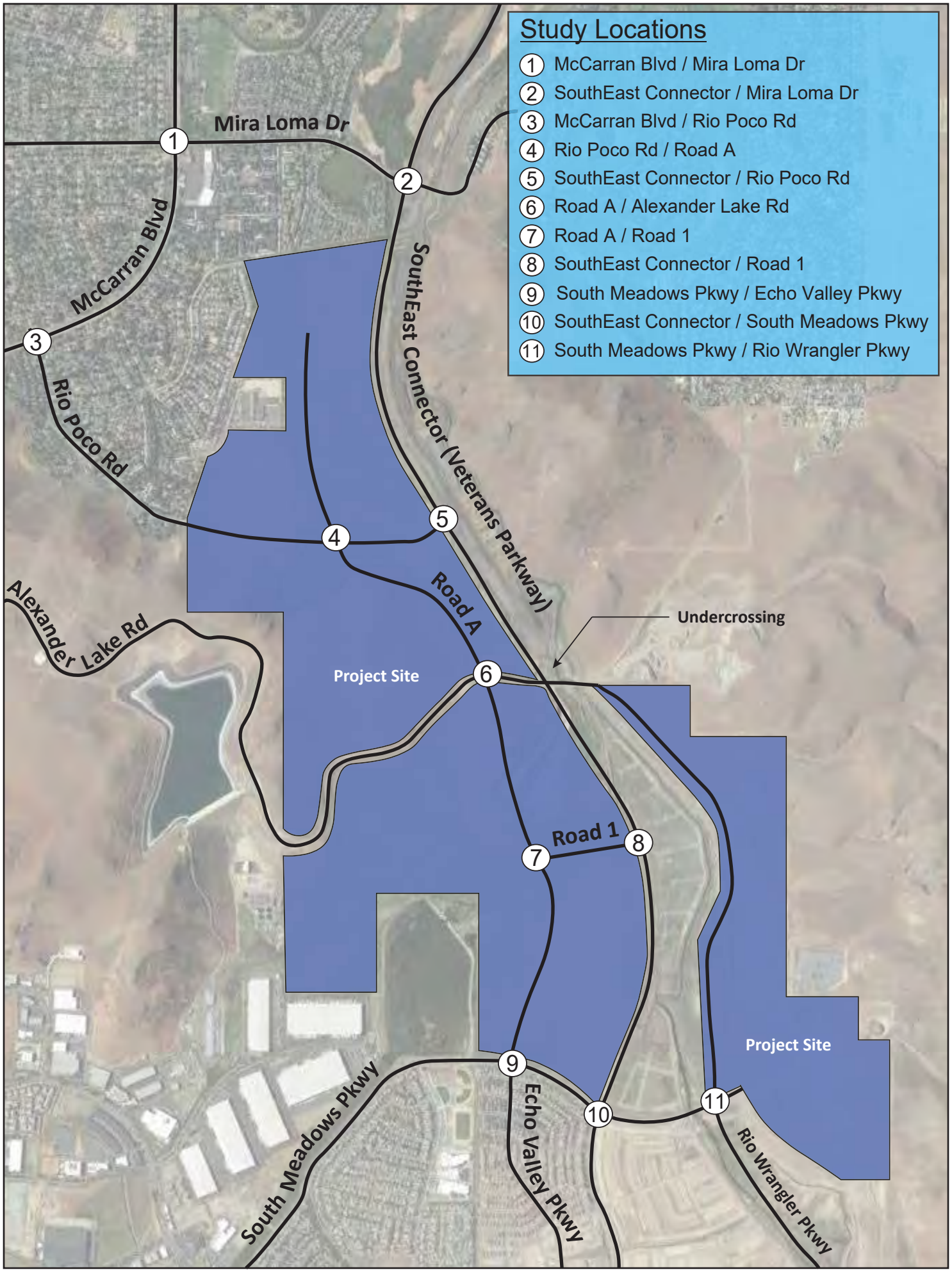
Table 8: Improvements List & Phasing

Location	Improvement	Trigger
SouthEast Connector/Rio Poco Rd	Build a Signal and turn-lanes	When the connection is made
SouthEast Connector/Road 1	Build a Signal and turn-lanes	When the connection is made
South Meadows Pkwy/Road A	Build a Signal and turn-lanes and a westbound acceleration lane Restripe the northbound approach to include one left-turn pocket, one through lane, and one right-turn pocket	When the connection is made
South Meadows Pkwy/Rio Wrangler Pkwy	Construct intersection	When the connection is made
Rio Poco Rd	Traffic Calming Measures and Safety Improvements	When the daily traffic volume on Rio Poco Road reaches 6,900 vehicles per day (LOS C upper limit)
Rio Poco Rd/McCarran Blvd	Restripe Rio Poco northbound approach to have two left-turn lanes and one shared through-right lane. Change side-street left-turn phasing to "Protected"	
Road 1	Build a connection to the SouthEast Connector	Prior to traffic volumes on Road A north of South Meadows Pkwy reaching 13,400 vehicles per day (LOS D upper limit)
South Meadows Parkway between SouthEast Connector and Rio Wrangler Pkwy	Extension of the 4-lane arterial including Steamboat Creek Crossing	When the connection is made
South Meadows Parkway between Rio Wrangler Pkwy and east project boundary	Reserve right of way for a 4-lane arterial	With the Tentative Map for that village
All Internal Intersections	Varies	Construct intersections and turn lanes with roadway construction
Bicycle and Pedestrian Facilities (all internal roads)	Per PUD Handbook	With adjacent roadway construction
Pedestrian Facilities along South Meadows Parkway frontage	Construct sidewalk along project frontage	With Road A connection to South Meadows Parkway
Project frontage	Build a transit stop if required by RTC	When a transit route serves the project

POTENTIAL RRIF OFFSET ELIGIBLE IMPROVEMENTS

The project will construct significant improvements that are of regional benefit and may meet the criteria for a Regional Road Impact Fee (RRIF) Offset Agreement and the earning of RRIF Waivers. The following project elements are recommended to be considered for an RRIF Offset Agreement:

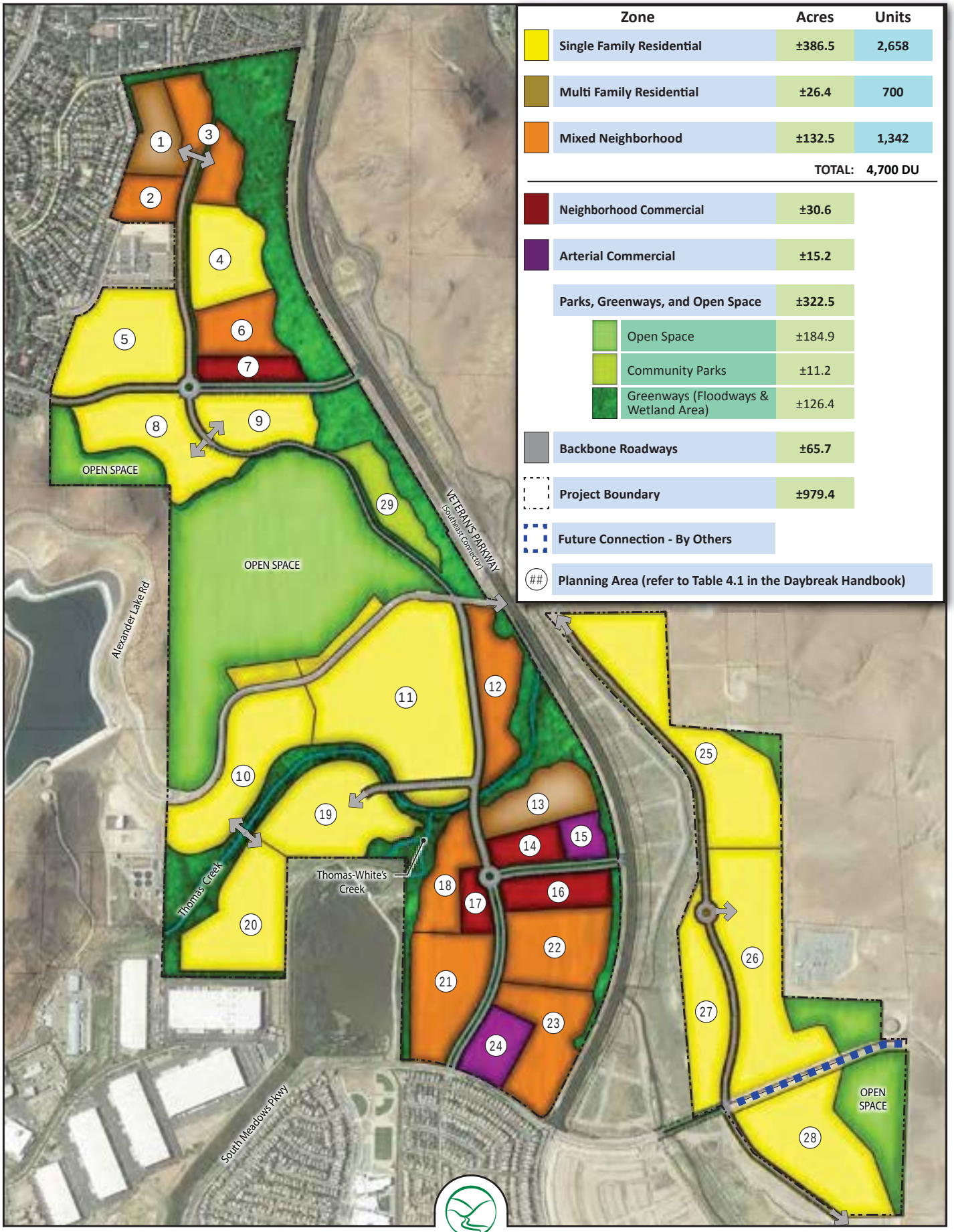
- Extension of South Meadows Parkway as a four-lane arterial, including the Steamboat Creek Crossing, from the Southeast Connector to Rio Wrangler Parkway
- Dedication of right-of-way and construction of a 2-lane roundabout at the South Meadows Parkway/Rio Wrangler Parkway intersection to be consistent with 4 lanes on South Meadows Parkway
- Dedication of right of way for the extension of South Meadows Parkway east of Rio Wrangler Parkway
- Construction of a traffic signal at the South Meadows Parkway/Echo Valley Parkway intersection which will require improvement with or without the proposed project (2030 Background LOS F/E)
- Potentially two lanes of the Rio Poco Road four-lane arterial between Road A and the SouthEast Connector as Rio Poco Road is listed as a regional facility in the 2040 RTP
- Potentially a portion of the new traffic signal at the Rio Poco Road/SouthEast Connector intersection
- Two of four lanes on roadways through the project defined as Regional Roads



TRAFFIC WORKS

NO SCALE

Figure 1
Daybreak
TRANSPORTATION IMPACT STUDY
Study Area



DAYBREAK

Development Plan

June 2018

WOOD RODGERS

TRAFFIC WORKS

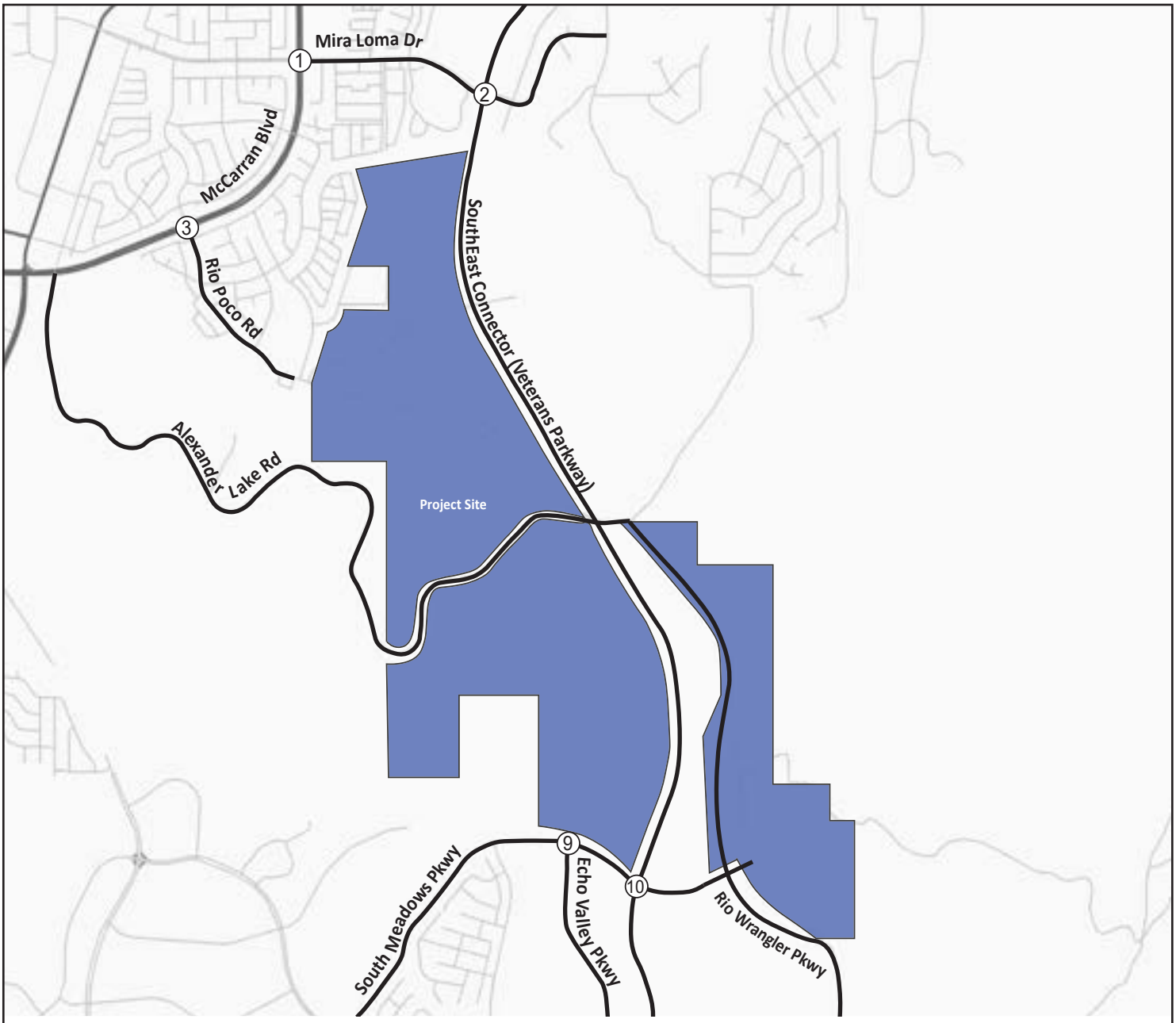
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Figure 2

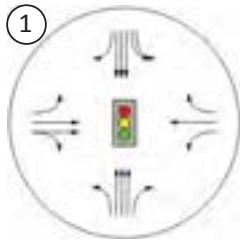
Daybreak

TRANSPORTATION IMPACT STUDY

Land Use Plan



McCarran Blvd / Mira Loma Dr



SouthEast Connector / Mira Loma Dr



McCarran Blvd / Rio Poco Rd



South Meadows Pkwy / Echo Valley Pkwy



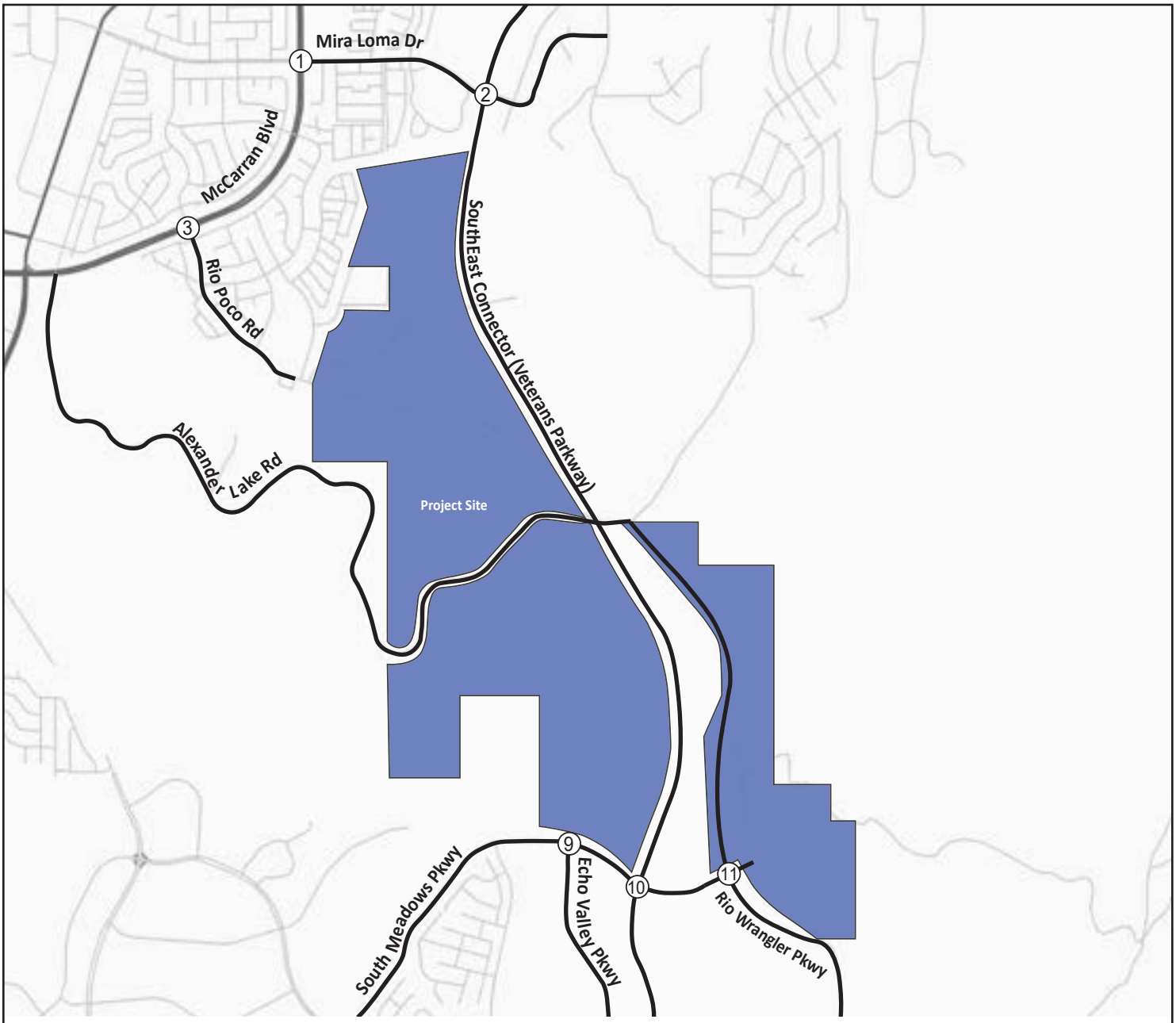
SouthEast Connector / South Meadows Pkwy



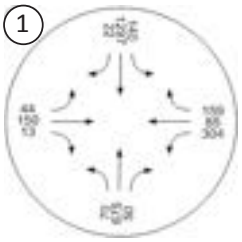
TRAFFIC WORKS

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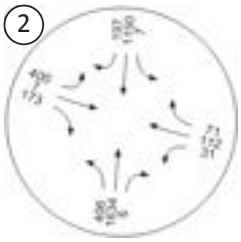
Figure 3
Daybreak
TRANSPORTATION IMPACT STUDY
2030 Background Lane Configurations



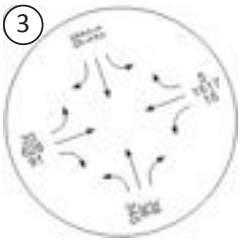
McCarran Blvd / Mira Loma Dr



SouthEast Connector / Mira Loma Dr



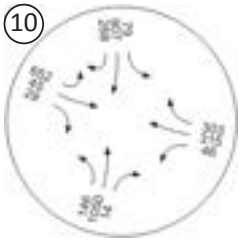
McCarran Blvd / Rio Poco Rd



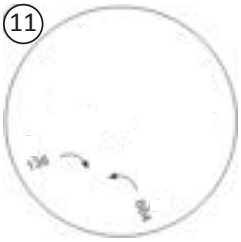
South Meadows Pkwy / Echo Valley Pkwy



SouthEast Connector / South Meadows Pkwy



South Meadows Pkwy / Rio Wrangler Pkwy



TRAFFIC WORKS

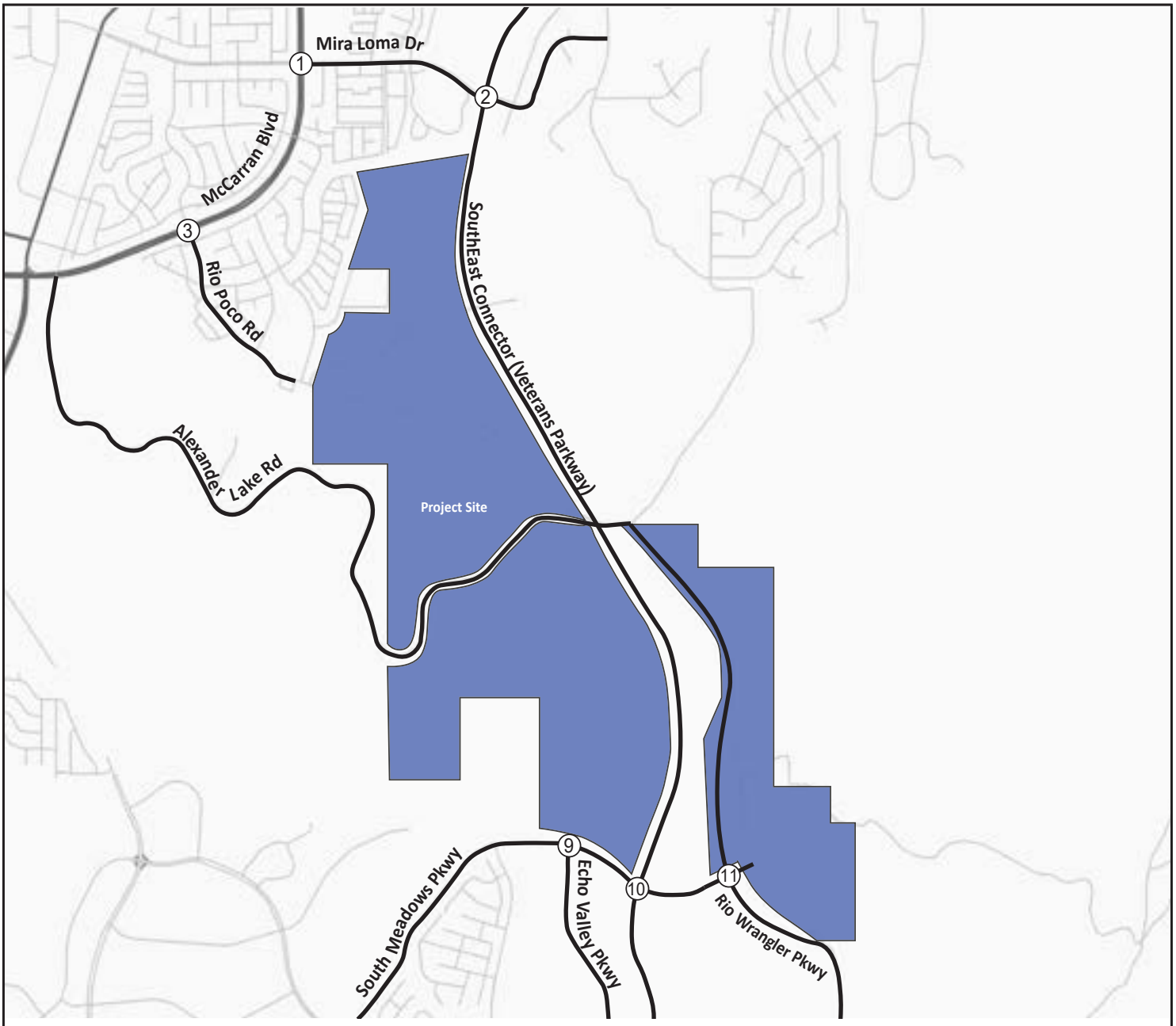
NO SCALE

Figure 4

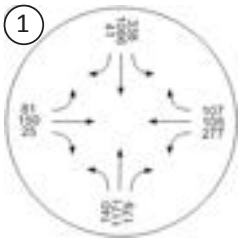
Daybreak

TRANSPORTATION IMPACT STUDY

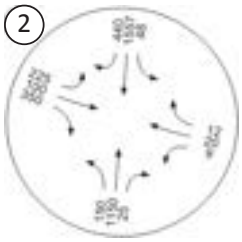
2030 Background AM Peak Hour Traffic Volumes



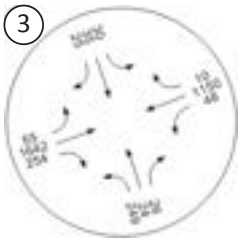
McCarran Blvd / Mira Loma Dr



SouthEast Connector / Mira Loma Dr



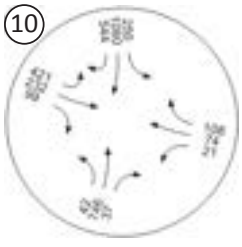
McCarran Blvd / Rio Poco Rd



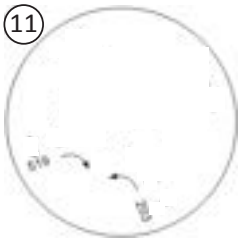
South Meadows Pkwy / Echo Valley Pkwy



SouthEast Connector / South Meadows Pkwy



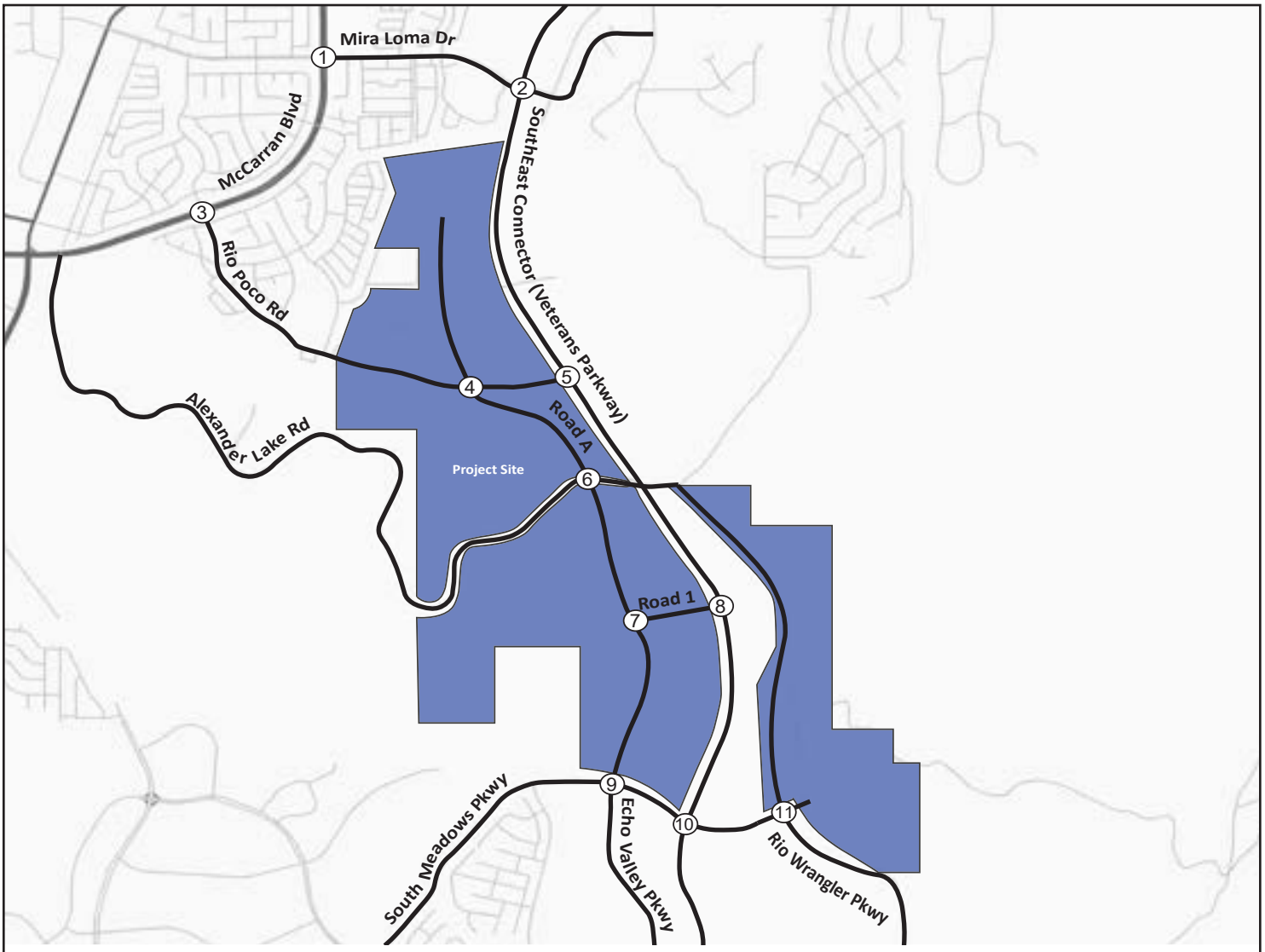
South Meadows Pkwy / Rio Wrangler Pkwy



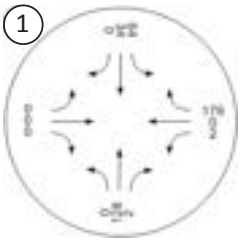
TRAFFIC WORKS

NO SCALE

Figure 5
Daybreak
TRANSPORTATION IMPACT STUDY
2030 Background PM Peak Hour Traffic Volumes



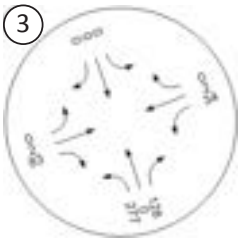
McCarran Blvd / Mira Loma Dr



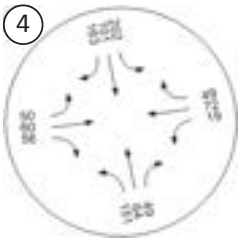
SouthEast Connector / Mira Loma Dr



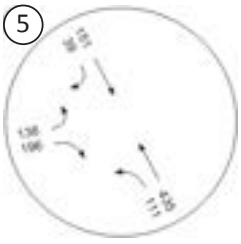
McCarran Blvd / Rio Poco Rd



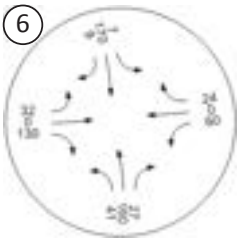
Rio Poco Rd / Road A



SouthEast Connector / Rio Poco Rd



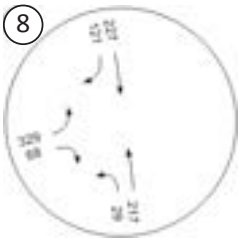
Road A / Alexander Lake Rd



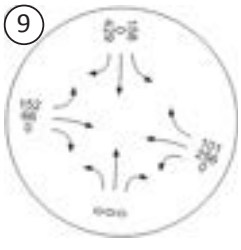
Road A / Road 1



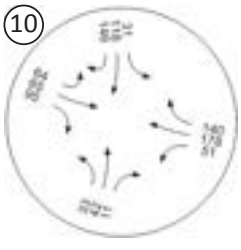
SouthEast Connector / Road 1



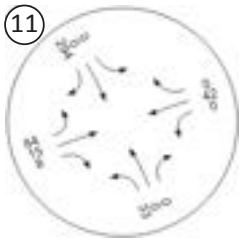
South Meadows Pkwy / Echo Valley Pkwy



SouthEast Connector / South Meadows Pkwy



South Meadows Pkwy / Rio Wrangler Pkwy



TRAFFIC WORKS LLC

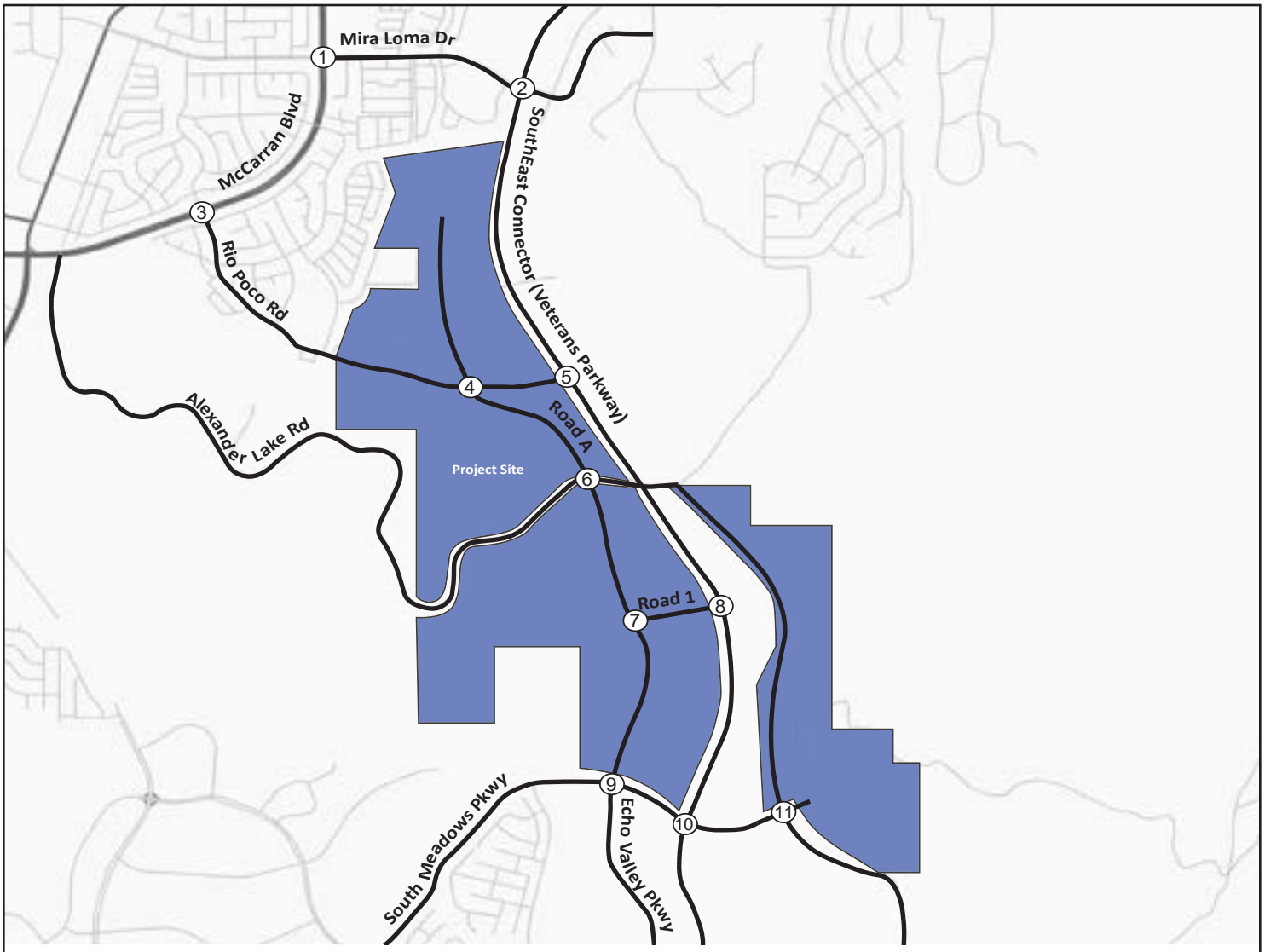
NO SCALE

Figure 6

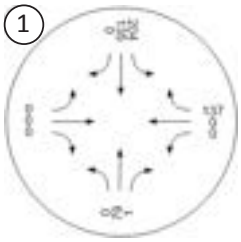
Daybreak

TRANSPORTATION IMPACT STUDY

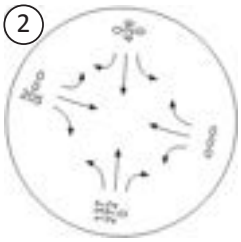
AM Peak Hour Project Trips



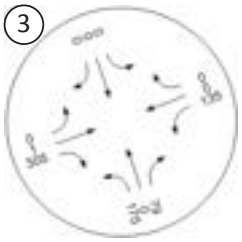
McCarran Blvd / Mira Loma Dr



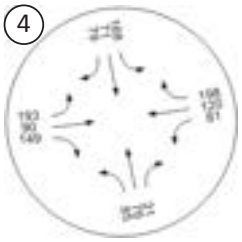
SouthEast Connector / Mira Loma Dr



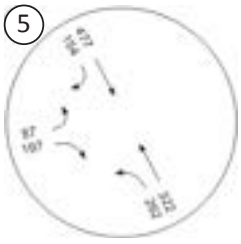
McCarran Blvd / Rio Poco Rd



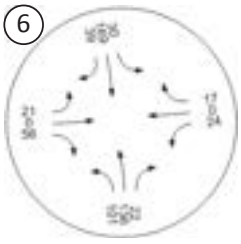
Rio Poco Rd / Road A



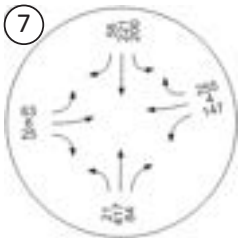
SouthEast Connector / Rio Poco Rd



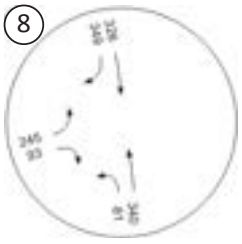
Road A / Alexander Lake Rd



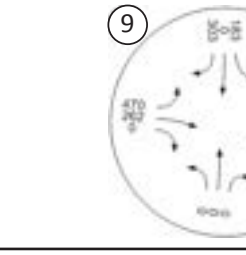
Road A / Road 1



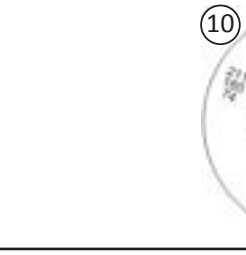
SouthEast Connector / Road 1



South Meadows Pkwy / Echo Valley Pkwy



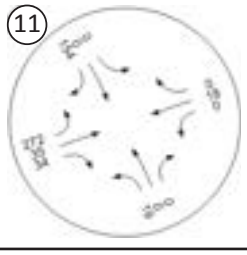
SouthEast Connector / South Meadows Pkwy



South Meadows Pkwy / Rio Wrangler Pkwy



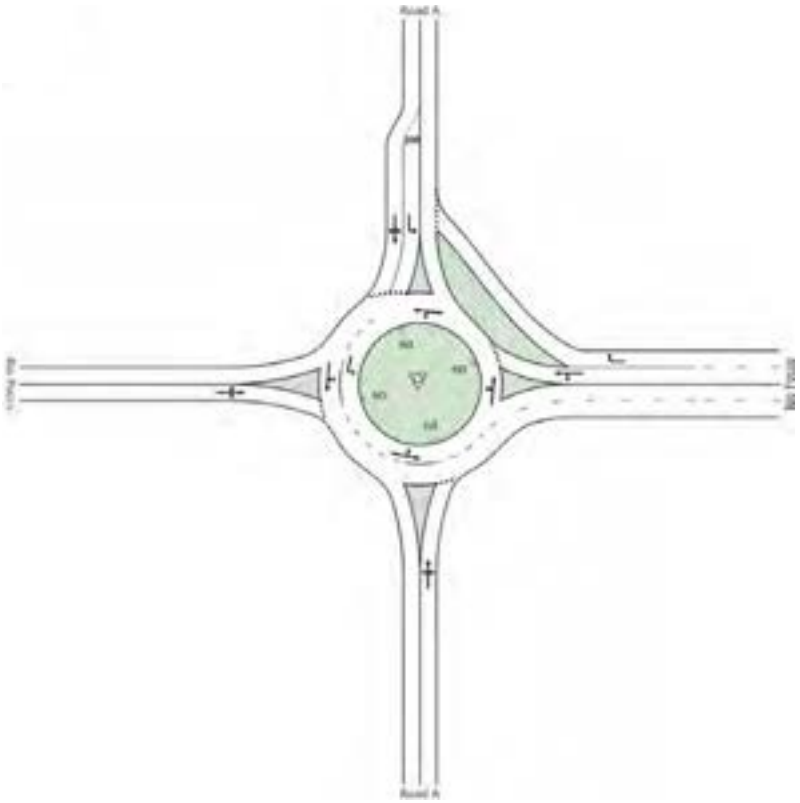




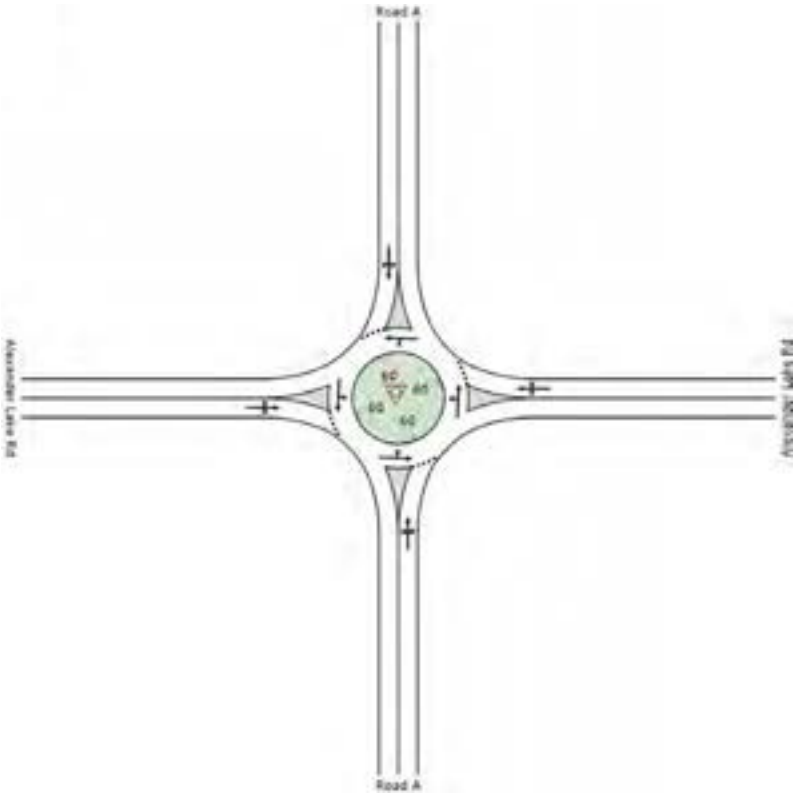
NO SCALE

Figure 7
Daybreak
TRANSPORTATION IMPACT STUDY
PM Peak Hour Project Trips

Rio Poco Rd / Road A



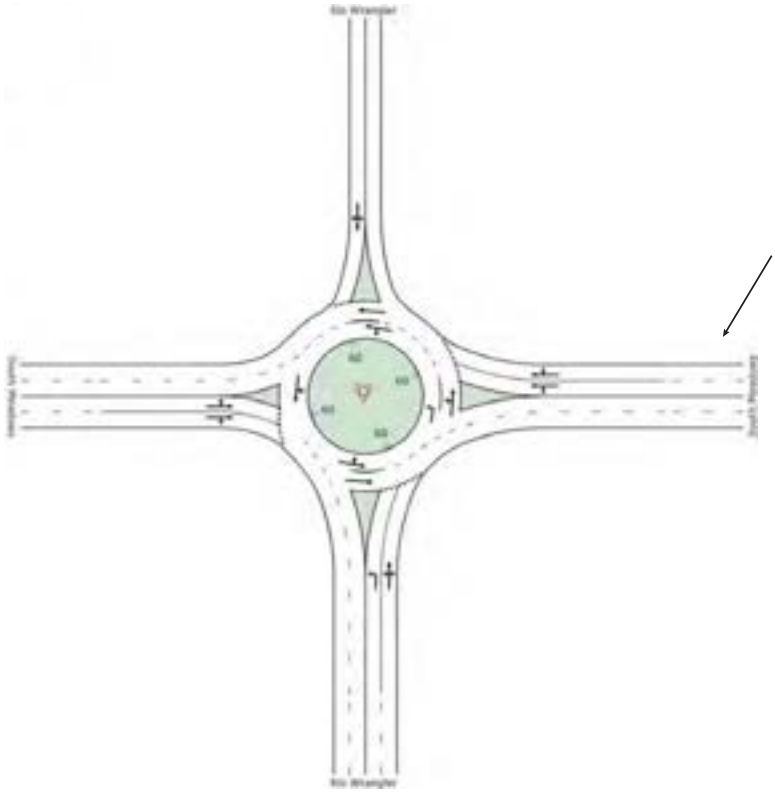
Alexander Lake Rd / Road A



Road A / Road 1



South Meadows Pkwy / Rio Wrangler Pkwy



TRAFFIC WORKS

NO SCALE

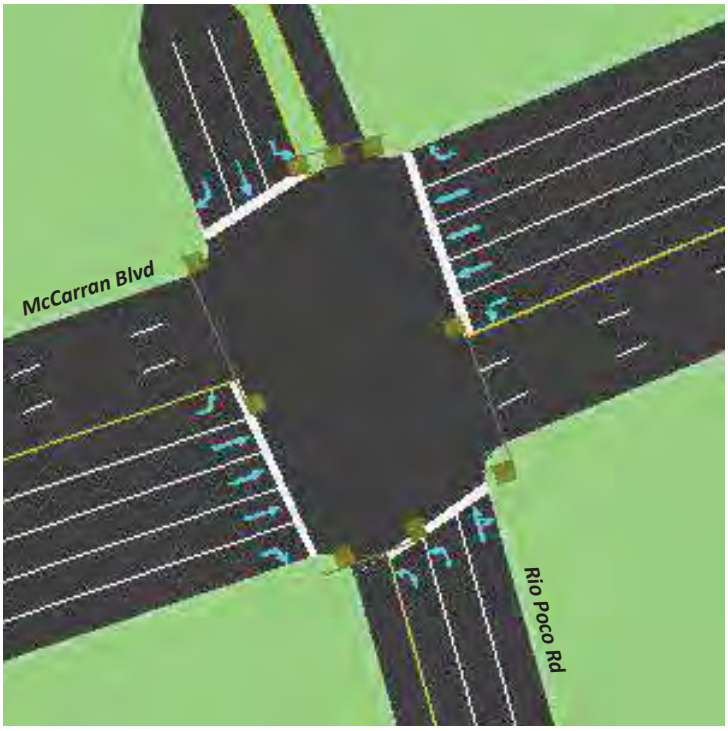
Figure 9

Daybreak

TRANSPORTATION IMPACT STUDY

Intersection Configurations - Panel 2

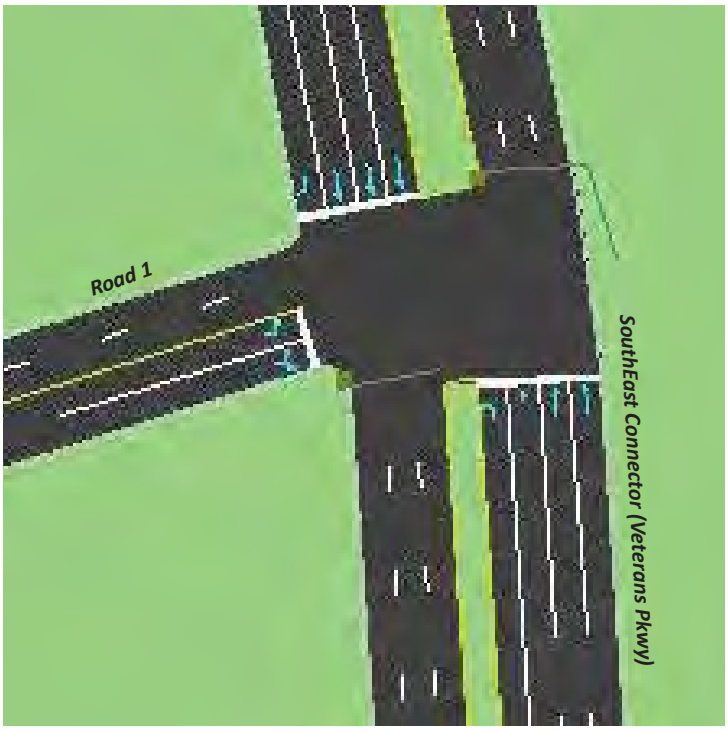
McCarran Blvd / Rio Poco Rd



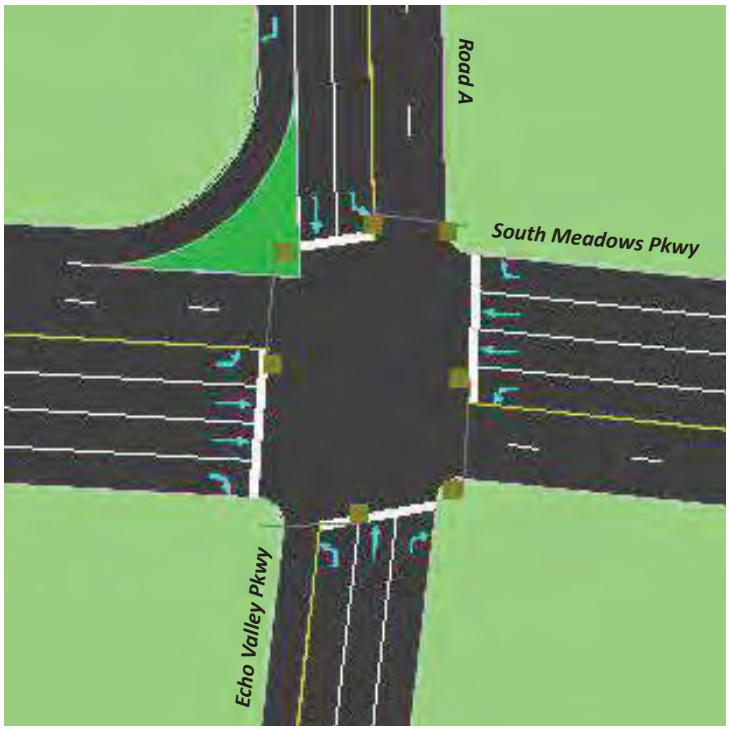
SouthEast Connector / Rio Poco Rd



SouthEast Connector / Road 1



South Meadows Pkwy / Road A / Echo Valley Pkwy



TRAFFIC WORKS

NO SCALE

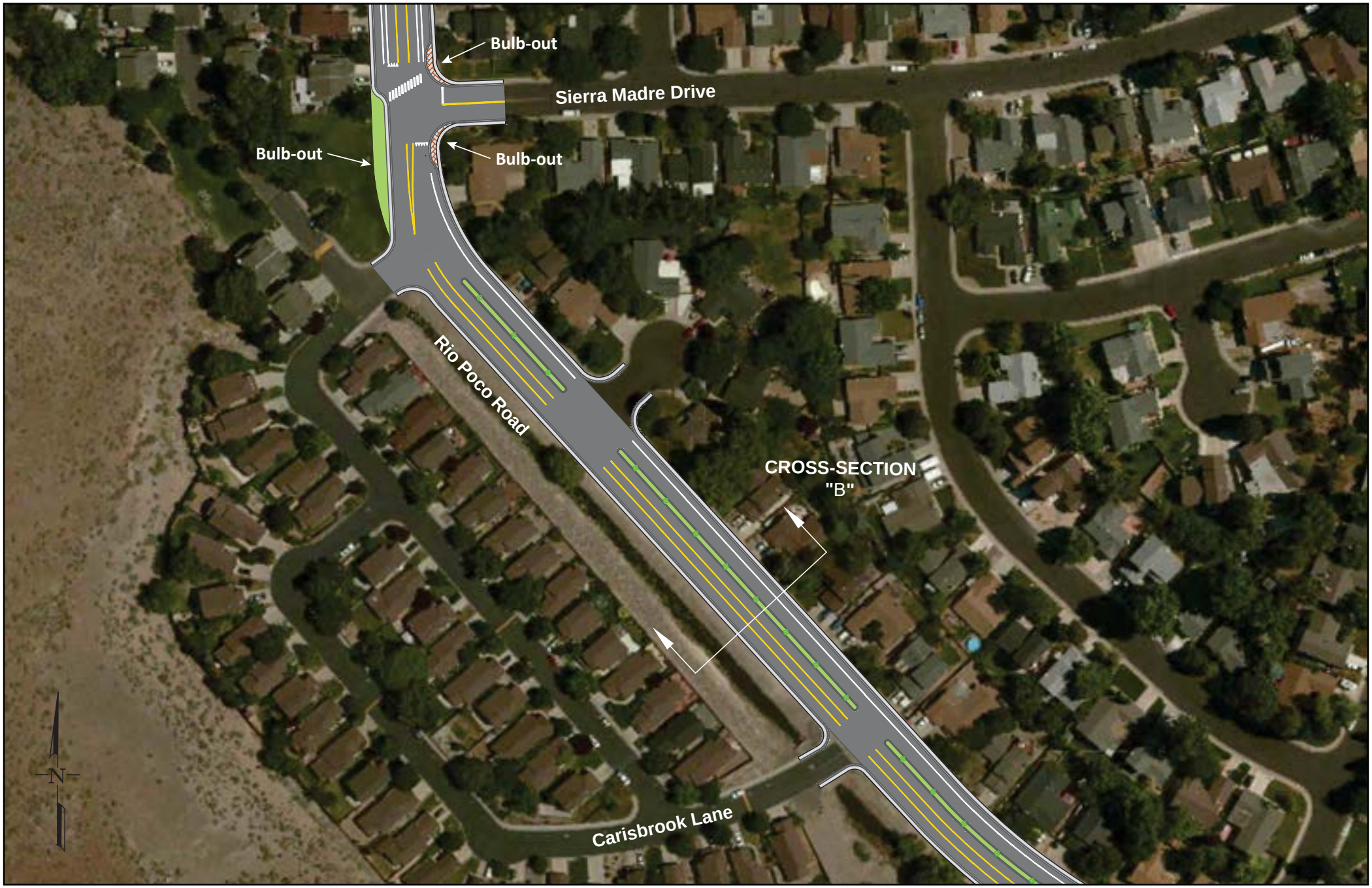
Figure 10
Daybreak
TRANSPORTATION IMPACT STUDY
Intersection Configurations - Panel 3



TRAFFIC WORKS

NO SCALE

Figure 11
Daybreak
TRANSPORTATION IMPACT STUDY
Rio Poco Road Traffic Calming Concepts - Panel 1



TRAFFIC WORKS

NO SCALE

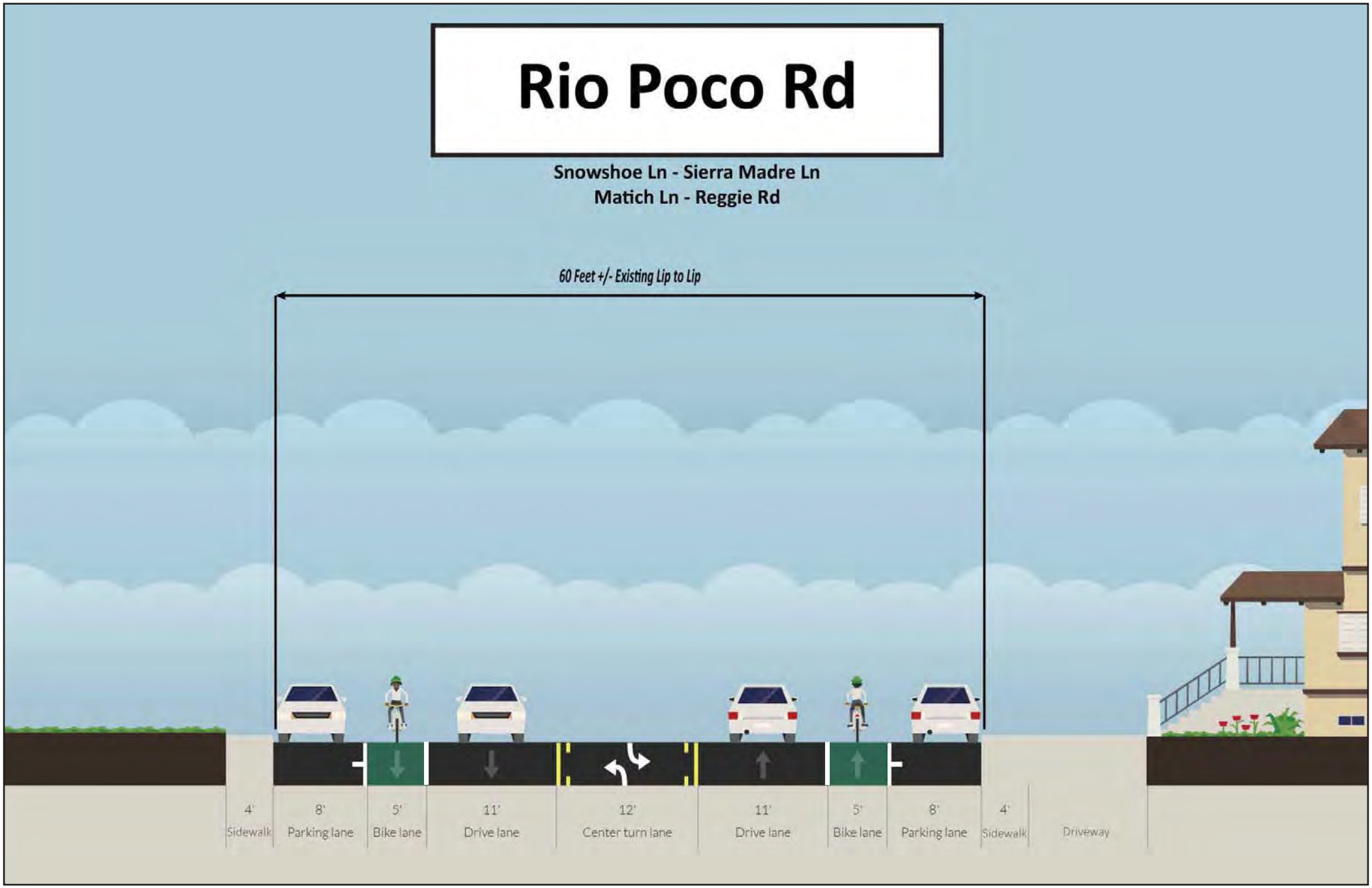
Figure 12
Daybreak
TRANSPORTATION IMPACT STUDY
Rio Poco Road Traffic Calming Concepts - Panel 2



TRAFFIC WORKS

NO SCALE

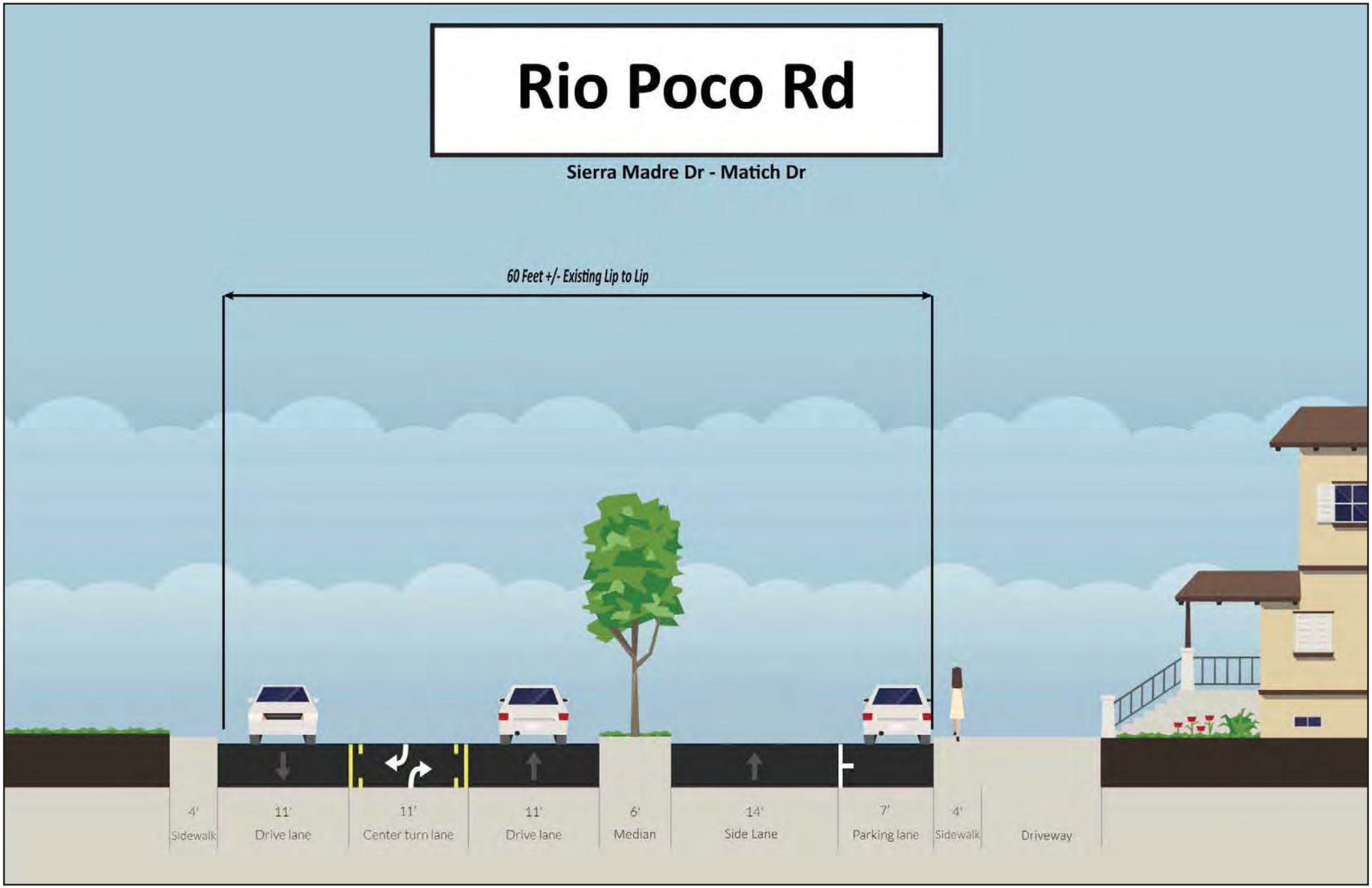
Figure 13
Daybreak
TRANSPORTATION IMPACT STUDY
Rio Poco Road Traffic Calming Concepts - Panel 3



TRAFFIC WORKS

NO SCALE

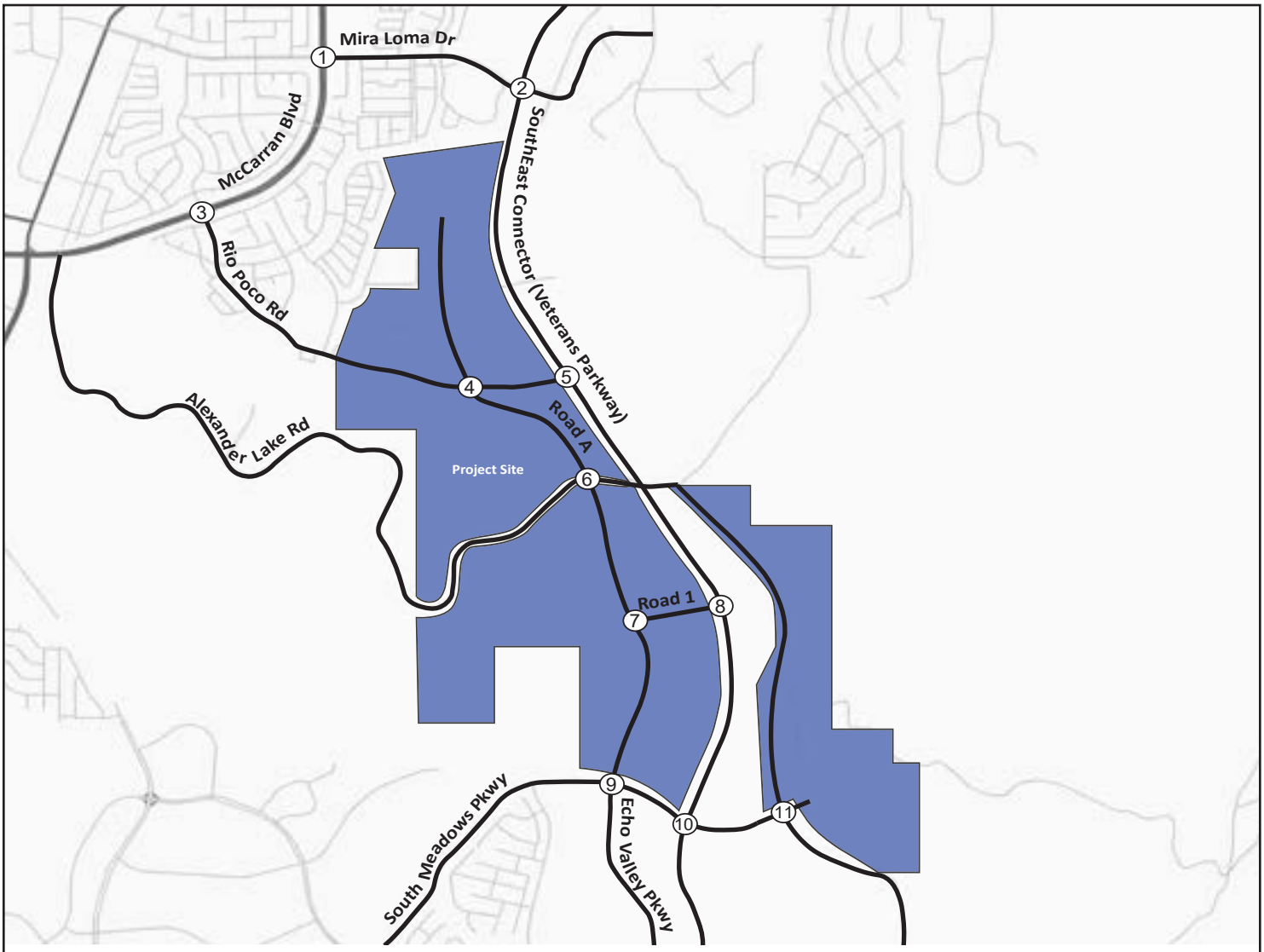
Figure 14
Daybreak
TRANSPORTATION IMPACT STUDY
Rio Poco Road Cross-Section A



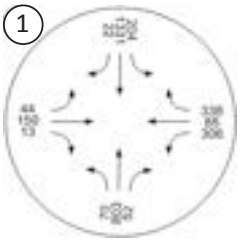
TRAFFIC WORKS

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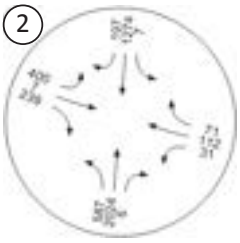
Figure 15
Daybreak
TRANSPORTATION IMPACT STUDY
Rio Poco Road Cross-Section B



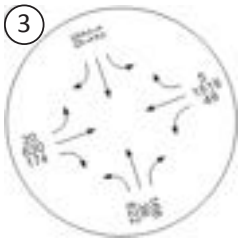
McCarran Blvd / Mira Loma Dr



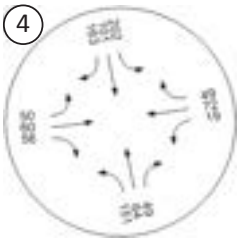
SouthEast Connector / Mira Loma Dr



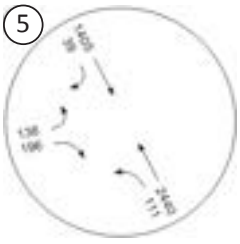
McCarran Blvd / Rio Poco Rd



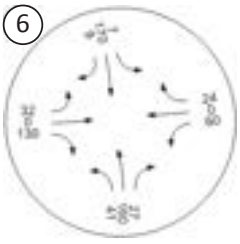
Rio Poco Rd / Road A



SouthEast Connector / Rio Poco Rd



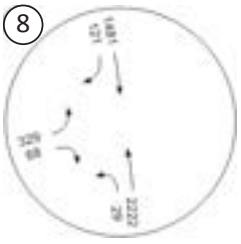
Road A / Alexander Lake Rd



Road A / Road 1



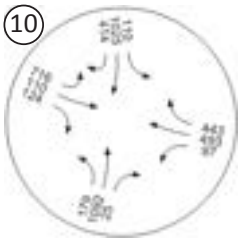
SouthEast Connector / Road 1



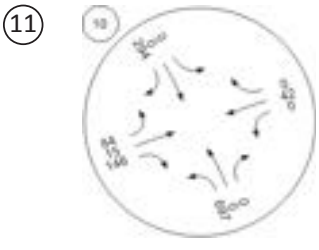
South Meadows Pkwy / Echo Valley Pkwy



SouthEast Connector / South Meadows Pkwy



South Meadows Pkwy / Rio Wrangler Pkwy



TRAFFIC WORKS

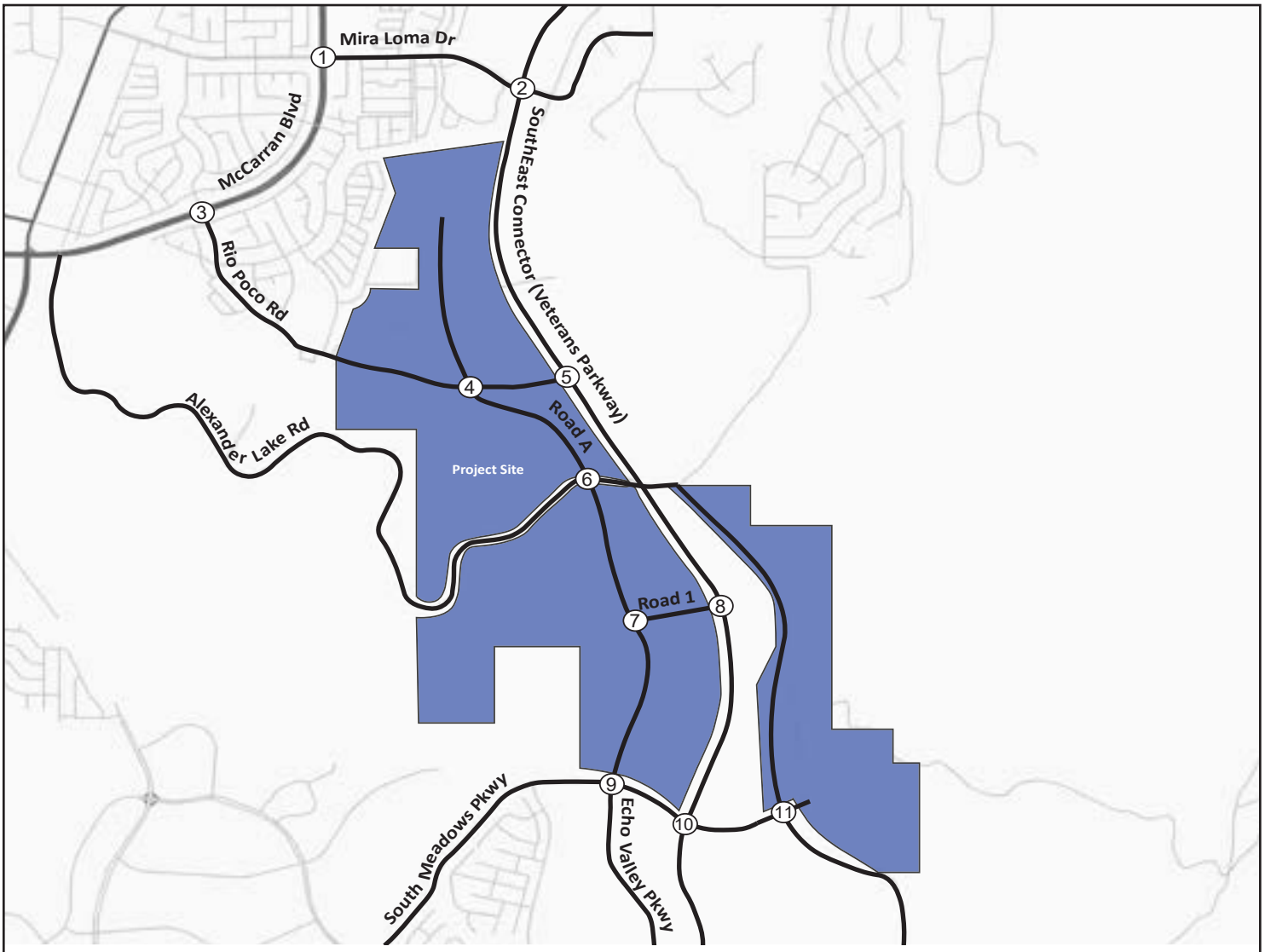
NO SCALE

Figure 16

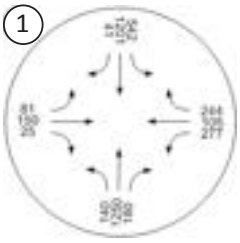
Daybreak

TRANSPORTATION IMPACT STUDY

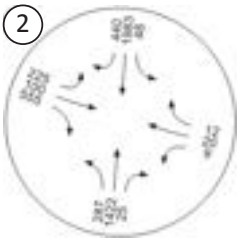
2030 Background Plus Project AM Peak Hour Traffic Volumes



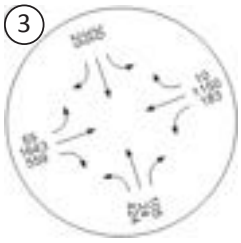
McCarran Blvd / Mira Loma Dr



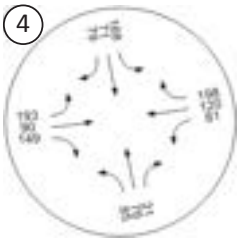
SouthEast Connector / Mira Loma Dr



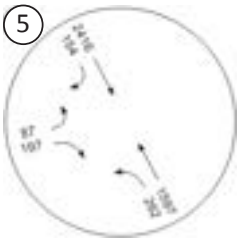
McCarran Blvd / Rio Poco Rd



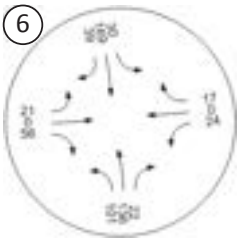
Rio Poco Rd / Road A



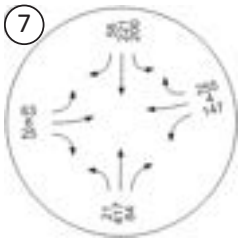
SouthEast Connector / Rio Poco Rd



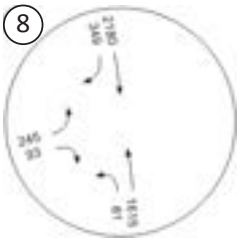
Road A / Alexander Lake Rd



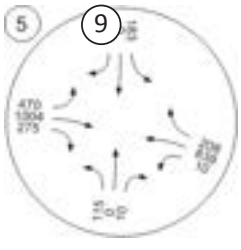
Road A / Road 1



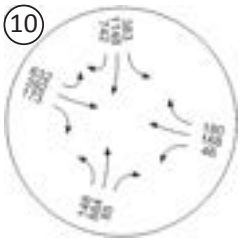
SouthEast Connector / Road 1



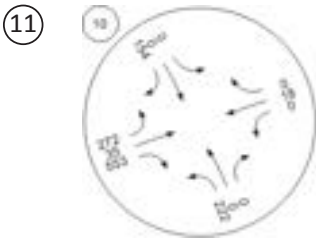
South Meadows Pkwy / Echo Valley Pkwy



SouthEast Connector / South Meadows Pkwy



South Meadows Pkwy / Rio Wrangler Pkwy



TRAFFIC WORKS LLC

NO SCALE

Figure 17

Daybreak

TRANSPORTATION IMPACT STUDY

2030 Background Plus Project PM Peak Hour Traffic Volumes

Appendix A

2030 Background Conditions SouthEast Connector Lane Configurations

CURVE	RADIUS	LENGTH	STATION FROM	STATION TO
C1	1000.00'	1000.00'	21+00.00	22+00.00
C2	1000.00'	1000.00'	22+00.00	23+00.00
C3	1000.00'	1000.00'	23+00.00	24+00.00
C4	1000.00'	1000.00'	24+00.00	25+00.00
C5	1000.00'	1000.00'	116+00.00	117+00.00
C6	1000.00'	1000.00'	117+00.00	118+00.00
C7	1000.00'	1000.00'	118+00.00	119+00.00

CURVE	RADIUS	LENGTH	STATION FROM	STATION TO
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TWO WORKING DAYS BEFORE YOU DIG
CALL USA TOLL FREE
811 / 1-800-227-2600

REGIONAL TRANSPORTATION COMMISSION OF WASHOE COUNTY

SOUTHEAST CONNECTOR PHASE 2

STRIPING DETAILS
VETERANS PKWY AND
MIRA LOMA DR INTERSECTION

ATKINS
10509 Professional Circle, Suite 102
Reno, Nevada 89521
Telephone: 775.858.1522

NO.	DATE	REVISION	BY	APVD

DESIGN | DR | CHK | APVD

PLOT TIME: 8:11:03 AM

Appendix B

2030 Background Conditions LOS Calculations

Intersection Level Of Service Report
Intersection 1: SE Connector / Mira Loma Pkwy

Control Type:	Signalized	Delay (sec / veh):	30.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.607

Intersection Setup

Name	SE Connector			SE Connector			Mira Loma Pkwy			Mira Loma Pkwy		
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	2	0	1	1	0	1	2	0	1	1	0	1
Pocket Length [ft]	700.00	100.00	400.00	500.00	100.00	500.00	450.00	100.00	350.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	SE Connector			SE Connector			Mira Loma Pkwy			Mira Loma Pkwy		
Base Volume Input [veh/h]	406	1634	6	7	1150	197	400	7	173	31	112	71
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	406	1634	6	7	1150	197	400	7	173	31	112	71
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
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]	107	430	2	2	303	52	105	2	46	8	29	19
Total Analysis Volume [veh/h]	427	1720	6	7	1211	207	421	7	182	33	118	75
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	31	47	0	15	31	0	33	39	0	29	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	13	0	0	20	0	0	28	0	0	24	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	81	81	1	62	62	20	28	28	4	11	11
g / C, Green / Cycle	0.16	0.63	0.63	0.01	0.48	0.48	0.15	0.22	0.22	0.03	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.14	0.38	0.00	0.00	0.26	0.14	0.14	0.00	0.13	0.02	0.07	0.05
s, saturation flow rate [veh/h]	3113	4584	1431	1603	4584	1431	3113	1683	1431	1603	1683	1431
c, Capacity [veh/h]	485	2864	894	15	2192	684	482	362	307	45	148	126
d1, Uniform Delay [s]	53.68	14.65	9.19	64.09	24.06	20.70	53.69	40.23	45.91	62.69	58.13	57.04
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.35	0.94	0.01	21.91	1.01	1.14	5.10	0.02	1.82	20.33	9.29	4.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.60	0.01	0.48	0.55	0.30	0.87	0.02	0.59	0.73	0.80	0.60
d, Delay for Lane Group [s/veh]	59.03	15.59	9.20	86.01	25.07	21.84	58.79	40.25	47.72	83.02	67.42	61.47
Lane Group LOS	E	B	A	F	C	C	E	D	D	F	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	7.02	9.39	0.06	0.32	8.58	3.91	7.07	0.18	5.46	1.34	4.20	2.53
50th-Percentile Queue Length [ft]	175.54	234.66	1.58	7.90	214.44	97.76	176.73	4.53	136.61	33.51	104.93	63.36
95th-Percentile Queue Length [veh]	11.37	14.41	0.11	0.57	13.38	7.04	11.43	0.33	9.30	2.41	7.55	4.56
95th-Percentile Queue Length [ft]	284.18	360.27	2.85	14.23	334.52	175.96	285.74	8.15	232.45	60.31	188.87	114.04

Movement, Approach, & Intersection Results

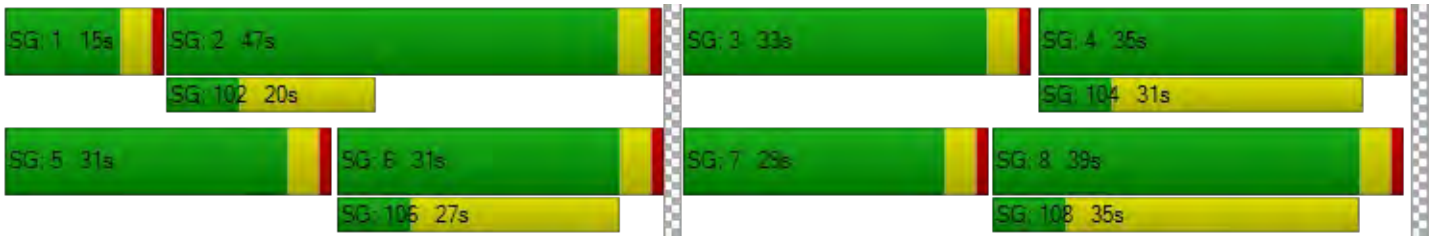
d_M, Delay for Movement [s/veh]	59.03	15.59	9.20	86.01	25.07	21.84	58.79	40.25	47.72	83.02	67.42	61.47
Movement LOS	E	B	A	F	C	C	E	D	D	F	E	E
d_A, Approach Delay [s/veh]	24.18			24.90			55.27			67.72		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	30.94											
Intersection LOS	C											
Intersection V/C	0.607											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	54.47	54.47	54.47
l_p,int, Pedestrian LOS Score for Intersection	3.448	3.409	2.692	2.209
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	662	415	538	477
d_b, Bicycle Delay [s]	29.11	40.80	34.71	37.70
l_b,int, Bicycle LOS Score for Intersection	2.744	2.343	2.566	1.933
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: SE Connecor / S Meadows Pkwy

Control Type:	Signalized	Delay (sec / veh):	43.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.695

Intersection Setup

Name	SE Connector			SE Connector			S Meadows Pkwy			South Meadows Pkwy		
Approach	Northbound			Southbound			Westbound			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	2	0	1	2	0	0	2	0	1	2	0	1
Pocket Length [ft]	475.00	100.00	350.00	500.00	100.00	100.00	400.00	100.00	425.00	525.00	100.00	300.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	SE Connector			SE Connector			S Meadows Pkwy			South Meadows Pkwy		
Base Volume Input [veh/h]	146	1050	14	79	907	268	46	315	303	652	45	29
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	146	1050	14	79	907	268	46	315	303	652	45	29
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	276	4	21	239	71	12	83	0	172	12	8
Total Analysis Volume [veh/h]	154	1105	15	83	955	282	48	332	0	686	47	31
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	55	0	9	52	0	59	40	0	46	27	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	75	75	5	72	72	4	18	18	36	49	49
g / C, Green / Cycle	0.05	0.50	0.50	0.03	0.48	0.48	0.03	0.12	0.12	0.24	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.05	0.34	0.01	0.03	0.30	0.20	0.02	0.10	0.00	0.22	0.01	0.02
s, saturation flow rate [veh/h]	3113	3204	1431	3113	3204	1431	3113	3204	1431	3113	3204	1431
c, Capacity [veh/h]	166	1608	718	104	1544	689	94	384	171	742	1051	469
d1, Uniform Delay [s]	70.71	28.40	18.80	72.00	28.68	25.07	71.65	64.83	0.00	55.81	34.38	34.62
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.98	2.42	0.05	13.09	1.87	1.80	4.26	5.93	0.00	5.53	0.02	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.69	0.02	0.80	0.62	0.41	0.51	0.87	0.00	0.92	0.04	0.07
d, Delay for Lane Group [s/veh]	89.69	30.82	18.86	85.09	30.55	26.87	75.91	70.76	0.00	61.34	34.40	34.68
Lane Group LOS	F	C	B	F	C	C	E	E	A	E	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.34	15.03	0.27	1.75	12.66	6.67	0.97	6.57	0.00	13.16	0.60	0.80
50th-Percentile Queue Length [ft]	83.60	375.78	6.78	43.85	316.42	166.81	24.27	164.37	0.00	329.09	14.89	19.89
95th-Percentile Queue Length [veh]	6.02	21.39	0.49	3.16	18.49	10.91	1.75	10.78	0.00	19.11	1.07	1.43
95th-Percentile Queue Length [ft]	150.48	534.74	12.20	78.93	462.29	272.71	43.69	269.50	0.00	477.85	26.80	35.80

Movement, Approach, & Intersection Results

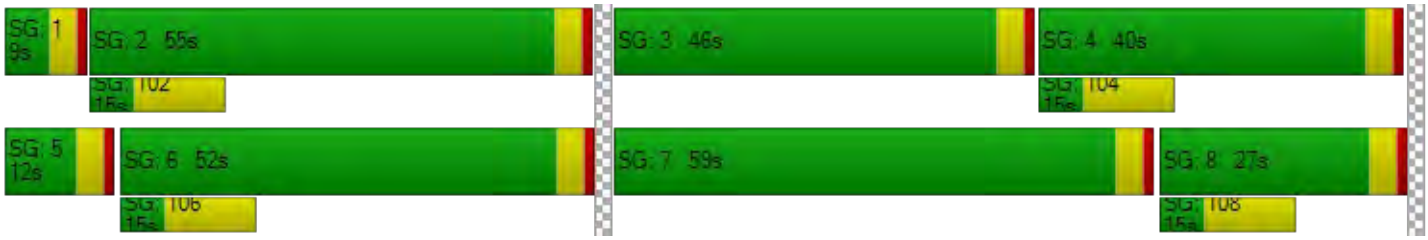
d_M, Delay for Movement [s/veh]	89.69	30.82	18.86	85.09	30.55	26.87	75.91	70.76	0.00	61.34	34.40	34.68
Movement LOS	F	C	B	F	C	C	E	E	A	E	C	C
d_A, Approach Delay [s/veh]	37.79			33.19			71.41			58.60		
Approach LOS	D			C			E			E		
d_I, Intersection Delay [s/veh]	43.84											
Intersection LOS	D											
Intersection V/C	0.695											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	66.27	66.27	66.27	66.27
l_p,int, Pedestrian LOS Score for Intersection	3.074	3.252	2.836	2.868
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	680	640	480	307
d_b, Bicycle Delay [s]	32.67	34.68	43.32	53.76
l_b,int, Bicycle LOS Score for Intersection	2.611	2.649	1.873	2.190
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: S Meadows Pkwy / Echo Valley

Control Type:	Two-way stop	Delay (sec / veh):	106.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.802

Intersection Setup

Name	Echo Valley Pkwy			Road 1			South Meadows Pkwy			South Meadows Pkwy		
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	1	0	1	0	0	0	1	0	1	1	0	0
Pocket Length [ft]	65.00	100.00	90.00	100.00	100.00	100.00	300.00	100.00	300.00	200.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Echo Valley Pkwy			Road 1			South Meadows Pkwy			South Meadows Pkwy		
Base Volume Input [veh/h]	260	0	15	0	0	0	0	711	50	10	719	0
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]	260	0	15	0	0	0	0	711	50	10	719	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	0	4	0	0	0	0	187	13	3	189	0
Total Analysis Volume [veh/h]	274	0	16	0	0	0	0	748	53	11	757	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No			
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.80	0.00	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	106.83	36.46	10.93	0.00	0.00	0.00	9.24	0.00	0.00	9.26	0.00	0.00
Movement LOS	F	E	B				A	A	A	A	A	A
95th-Percentile Queue Length [veh]	6.29	0.08	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00
95th-Percentile Queue Length [ft]	157.17	1.97	1.97	0.00	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.00
d_A, Approach Delay [s/veh]	101.54			0.00			0.00			0.13		
Approach LOS	F			A			A			A		
d_I, Intersection Delay [s/veh]	15.89											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 14: McCarran Blvd/Rio Poco Dr

Control Type:	Signalized	Delay (sec / veh):	32.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.567

Intersection Setup

Name				Rio Poco			McCarran			McCarran		
Approach	Northbound			Southbound			Eastbound			Southwestbound		
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	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	110.00	100.00	50.00	300.00	100.00	300.00	350.00	100.00	250.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Rio Poco			McCarran			McCarran		
Base Volume Input [veh/h]	345	36	38	12	21	55	20	628	91	15	1517	5
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	345	36	38	12	21	55	20	628	91	15	1517	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
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]	91	9	10	3	6	14	5	165	24	4	399	1
Total Analysis Volume [veh/h]	363	38	40	13	22	58	21	661	96	16	1597	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	40	0	9	40	0	9	72	0	9	72	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	29	0	0	29	0	0	18	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	62	56	56	62	53	53	3	54	54	2	53	53
g / C, Green / Cycle	0.48	0.43	0.43	0.48	0.41	0.41	0.02	0.41	0.41	0.02	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.28	0.02	0.03	0.01	0.01	0.04	0.01	0.14	0.07	0.01	0.35	0.00
s, saturation flow rate [veh/h]	1290	1683	1431	1256	1683	1431	1603	4584	1431	1603	4584	1431
c, Capacity [veh/h]	679	728	619	654	689	586	34	1887	589	28	1871	584
d1, Uniform Delay [s]	24.63	21.41	21.53	17.85	22.98	23.64	63.12	26.30	24.12	63.37	34.94	22.85
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.00	0.14	0.20	0.01	0.09	0.34	17.36	0.11	0.13	16.77	1.19	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.05	0.06	0.02	0.03	0.10	0.62	0.35	0.16	0.57	0.85	0.01
d, Delay for Lane Group [s/veh]	27.63	21.54	21.73	17.86	23.07	23.97	80.49	26.41	24.25	80.15	36.13	22.86
Lane Group LOS	C	C	C	B	C	C	F	C	C	F	D	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	8.04	0.71	0.76	0.21	0.43	1.17	0.85	4.75	1.91	0.66	15.31	0.09
50th-Percentile Queue Length [ft]	201.09	17.77	18.95	5.28	10.69	29.23	21.34	118.68	47.77	16.45	382.77	2.34
95th-Percentile Queue Length [veh]	12.69	1.28	1.36	0.38	0.77	2.10	1.54	8.32	3.44	1.18	21.73	0.17
95th-Percentile Queue Length [ft]	317.37	31.99	34.11	9.50	19.23	52.62	38.41	208.01	85.98	29.61	543.20	4.22

Movement, Approach, & Intersection Results

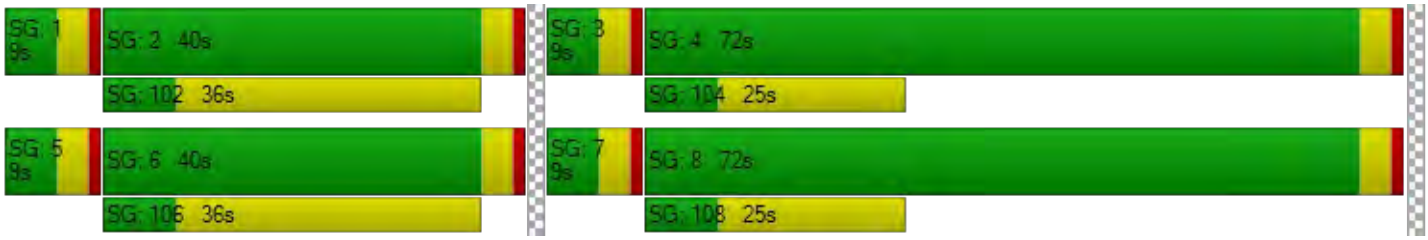
d_M, Delay for Movement [s/veh]	27.63	21.54	21.73	17.86	23.07	23.97	80.49	26.41	24.25	80.15	36.13	22.86
Movement LOS	C	C	C	B	C	C	F	C	C	F	D	C
d_A, Approach Delay [s/veh]	26.57			22.91			27.60			36.53		
Approach LOS	C			C			C			D		
d_I, Intersection Delay [s/veh]	32.23											
Intersection LOS	C											
Intersection V/C	0.567											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	54.47	54.47	54.47
l_p,int, Pedestrian LOS Score for Intersection	2.289	2.187	3.442	3.036
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	554	554	1046	1046
d_b, Bicycle Delay [s]	33.98	33.98	14.78	14.78
l_b,int, Bicycle LOS Score for Intersection	2.287	1.713	1.988	2.450
Bicycle LOS	B	A	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1089: Mira Loma Dr/McCrran Blvd

Control Type:	Signalized	Delay (sec / veh):	24.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.596

Intersection Setup

Name	McCarran			McCarran			Mira Loma Dr			Mira Loma Pkwy		
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	1	0	1	2	0	1	1	0	1	1	0	1
Pocket Length [ft]	375.00	100.00	525.00	440.00	100.00	250.00	190.00	100.00	190.00	110.00	100.00	200.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	McCarran			McCarran			Mira Loma Dr			Mira Loma Pkwy		
Base Volume Input [veh/h]	70	675	50	140	1297	22	44	150	13	304	85	159
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	675	50	140	1297	22	44	150	13	304	85	159
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
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	0.0000
Total 15-Minute Volume [veh/h]	18	178	13	37	341	6	12	39	3	80	22	0
Total Analysis Volume [veh/h]	74	711	53	147	1365	23	46	158	14	320	89	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	19	0	9	19	0	32	19	0	33	20	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	35	35	5	35	35	3	6	6	18	21	21
g / C, Green / Cycle	0.06	0.43	0.43	0.06	0.44	0.44	0.04	0.08	0.08	0.23	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.05	0.16	0.04	0.05	0.30	0.02	0.03	0.05	0.05	0.20	0.05	0.00
s, saturation flow rate [veh/h]	1603	4584	1431	3113	4584	1431	1603	1683	1636	1603	1683	1431
c, Capacity [veh/h]	91	1986	620	195	2011	627	68	132	129	362	441	375
d1, Uniform Delay [s]	37.29	15.21	13.35	36.90	17.95	12.81	37.76	35.79	35.83	29.96	23.01	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.33	0.50	0.27	5.87	1.87	0.11	11.10	5.35	5.77	7.23	0.22	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.36	0.09	0.76	0.68	0.04	0.68	0.65	0.66	0.88	0.20	0.00
d, Delay for Lane Group [s/veh]	52.62	15.72	13.62	42.77	19.82	12.92	48.86	41.14	41.59	37.19	23.23	0.00
Lane Group LOS	D	B	B	D	B	B	D	D	D	D	C	A
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.79	2.81	0.58	1.54	6.56	0.24	1.08	1.80	1.79	6.45	1.30	0.00
50th-Percentile Queue Length [ft]	44.78	70.37	14.52	38.58	163.92	6.08	27.05	45.03	44.84	161.33	32.39	0.00
95th-Percentile Queue Length [veh]	3.22	5.07	1.05	2.78	10.76	0.44	1.95	3.24	3.23	10.62	2.33	0.00
95th-Percentile Queue Length [ft]	80.61	126.67	26.14	69.44	268.90	10.94	48.70	81.05	80.72	265.49	58.31	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.62	15.72	13.62	42.77	19.82	12.92	48.86	41.35	41.59	37.19	23.23	0.00
Movement LOS	D	B	B	D	B	B	D	D	D	D	C	A
d_A, Approach Delay [s/veh]	18.85			21.92			42.95			34.15		
Approach LOS	B			C			D			C		
d_I, Intersection Delay [s/veh]	24.25											
Intersection LOS	C											
Intersection V/C	0.596											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	29.76	29.76	29.76	29.76
l_p,int, Pedestrian LOS Score for Intersection	3.028	3.091	2.223	2.534
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	375	375	375	400
d_b, Bicycle Delay [s]	26.41	26.41	26.41	25.60
l_b,int, Bicycle LOS Score for Intersection	2.021	2.404	1.739	2.234
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: SE Connector / Mira Loma Pkwy

Control Type:	Signalized	Delay (sec / veh):	25.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.671

Intersection Setup

Name	SE Connector			SE Connector			Mira Loma Pkwy			Mira Loma Pkwy		
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	2	0	1	1	0	1	2	0	1	1	0	1
Pocket Length [ft]	700.00	100.00	400.00	500.00	100.00	500.00	450.00	100.00	350.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	SE Connector			SE Connector			Mira Loma Pkwy			Mira Loma Pkwy		
Base Volume Input [veh/h]	150	1150	25	48	1557	440	225	100	350	9	20	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	1150	25	48	1557	440	225	100	350	9	20	12
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
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]	39	303	7	13	410	116	59	26	92	2	5	3
Total Analysis Volume [veh/h]	158	1211	26	51	1639	463	237	105	368	9	21	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	32	0	9	31	0	14	40	0	9	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	13	0	0	20	0	0	28	0	0	24	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	44	44	4	41	41	9	26	26	1	18	18
g / C, Green / Cycle	0.07	0.49	0.49	0.04	0.46	0.46	0.10	0.28	0.28	0.01	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.02	0.03	0.36	0.32	0.08	0.06	0.26	0.01	0.01	0.01
s, saturation flow rate [veh/h]	3113	4584	1431	1603	4584	1431	3113	1683	1431	1603	1683	1431
c, Capacity [veh/h]	208	2231	696	65	2110	658	303	477	406	19	333	283
d1, Uniform Delay [s]	41.30	16.12	12.08	42.81	20.41	19.39	39.67	24.64	31.10	44.18	29.32	29.22
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.15	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.68	0.95	0.10	18.89	2.89	6.20	4.37	0.23	10.40	17.05	0.08	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.54	0.04	0.79	0.78	0.70	0.78	0.22	0.91	0.47	0.06	0.05
d, Delay for Lane Group [s/veh]	46.98	17.08	12.18	61.70	23.30	25.59	44.05	24.87	41.51	61.24	29.40	29.28
Lane Group LOS	D	B	B	E	C	C	D	C	D	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.81	5.28	0.26	1.42	9.00	7.92	2.71	1.71	8.62	0.29	0.37	0.23
50th-Percentile Queue Length [ft]	45.22	131.89	6.61	35.38	225.00	198.10	67.72	42.84	215.47	7.19	9.31	5.76
95th-Percentile Queue Length [veh]	3.26	9.04	0.48	2.55	13.92	12.54	4.88	3.08	13.43	0.52	0.67	0.41
95th-Percentile Queue Length [ft]	81.40	226.06	11.90	63.68	348.00	313.51	121.89	77.11	335.84	12.95	16.76	10.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.98	17.08	12.18	61.70	23.30	25.59	44.05	24.87	41.51	61.24	29.40	29.28
Movement LOS	D	B	B	E	C	C	D	C	D	E	C	C
d_A, Approach Delay [s/veh]	20.37			24.70			39.89			36.03		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	25.92											
Intersection LOS	C											
Intersection V/C	0.671											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
l_p,int, Pedestrian LOS Score for Intersection	3.403	3.386	2.672	2.185
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	622	600	800	689
d_b, Bicycle Delay [s]	21.36	22.05	16.20	19.34
l_b,int, Bicycle LOS Score for Intersection	2.327	2.744	2.731	1.631
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: SE Connecor / S Meadows Pkwy

Control Type:	Signalized	Delay (sec / veh):	28.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.581

Intersection Setup

Name	SE Connector			SE Connector			S Meadows Pkwy			South Meadows Pkwy		
Approach	Northbound			Southbound			Westbound			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	2	0	1	2	0	0	2	0	1	2	0	1
Pocket Length [ft]	475.00	100.00	350.00	500.00	100.00	100.00	400.00	100.00	425.00	525.00	100.00	300.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	SE Connector			SE Connector			S Meadows Pkwy			South Meadows Pkwy		
Base Volume Input [veh/h]	42	746	37	250	1060	544	21	74	108	421	232	99
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	746	37	250	1060	544	21	74	108	421	232	99
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	196	10	66	279	143	6	19	0	111	61	26
Total Analysis Volume [veh/h]	44	785	39	263	1116	573	22	78	0	443	244	104
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	35	0	17	43	0	9	35	0	43	69	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	24	0	0	24	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	20.0	100.0	0.0	20.0	100.0	0.0	20.0	100.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	75	75	13	84	84	3	5	5	21	24	24
g / C, Green / Cycle	0.03	0.58	0.58	0.10	0.64	0.64	0.02	0.04	0.04	0.16	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.01	0.24	0.03	0.08	0.35	0.40	0.01	0.02	0.00	0.14	0.08	0.07
s, saturation flow rate [veh/h]	3113	3204	1431	3113	3204	1431	3113	3204	1431	3113	3204	1431
c, Capacity [veh/h]	95	1845	824	307	2063	921	66	124	55	510	581	259
d1, Uniform Delay [s]	61.95	15.49	12.02	57.68	12.65	13.75	62.72	61.57	0.00	53.00	47.17	46.99
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.44	0.72	0.11	6.82	1.02	3.16	2.94	5.16	0.00	4.70	0.48	1.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.43	0.05	0.86	0.54	0.62	0.33	0.63	0.00	0.87	0.42	0.40
d, Delay for Lane Group [s/veh]	65.40	16.21	12.13	64.50	13.67	16.91	65.66	66.73	0.00	57.71	47.65	47.99
Lane Group LOS	E	B	B	E	B	B	E	E	A	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	0.75	6.29	0.50	4.45	8.24	9.68	0.39	1.36	0.00	7.33	3.53	3.04
50th-Percentile Queue Length [ft]	18.68	157.15	12.38	111.35	205.94	241.94	9.66	34.04	0.00	183.24	88.36	76.02
95th-Percentile Queue Length [veh]	1.34	10.40	0.89	7.91	12.94	14.78	0.70	2.45	0.00	11.77	6.36	5.47
95th-Percentile Queue Length [ft]	33.62	259.94	22.29	197.87	323.61	369.48	17.39	61.28	0.00	294.24	159.05	136.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.40	16.21	12.13	64.50	13.67	16.91	65.66	66.73	0.00	57.71	47.65	47.99
Movement LOS	E	B	B	E	B	B	E	E	A	E	D	D
d_A, Approach Delay [s/veh]	18.52			21.47			66.49			53.33		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	28.78											
Intersection LOS	C											
Intersection V/C	0.581											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	54.47	54.47	54.47
l_p,int, Pedestrian LOS Score for Intersection	3.043	3.251	2.834	2.853
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	477	600	477	1000
d_b, Bicycle Delay [s]	37.70	31.85	37.70	16.25
l_b,int, Bicycle LOS Score for Intersection	2.276	3.170	1.642	2.212
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: S Meadows Pkwy / Echo Valley

Control Type:	Two-way stop	Delay (sec / veh):	43.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.791

Intersection Setup

Name	Echo Valley Pkwy			Road 1			South Meadows Pkwy			South Meadows Pkwy		
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	1	0	1	0	0	0	1	0	1	1	0	0
Pocket Length [ft]	65.00	100.00	90.00	100.00	100.00	100.00	300.00	100.00	300.00	200.00	100.00	100.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	Echo Valley Pkwy			Road 1			South Meadows Pkwy			South Meadows Pkwy		
Base Volume Input [veh/h]	115	0	10	0	0	0	0	742	275	10	650	0
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]	115	0	10	0	0	0	0	742	275	10	650	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	0	3	0	0	0	0	195	72	3	171	0
Total Analysis Volume [veh/h]	121	0	11	0	0	0	0	781	289	11	684	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No			
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No			
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.79	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	43.16	34.72	11.03	0.00	0.00	0.00	8.98	0.00	0.00	9.38	0.00	0.00
Movement LOS	E	D	B				A	A	A	A	A	A
95th-Percentile Queue Length [veh]	1.71	0.06	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00
95th-Percentile Queue Length [ft]	42.76	1.38	1.38	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00
d_A, Approach Delay [s/veh]	40.48			0.00			0.00			0.15		
Approach LOS	E			A			A			A		
d_I, Intersection Delay [s/veh]	2.87											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 14: McCarran Blvd/Rio Poco Dr

Control Type:	Signalized	Delay (sec / veh):	35.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.555

Intersection Setup

Name				Rio Poco			McCarran			McCarran		
Approach	Northbound			Southbound			Eastbound			Southwestbound		
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	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	110.00	100.00	50.00	300.00	100.00	300.00	350.00	100.00	250.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Rio Poco			McCarran			McCarran		
Base Volume Input [veh/h]	249	24	26	30	35	25	55	1642	254	48	1150	10
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	249	24	26	30	35	25	55	1642	254	48	1150	10
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
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]	66	6	7	8	9	7	14	432	67	13	303	3
Total Analysis Volume [veh/h]	262	25	27	32	37	26	58	1728	267	51	1211	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	40	0	9	40	0	11	91	0	10	90	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	29	0	0	29	0	0	18	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	150	150	150	150	150	150	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	64	57	57	64	55	55	7	68	68	6	67	67
g / C, Green / Cycle	0.43	0.38	0.38	0.43	0.37	0.37	0.04	0.45	0.45	0.04	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.21	0.01	0.02	0.03	0.02	0.02	0.04	0.38	0.19	0.03	0.26	0.01
s, saturation flow rate [veh/h]	1274	1683	1431	1279	1683	1431	1603	4584	1431	1603	4584	1431
c, Capacity [veh/h]	583	634	539	590	620	527	72	2072	647	63	2048	639
d1, Uniform Delay [s]	31.61	29.58	29.70	25.04	30.59	30.47	70.98	36.15	27.69	71.46	31.21	23.14
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.49	0.12	0.18	0.04	0.18	0.18	18.50	0.93	0.42	20.45	0.27	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.04	0.05	0.05	0.06	0.05	0.81	0.83	0.41	0.80	0.59	0.02
d, Delay for Lane Group [s/veh]	34.11	29.70	29.88	25.08	30.77	30.65	89.48	37.08	28.11	91.91	31.48	23.15
Lane Group LOS	C	C	C	C	C	C	F	D	C	F	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	6.95	0.61	0.66	0.69	0.92	0.65	2.59	18.64	6.63	2.32	11.13	0.23
50th-Percentile Queue Length [ft]	173.86	15.14	16.52	17.23	22.94	16.15	64.78	465.88	165.74	57.91	278.14	5.64
95th-Percentile Queue Length [veh]	11.28	1.09	1.19	1.24	1.65	1.16	4.66	25.71	10.85	4.17	16.60	0.41
95th-Percentile Queue Length [ft]	281.98	27.26	29.74	31.01	41.29	29.07	116.61	642.86	271.31	104.24	414.89	10.15

Movement, Approach, & Intersection Results

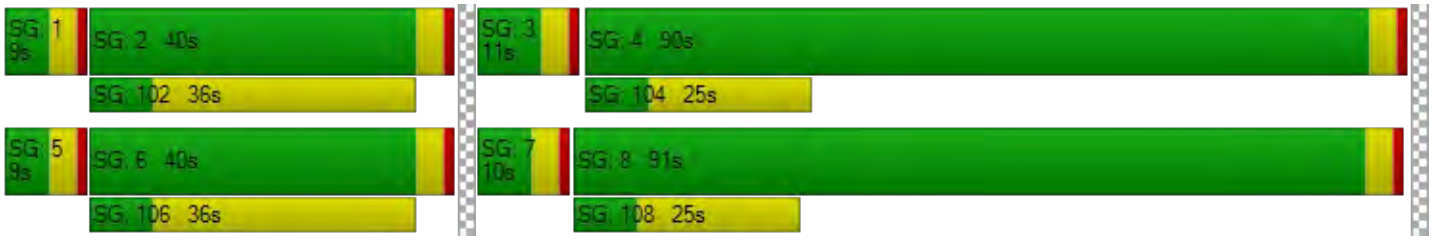
d_M, Delay for Movement [s/veh]	34.11	29.70	29.88	25.08	30.77	30.65	89.48	37.08	28.11	91.91	31.48	23.15
Movement LOS	C	C	C	C	C	C	F	D	C	F	C	C
d_A, Approach Delay [s/veh]	33.39			28.82			37.39			33.83		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	35.63											
Intersection LOS	D											
Intersection V/C	0.555											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	64.40	64.40	64.40	64.40
l_p,int, Pedestrian LOS Score for Intersection	2.318	2.201	3.419	3.141
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	480	480	1160	1147
d_b, Bicycle Delay [s]	43.32	43.32	13.23	13.65
l_b,int, Bicycle LOS Score for Intersection	2.078	1.716	2.689	2.260
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1089: Mira Loma Dr/McCrran Blvd

Control Type:	Signalized	Delay (sec / veh):	27.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.591

Intersection Setup

Name	McCarran			McCarran			Mira Loma Dr			Mira Loma Pkwy		
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	1	0	1	2	0	1	1	0	1	1	0	1
Pocket Length [ft]	375.00	100.00	525.00	440.00	100.00	250.00	190.00	100.00	190.00	110.00	100.00	200.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	McCarran			McCarran			Mira Loma Dr			Mira Loma Pkwy		
Base Volume Input [veh/h]	140	1171	179	338	1066	41	81	150	25	277	105	107
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	140	1171	179	338	1066	41	81	150	25	277	105	107
Peak Hour 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
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	0.0000
Total 15-Minute Volume [veh/h]	35	293	45	85	267	10	20	38	6	69	26	0
Total Analysis Volume [veh/h]	140	1171	179	338	1066	41	81	150	25	277	105	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	26	0	17	21	0	28	19	0	28	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	38	38	12	40	40	6	7	7	18	19	19
g / C, Green / Cycle	0.11	0.42	0.42	0.13	0.44	0.44	0.06	0.08	0.08	0.19	0.21	0.21
(v / s)_i Volume / Saturation Flow Rate	0.09	0.26	0.13	0.11	0.23	0.03	0.05	0.05	0.05	0.17	0.06	0.00
s, saturation flow rate [veh/h]	1603	4584	1431	3113	4584	1431	1603	1683	1601	1603	1683	1431
c, Capacity [veh/h]	171	1925	601	405	2032	634	104	131	124	312	349	297
d1, Uniform Delay [s]	39.35	20.34	17.31	38.20	18.17	14.36	41.45	40.41	40.47	35.29	30.15	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.24	1.44	1.27	4.57	0.97	0.20	11.80	5.99	6.80	8.46	0.48	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.61	0.30	0.83	0.52	0.06	0.78	0.68	0.70	0.89	0.30	0.00
d, Delay for Lane Group [s/veh]	48.59	21.78	18.58	42.77	19.15	14.56	53.24	46.40	47.27	43.74	30.63	0.00
Lane Group LOS	D	C	B	D	B	B	D	D	D	D	C	A
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	3.42	6.34	2.59	3.83	5.29	0.50	2.09	2.10	2.08	6.51	1.94	0.00
50th-Percentile Queue Length [ft]	85.57	158.60	64.68	95.84	132.15	12.49	52.26	52.57	52.00	162.75	48.54	0.00
95th-Percentile Queue Length [veh]	6.16	10.47	4.66	6.90	9.06	0.90	3.76	3.79	3.74	10.69	3.49	0.00
95th-Percentile Queue Length [ft]	154.03	261.87	116.42	172.51	226.41	22.49	94.06	94.63	93.60	267.36	87.37	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.59	21.78	18.58	42.77	19.15	14.56	53.24	46.76	47.27	43.74	30.63	0.00
Movement LOS	D	C	B	D	B	B	D	D	D	D	C	A
d_A, Approach Delay [s/veh]	23.92			24.54			48.86			40.14		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	27.69											
Intersection LOS	C											
Intersection V/C	0.591											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	36.45	36.45	36.45	36.45
l_p,int, Pedestrian LOS Score for Intersection	3.075	3.143	2.265	2.559
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	489	378	333	333
d_b, Bicycle Delay [s]	25.69	29.61	31.25	31.25
l_b,int, Bicycle LOS Score for Intersection	2.379	2.354	1.771	2.190
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Appendix C

2030 Background Plus Project Conditions LOS Calculations

Intersection Level Of Service Report
Intersection 1: SE Connector / Mira Loma Pkwy

Control Type:	Signalized	Delay (sec / veh):	34.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.696

Intersection Setup

Name	SE Connector			SE Connector			Mira Loma Pkwy			Mira Loma Pkwy		
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	2	0	1	1	0	1	2	0	1	1	0	1
Pocket Length [ft]	700.00	100.00	400.00	500.00	100.00	500.00	450.00	100.00	350.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	SE Connector			SE Connector			Mira Loma Pkwy			Mira Loma Pkwy		
Base Volume Input [veh/h]	406	1634	6	7	1150	197	400	7	173	31	112	71
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]	181	390	0	0	124	0	0	0	66	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	587	2024	6	7	1274	197	400	7	239	31	112	71
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
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]	154	533	2	2	335	52	105	2	63	8	29	19
Total Analysis Volume [veh/h]	618	2131	6	7	1341	207	421	7	252	33	118	75
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	130
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	40	52	0	19	31	0	24	39	0	20	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	13	0	0	20	0	0	28	0	0	24	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	130	130	130	130	130	130	130	130	130	130	130	130
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	29	82	82	1	55	55	19	27	27	4	11	11
g / C, Green / Cycle	0.22	0.63	0.63	0.01	0.42	0.42	0.15	0.21	0.21	0.03	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.20	0.46	0.00	0.00	0.29	0.14	0.14	0.00	0.18	0.02	0.07	0.05
s, saturation flow rate [veh/h]	3113	4584	1431	1603	4584	1431	3113	1683	1431	1603	1683	1431
c, Capacity [veh/h]	683	2893	903	14	1929	602	465	353	300	44	147	125
d1, Uniform Delay [s]	49.43	16.53	8.88	64.11	30.82	25.49	54.39	40.77	49.28	62.81	58.20	57.12
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.89	1.71	0.01	23.06	2.10	1.56	6.92	0.02	6.27	23.10	9.61	4.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.74	0.01	0.48	0.70	0.34	0.91	0.02	0.84	0.76	0.80	0.60
d, Delay for Lane Group [s/veh]	54.33	18.24	8.90	87.17	32.91	27.05	61.31	40.79	55.55	85.91	67.81	61.64
Lane Group LOS	D	B	A	F	C	C	E	D	E	F	E	E
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	9.96	13.39	0.06	0.32	11.33	4.46	7.22	0.18	8.37	1.37	4.21	2.54
50th-Percentile Queue Length [ft]	248.98	334.78	1.55	7.98	283.29	111.45	180.56	4.56	209.24	34.15	105.23	63.44
95th-Percentile Queue Length [veh]	15.13	19.39	0.11	0.57	16.85	7.92	11.63	0.33	13.11	2.46	7.57	4.57
95th-Percentile Queue Length [ft]	378.37	484.82	2.79	14.36	421.31	198.02	290.74	8.21	327.86	61.47	189.35	114.20

Movement, Approach, & Intersection Results

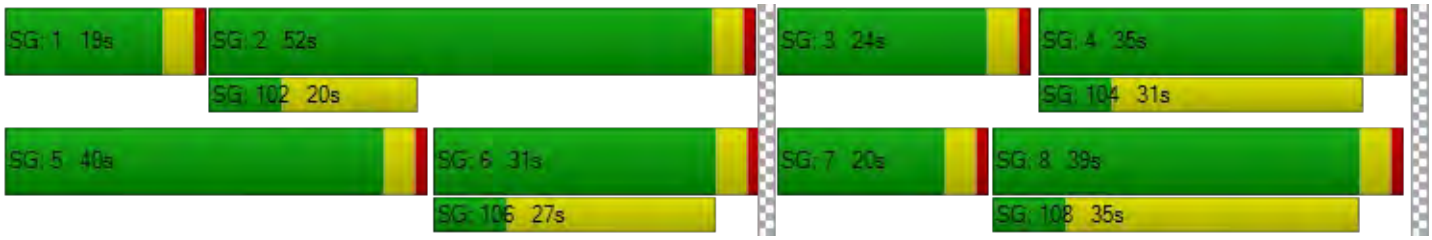
d_M, Delay for Movement [s/veh]	54.33	18.24	8.90	87.17	32.91	27.05	61.31	40.79	55.55	85.91	67.81	61.64
Movement LOS	D	B	A	F	C	C	E	D	E	F	E	E
d_A, Approach Delay [s/veh]	26.32			32.38			58.97			68.41		
Approach LOS	C			C			E			E		
d_I, Intersection Delay [s/veh]	34.20											
Intersection LOS	C											
Intersection V/C	0.696											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	54.47	54.47	54.47	54.47
l_p,int, Pedestrian LOS Score for Intersection	3.579	3.508	2.734	2.209
Crosswalk LOS	D	D	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	738	415	538	477
d_b, Bicycle Delay [s]	25.86	40.80	34.71	37.70
l_b,int, Bicycle LOS Score for Intersection	3.075	2.415	2.682	1.933
Bicycle LOS	C	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: SE Connector / Rio Poco (TBD)

Control Type:	Signalized	Delay (sec / veh):	12.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.704

Intersection Setup

Name	Rio Poco Rd		SE Connector		SE Connector	
Approach	Eastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1
Pocket Length [ft]	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		25.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rio Poco Rd		SE Connector		SE Connector	
Base Volume Input [veh/h]	0	0	0	2005	1254	0
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]	136	196	111	435	151	39
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	196	111	2440	1405	39
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	52	29	642	370	10
Total Analysis Volume [veh/h]	143	206	117	2568	1479	41
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	3	0	5	2	6	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	35	0	13	35	22	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	24	0	0	11	11	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	6	49	39	39
g / C, Green / Cycle	0.18	0.18	0.09	0.71	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.09	0.14	0.07	0.56	0.32	0.03
s, saturation flow rate [veh/h]	1603	1431	1603	4584	4584	1431
c, Capacity [veh/h]	289	257	146	3235	2557	798
d1, Uniform Delay [s]	25.84	27.49	31.21	6.89	10.10	7.05
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.32	5.68	9.86	2.09	0.96	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.80	0.80	0.79	0.58	0.05
d, Delay for Lane Group [s/veh]	27.16	33.18	41.07	8.99	11.06	7.17
Lane Group LOS	C	C	D	A	B	A
Critical Lane Group	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	2.19	3.61	2.30	6.56	3.88	0.24
50th-Percentile Queue Length [ft]	54.85	90.19	57.38	163.99	96.91	5.97
95th-Percentile Queue Length [veh]	3.95	6.49	4.13	10.76	6.98	0.43
95th-Percentile Queue Length [ft]	98.73	162.35	103.28	269.00	174.44	10.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.16	33.18	41.07	8.99	11.06	7.17
Movement LOS	C	C	D	A	B	A
d_A, Approach Delay [s/veh]	30.71		10.38		10.96	
Approach LOS	C		B		B	
d_I, Intersection Delay [s/veh]	12.13					
Intersection LOS	B					
Intersection V/C	0.704					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.86	24.86	24.86
l_p,int, Pedestrian LOS Score for Intersection	2.064	3.087	3.667
Crosswalk LOS	B	C	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	35.00	35.00	35.00
l_b,int, Bicycle LOS Score for Intersection	4.132	5.609	4.968
Bicycle LOS	D	F	E

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: SE Connecor / S Meadows Pkwy

Control Type:	Signalized	Delay (sec / veh):	47.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name	SE Connector			SE Connector			S Meadows Pkwy			South Meadows Pkwy		
Approach	Northbound			Southbound			Westbound			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	2	0	1	2	0	0	2	0	1	2	0	1
Pocket Length [ft]	475.00	100.00	350.00	500.00	100.00	100.00	400.00	100.00	425.00	525.00	100.00	300.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	SE Connector			SE Connector			S Meadows Pkwy			South Meadows Pkwy		
Base Volume Input [veh/h]	146	1050	14	79	907	268	46	315	303	652	45	29
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]	33	42	11	31	118	146	51	178	140	64	65	95
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	1092	25	110	1025	414	97	493	443	716	110	124
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	46	279	6	28	261	106	25	126	0	183	28	32
Total Analysis Volume [veh/h]	183	1114	26	112	1046	422	99	503	0	731	112	127
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	46	0	9	43	0	23	23	0	42	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	47	47	5	44	44	6	21	21	31	46	46
g / C, Green / Cycle	0.07	0.39	0.39	0.04	0.37	0.37	0.05	0.18	0.18	0.26	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.06	0.35	0.02	0.04	0.33	0.29	0.03	0.16	0.00	0.23	0.03	0.09
s, saturation flow rate [veh/h]	3113	3204	1431	3113	3204	1431	3113	3204	1431	3113	3204	1431
c, Capacity [veh/h]	208	1254	560	130	1174	524	152	562	251	804	1233	550
d1, Uniform Delay [s]	55.53	34.08	22.64	57.16	35.77	34.18	56.05	48.40	0.00	43.13	23.53	24.92
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.50	9.60	0.16	15.21	10.37	12.45	4.60	5.31	0.00	4.37	0.03	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.89	0.05	0.86	0.89	0.81	0.65	0.90	0.00	0.91	0.09	0.23
d, Delay for Lane Group [s/veh]	67.03	43.68	22.80	72.37	46.14	46.63	60.65	53.70	0.00	47.50	23.56	25.13
Lane Group LOS	E	D	C	E	D	D	E	D	A	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.01	15.96	0.47	1.92	15.33	12.32	1.57	7.75	0.00	10.81	1.01	2.45
50th-Percentile Queue Length [ft]	75.23	398.90	11.68	48.06	383.16	308.10	39.30	193.81	0.00	270.30	25.33	61.33
95th-Percentile Queue Length [veh]	5.42	22.51	0.84	3.46	21.75	18.08	2.83	12.32	0.00	16.20	1.82	4.42
95th-Percentile Queue Length [ft]	135.42	562.67	21.03	86.51	543.67	452.04	70.74	307.97	0.00	405.11	45.60	110.39

Movement, Approach, & Intersection Results

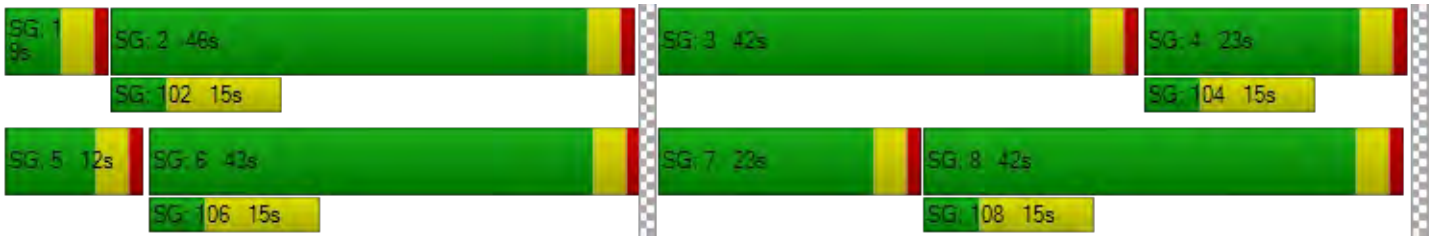
d_M, Delay for Movement [s/veh]	67.03	43.68	22.80	72.37	46.14	46.63	60.65	53.70	0.00	47.50	23.56	25.13
Movement LOS	E	D	C	E	D	D	E	D	A	D	C	C
d_A, Approach Delay [s/veh]	46.50			48.13			54.85			41.81		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	47.18											
Intersection LOS	D											
Intersection V/C	0.777											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	51.34	51.34	51.34	51.34
l_p,int, Pedestrian LOS Score for Intersection	3.096	3.272	2.840	2.947
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	700	650	317	633
d_b, Bicycle Delay [s]	25.35	27.34	42.50	28.02
l_b,int, Bicycle LOS Score for Intersection	2.651	2.863	2.056	2.360
Bicycle LOS	B	C	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: S Meadows Pkwy / Echo Valley

Control Type:	Signalized	Delay (sec / veh):	31.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.598

Intersection Setup

Name	Echo Valley Pkwy			Road 1			South Meadows Pkwy			South Meadows Pkwy		
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	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	65.00	100.00	90.00	100.00	100.00	250.00	300.00	100.00	300.00	200.00	100.00	200.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Echo Valley Pkwy			Road 1			South Meadows Pkwy			South Meadows Pkwy		
Base Volume Input [veh/h]	260	0	15	0	0	0	0	711	50	10	719	0
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	158	0	429	152	66	0	0	256	101
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	260	0	15	158	0	429	152	777	50	10	975	101
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	0	4	42	0	0	40	204	13	3	257	27
Total Analysis Volume [veh/h]	274	0	16	166	0	0	160	818	53	11	1026	106
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	31	0	9	31	0	16	61	0	9	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	13	0	0	13	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	47	38	38	47	38	38	12	49	49	1	39	39
g / C, Green / Cycle	0.43	0.35	0.35	0.43	0.35	0.35	0.11	0.45	0.45	0.01	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.21	0.00	0.01	0.13	0.00	0.00	0.10	0.26	0.04	0.01	0.32	0.07
s, saturation flow rate [veh/h]	1324	1683	1431	1324	1683	1431	1603	3204	1431	1603	3204	1431
c, Capacity [veh/h]	657	585	497	657	585	497	175	1434	640	22	1130	504
d1, Uniform Delay [s]	22.05	0.00	23.68	20.00	0.00	0.00	48.50	22.53	17.43	53.84	33.92	24.90
k, delay calibration	0.50	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.95	0.00	0.12	0.20	0.00	0.00	16.68	0.36	0.05	15.63	3.16	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.00	0.03	0.25	0.00	0.00	0.92	0.57	0.08	0.49	0.91	0.21
d, Delay for Lane Group [s/veh]	23.99	0.00	23.80	20.20	0.00	0.00	65.17	22.89	17.48	69.47	37.08	25.11
Lane Group LOS	C	A	C	C	A	A	E	C	B	E	D	C
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	5.16	0.00	0.29	2.73	0.00	0.00	5.10	7.63	0.77	0.40	13.08	1.94
50th-Percentile Queue Length [ft]	129.11	0.00	7.31	68.28	0.00	0.00	127.39	190.65	19.17	9.92	327.02	48.45
95th-Percentile Queue Length [veh]	8.89	0.00	0.53	4.92	0.00	0.00	8.80	12.15	1.38	0.71	19.01	3.49
95th-Percentile Queue Length [ft]	222.28	0.00	13.16	122.90	0.00	0.00	219.95	303.87	34.51	17.86	475.31	87.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	23.99	0.00	23.80	20.20	0.00	0.00	65.17	22.89	17.48	69.47	37.08	25.11
Movement LOS	C	A	C	C	A	A	E	C	B	E	D	C
d_A, Approach Delay [s/veh]	23.98			20.20			29.18			36.28		
Approach LOS	C			C			C			D		
d_I, Intersection Delay [s/veh]	31.12											
Intersection LOS	C											
Intersection V/C	0.598											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	44.55	44.55	44.55
l_p,int, Pedestrian LOS Score for Intersection	2.227	2.246	3.108	2.955
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	491	491	1036	909
d_b, Bicycle Delay [s]	31.31	31.31	12.77	16.36
l_b,int, Bicycle LOS Score for Intersection	2.038	1.834	2.410	2.503
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: SE Connector/Access 1

Control Type:	Signalized	Delay (sec / veh):	10.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.643

Intersection Setup

Name	SE Connector		SE Connector		Access 1	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	1	0
Pocket Length [ft]	150.00	100.00	100.00	100.00	150.00	100.00
Speed [mph]	25.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	SE Connector		SE Connector		Access 1	
Base Volume Input [veh/h]	0	2005	1254	0	0	0
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]	29	217	227	121	329	68
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	29	2222	1481	121	329	68
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	585	390	32	87	18
Total Analysis Volume [veh/h]	31	2339	1559	127	346	72
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	5	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	9	35	26	0	35	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	11	11	0	24	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	50	44	44	12	12
g / C, Green / Cycle	0.03	0.72	0.63	0.63	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.02	0.51	0.34	0.09	0.13	0.13
s, saturation flow rate [veh/h]	1603	4584	4584	1431	1603	1538
c, Capacity [veh/h]	53	3275	2862	893	275	263
d1, Uniform Delay [s]	33.38	5.83	7.49	5.42	27.72	27.72
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.94	1.36	0.75	0.33	4.70	4.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.71	0.54	0.14	0.78	0.78
d, Delay for Lane Group [s/veh]	43.31	7.19	8.24	5.76	32.42	32.63
Lane Group LOS	D	A	A	A	C	C
Critical Lane Group	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh]	0.66	4.99	3.13	0.60	3.62	3.49
50th-Percentile Queue Length [ft]	16.41	124.85	78.15	15.02	90.42	87.19
95th-Percentile Queue Length [veh]	1.18	8.66	5.63	1.08	6.51	6.28
95th-Percentile Queue Length [ft]	29.54	216.47	140.66	27.04	162.75	156.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.31	7.19	8.24	5.76	32.50	32.63
Movement LOS	D	A	A	A	C	C
d_A, Approach Delay [s/veh]	7.66		8.05		32.52	
Approach LOS	A		A		C	
d_I, Intersection Delay [s/veh]	10.13					
Intersection LOS	B					
Intersection V/C	0.643					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.86	24.86	24.86
l_p,int, Pedestrian LOS Score for Intersection	3.044	3.985	2.114
Crosswalk LOS	C	D	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	35.00	35.00	35.00
l_b,int, Bicycle LOS Score for Intersection	5.436	5.060	4.822
Bicycle LOS	F	F	E

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Road 1/Access 1

Control Type:	Roundabout	Delay (sec / veh):	17.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes		

Intersection Setup

Name	Road 1			Road 1						Access 1		
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	Road 1			Road 1						Access 1		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
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]	116	109	96	280	367	256	191	26	78	31	42	54
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]	116	109	96	280	367	256	191	26	78	31	42	54
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
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]	31	29	25	74	97	67	50	7	21	8	11	14
Total Analysis Volume [veh/h]	122	115	101	295	386	269	201	27	82	33	44	57
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	533			203			728			447		
Exiting Flow Rate [veh/h]	328			169			427			322		
Demand Flow Rate [veh/h]	116	109	96	280	367	256	191	26	78	31	42	54
Adjusted Demand Flow Rate [veh/h]	122	115	101	295	386	269	201	27	82	33	44	57

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	345	969	317	137
Capacity of Entry and Bypass Lanes [veh/h]	801	1122	657	875
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	786	1100	644	858
X, volume / capacity	0.43	0.86	0.48	0.16

Movement, Approach, & Intersection Results

Lane LOS	B	C	B	A
95th-Percentile Queue Length [veh]	2.18	11.70	2.62	0.55
95th-Percentile Queue Length [ft]	54.56	292.56	65.56	13.80
Approach Delay [s/veh]	10.16	23.96	13.09	5.75
Approach LOS	B	C	B	A
Intersection Delay [s/veh]	17.91			
Intersection LOS	C			

Intersection Level Of Service Report
Intersection 8: Road 1/Road A

Control Type:	Roundabout	Delay (sec / veh):	4.5
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Road 1			Road 1						Road A		
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	Road 1			Road 1						Road A		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
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]	41	160	27	7	170	9	32	0	130	60	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]	41	160	27	7	170	9	32	0	130	60	0	24
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
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]	11	42	7	2	45	2	8	0	34	16	0	6
Total Analysis Volume [veh/h]	43	168	28	7	179	9	34	0	137	63	0	25
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	42			108			254			250		
Exiting Flow Rate [veh/h]	7			44			247			206		
Demand Flow Rate [veh/h]	41	160	27	7	170	9	32	0	130	60	0	24
Adjusted Demand Flow Rate [veh/h]	43	168	28	7	179	9	34	0	137	63	0	25

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	244	199	175	90
Capacity of Entry and Bypass Lanes [veh/h]	1323	1236	1066	1070
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1297	1212	1045	1049
X, volume / capacity	0.18	0.16	0.16	0.08

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.67	0.57	0.58	0.27
95th-Percentile Queue Length [ft]	16.87	14.32	14.61	6.86
Approach Delay [s/veh]	4.33	4.34	4.94	4.17
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	4.46			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 9: Road 1/Rio Poco Rd

Control Type:	Roundabout	Delay (sec / veh):	7.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Road 1			Road 1						Rio Poco 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	Road 1			Road 1						Rio Poco Rd		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
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]	151	64	49	202	101	163	50	60	56	19	72	49
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]	151	64	49	202	101	163	50	60	56	19	72	49
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
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]	40	17	13	53	27	43	13	16	15	5	19	13
Total Analysis Volume [veh/h]	159	67	52	213	106	172	53	63	59	20	76	52
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	336			260			346			285		
Exiting Flow Rate [veh/h]	282			240			129			122		
Demand Flow Rate [veh/h]	151	64	49	202	101	163	50	60	56	19	72	49
Adjusted Demand Flow Rate [veh/h]	159	67	52	213	106	172	53	63	59	20	76	52

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	284	501	179	151
Capacity of Entry and Bypass Lanes [veh/h]	980	1059	970	1033
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	961	1038	951	1013
X, volume / capacity	0.29	0.47	0.18	0.15

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	1.20	2.60	0.67	0.51
95th-Percentile Queue Length [ft]	30.11	64.90	16.80	12.79
Approach Delay [s/veh]	6.71	8.91	5.56	4.90
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	7.27			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 10: S Meadows Pkwy/Road 2

Control Type:	Roundabout	Delay (sec / veh):	9.2
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Road 2			S Meadows Pkwy			S Meadows Pkwy			Road 2		
Approach	Northbound			Eastbound			Westbound			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	0	0	0	0	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	800.00	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	Road 2			S Meadows Pkwy			S Meadows Pkwy			Road 2		
Base Volume Input [veh/h]	664	0	0	0	0	138	0	0	0	0	0	0
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]	33	0	0	84	15	8	0	42	0	0	0	294
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]	697	0	0	84	15	146	0	42	0	0	0	294
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
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]	183	0	0	22	4	38	0	11	0	0	0	77
Total Analysis Volume [veh/h]	734	0	0	88	16	154	0	44	0	0	0	309
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	2			2			2			2		
Circulating Flow Rate [veh/h]	106			0			838			794		
Exiting Flow Rate [veh/h]	16			0			90			794		
Demand Flow Rate [veh/h]	697	0	0	84	15	146	0	42	0	0	0	294
Adjusted Demand Flow Rate [veh/h]	734	0	0	88	16	154	0	44	0	0	0	309

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1350.00	1420.00	1350.00	1420.00	1350.00	1420.00	1350.00	1420.00
B (coefficient)	0.00092	0.00085	0.00092	0.00085	0.00092	0.00085	0.00092	0.00085
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	749	0	107	158	22	24	0	316
Capacity of Entry and Bypass Lanes [veh/h]	1225	1298	1350	1420	625	697	651	724
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1201	1273	1324	1393	612	683	638	710
X, volume / capacity	0.61	0.00	0.08	0.11	0.03	0.03	0.00	0.44

Movement, Approach, & Intersection Results

Lane LOS	B	A	A	A	A	A	A	B
95th-Percentile Queue Length [veh]	4.39	0.00	0.26	0.37	0.10	0.11	0.00	2.22
95th-Percentile Queue Length [ft]	109.75	0.00	6.39	9.31	2.62	2.65	0.00	55.45
Approach Delay [s/veh]	10.65		3.41		5.93		11.12	
Approach LOS	B		A		A		B	
Intersection Delay [s/veh]	9.22							
Intersection LOS	A							

Intersection Level Of Service Report
Intersection 14: McCarran Blvd/Rio Poco Dr

Control Type:	Signalized	Delay (sec / veh):	34.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.613

Intersection Setup

Name				Rio Poco			McCarran			McCarran		
Approach	Northbound			Southbound			Eastbound			Southwestbound		
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	2	0	0	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	110.00	100.00	50.00	300.00	100.00	300.00	350.00	100.00	250.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Rio Poco			McCarran			McCarran		
Base Volume Input [veh/h]	345	36	38	12	21	55	20	628	91	15	1517	5
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]	277	0	128	0	0	0	0	2	83	34	2	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	622	36	166	12	21	55	20	630	174	49	1519	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
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]	164	9	44	3	6	14	5	166	46	13	400	1
Total Analysis Volume [veh/h]	655	38	175	13	22	58	21	663	183	52	1599	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	35	23	0	31	19	0	9	20	0	36	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	47	2	23	23	2	41	41	5	43	43
g / C, Green / Cycle	0.23	0.43	0.02	0.21	0.21	0.02	0.37	0.37	0.04	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.21	0.14	0.01	0.01	0.04	0.01	0.14	0.13	0.03	0.35	0.00
s, saturation flow rate [veh/h]	3113	1470	1603	1683	1431	1603	4584	1431	1603	4584	1431
c, Capacity [veh/h]	728	629	27	354	301	35	1687	526	68	1781	556
d1, Uniform Delay [s]	40.88	21.07	53.61	34.74	35.74	53.34	25.69	25.20	52.14	31.58	20.64
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.36	1.46	12.99	0.34	1.42	15.63	0.15	0.39	16.33	1.84	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.34	0.49	0.06	0.19	0.60	0.39	0.35	0.77	0.90	0.01
d, Delay for Lane Group [s/veh]	45.25	22.53	66.60	35.08	37.16	68.97	25.84	25.59	68.47	33.43	20.65
Lane Group LOS	D	C	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	8.95	3.89	0.45	0.51	1.40	0.73	4.26	3.50	1.73	13.23	0.08
50th-Percentile Queue Length [ft]	223.87	97.16	11.32	12.67	35.07	18.15	106.53	87.49	43.17	330.83	2.01
95th-Percentile Queue Length [veh]	13.86	7.00	0.82	0.91	2.53	1.31	7.65	6.30	3.11	19.20	0.14
95th-Percentile Queue Length [ft]	346.56	174.89	20.38	22.80	63.13	32.66	191.17	157.48	77.70	479.98	3.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.25	22.53	22.53	66.60	35.08	37.16	68.97	25.84	25.59	68.47	33.43	20.65
Movement LOS	D	C	C	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	39.67			40.78			26.83			34.49		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	34.04											
Intersection LOS	C											
Intersection V/C	0.613											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.37	46.37	46.37	46.37
l_p,int, Pedestrian LOS Score for Intersection	2.416	2.181	3.124	3.042
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	345	273	291	782
d_b, Bicycle Delay [s]	37.64	41.02	40.16	20.40
l_b,int, Bicycle LOS Score for Intersection	2.992	1.713	2.036	2.470
Bicycle LOS	C	A	B	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1089: Mira Loma Dr/McCrran Blvd

Control Type:	Signalized	Delay (sec / veh):	25.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.605

Intersection Setup

Name	McCarran			McCarran			Mira Loma Dr			Mira Loma Pkwy		
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	1	0	1	2	0	1	1	0	1	1	0	1
Pocket Length [ft]	375.00	100.00	525.00	440.00	100.00	250.00	190.00	100.00	190.00	110.00	100.00	200.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	McCarran			McCarran			Mira Loma Dr			Mira Loma Pkwy		
Base Volume Input [veh/h]	70	675	50	140	1297	22	44	150	13	304	85	159
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	128	2	64	34	0	0	0	0	2	0	179
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	70	803	52	204	1331	22	44	150	13	306	85	338
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
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	0.0000
Total 15-Minute Volume [veh/h]	18	211	14	54	350	6	12	39	3	81	22	0
Total Analysis Volume [veh/h]	74	845	55	215	1401	23	46	158	14	322	89	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	80
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	19	0	11	21	0	20	19	0	31	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	80	80	80	80	80	80	80	80	80	80	80	80
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	33	33	7	35	35	3	6	6	18	21	21
g / C, Green / Cycle	0.06	0.41	0.41	0.09	0.44	0.44	0.04	0.08	0.08	0.23	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.05	0.18	0.04	0.07	0.31	0.02	0.03	0.05	0.05	0.20	0.05	0.00
s, saturation flow rate [veh/h]	1603	4584	1431	3113	4584	1431	1603	1683	1636	1603	1683	1431
c, Capacity [veh/h]	91	1865	582	272	2004	625	68	133	129	363	443	377
d1, Uniform Delay [s]	37.29	17.26	14.64	35.78	18.25	12.88	37.75	35.75	35.79	29.94	22.92	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.29	0.80	0.32	5.08	2.06	0.11	11.03	5.23	5.63	7.42	0.22	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.45	0.09	0.79	0.70	0.04	0.68	0.65	0.66	0.89	0.20	0.00
d, Delay for Lane Group [s/veh]	52.57	18.06	14.96	40.86	20.30	12.99	48.78	40.98	41.42	37.36	23.14	0.00
Lane Group LOS	D	B	B	D	C	B	D	D	D	D	C	A
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	1.79	3.69	0.64	2.20	6.84	0.24	1.08	1.80	1.79	6.51	1.29	0.00
50th-Percentile Queue Length [ft]	44.76	92.20	16.01	55.02	171.01	6.09	27.03	44.94	44.75	162.85	32.34	0.00
95th-Percentile Queue Length [veh]	3.22	6.64	1.15	3.96	11.13	0.44	1.95	3.24	3.22	10.70	2.33	0.00
95th-Percentile Queue Length [ft]	80.57	165.96	28.81	99.03	278.24	10.96	48.65	80.89	80.54	267.49	58.22	0.00

Movement, Approach, & Intersection Results

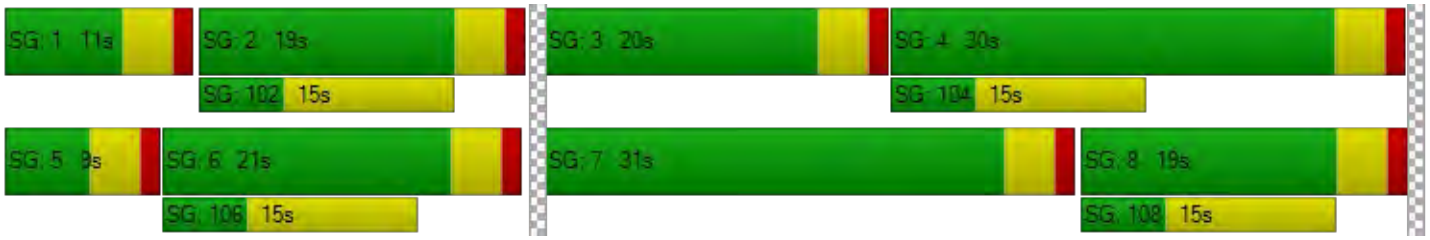
d_M, Delay for Movement [s/veh]	52.57	18.06	14.96	40.86	20.30	12.99	48.78	41.18	41.42	37.36	23.14	0.00
Movement LOS	D	B	B	D	C	B	D	D	D	D	C	A
d_A, Approach Delay [s/veh]	20.51			22.90			42.80			34.28		
Approach LOS	C			C			D			C		
d_I, Intersection Delay [s/veh]	24.96											
Intersection LOS	C											
Intersection V/C	0.605											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	31.51	31.51	31.51	31.51
l_p,int, Pedestrian LOS Score for Intersection	3.052	3.119	2.225	2.540
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	375	425	375	650
d_b, Bicycle Delay [s]	26.41	24.81	26.41	18.23
l_b,int, Bicycle LOS Score for Intersection	2.095	2.461	1.739	2.238
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1: SE Connector / Mira Loma Pkwy

Control Type:	Signalized	Delay (sec / veh):	67.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.937

Intersection Setup

Name	SE Connector			SE Connector			Mira Loma Pkwy			Mira Loma Pkwy		
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	2	0	1	1	0	1	2	0	1	1	0	1
Pocket Length [ft]	700.00	100.00	400.00	500.00	100.00	500.00	450.00	100.00	350.00	100.00	100.00	100.00
Speed [mph]	45.00			45.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	SE Connector			SE Connector			Mira Loma Pkwy			Mira Loma Pkwy		
Base Volume Input [veh/h]	150	1150	25	48	1557	440	225	100	350	9	20	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]	137	272	0	0	426	0	0	0	205	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	287	1422	25	48	1983	440	225	100	555	9	20	12
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
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]	73	363	6	12	506	112	57	26	142	2	5	3
Total Analysis Volume [veh/h]	293	1451	26	49	2023	449	230	102	566	9	20	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	160
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	52	0	38	71	0	27	61	0	9	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	13	0	0	20	0	0	28	0	0	24	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	160	160	160	160	160	160	160	160	160	160	160	160
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	76	76	6	67	67	14	60	60	2	48	48
g / C, Green / Cycle	0.09	0.47	0.47	0.04	0.42	0.42	0.09	0.38	0.38	0.01	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.09	0.32	0.02	0.03	0.44	0.31	0.07	0.06	0.40	0.01	0.01	0.01
s, saturation flow rate [veh/h]	3113	4584	1431	1603	4584	1431	3113	1683	1431	1603	1683	1431
c, Capacity [veh/h]	292	2174	678	63	1925	601	274	633	538	17	502	427
d1, Uniform Delay [s]	72.50	32.37	22.53	76.13	46.41	39.24	71.82	33.17	49.93	78.78	39.88	39.74
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.50	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	25.47	1.64	0.11	17.88	35.40	8.27	6.72	0.12	53.37	24.06	0.03	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.00	0.67	0.04	0.77	1.05	0.75	0.84	0.16	1.05	0.54	0.04	0.03
d, Delay for Lane Group [s/veh]	97.97	34.01	22.64	94.01	81.81	47.51	78.54	33.29	103.30	102.84	39.91	39.76
Lane Group LOS	F	C	C	F	F	D	E	C	F	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	6.94	14.34	0.54	2.29	30.91	15.93	4.93	2.72	29.36	0.48	0.58	0.35
50th-Percentile Queue Length [ft]	173.58	358.60	13.61	57.33	772.73	398.32	123.28	67.92	734.10	12.10	14.42	8.63
95th-Percentile Queue Length [veh]	11.28	20.56	0.98	4.13	41.54	22.48	8.57	4.89	39.69	0.87	1.04	0.62
95th-Percentile Queue Length [ft]	282.04	513.88	24.49	103.20	1038.62	561.98	214.32	122.25	992.14	21.78	25.96	15.54

Movement, Approach, & Intersection Results

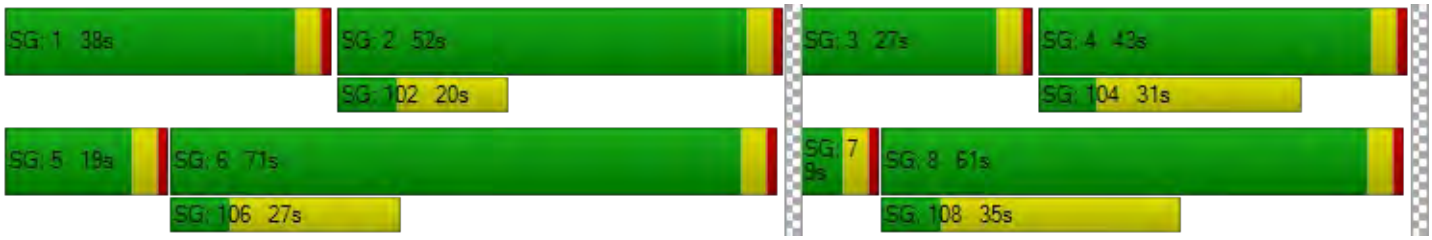
d_M, Delay for Movement [s/veh]	97.97	34.01	22.64	94.01	81.81	47.51	78.54	33.29	103.30	102.84	39.91	39.76
Movement LOS	F	C	C	F	F	D	E	C	F	F	D	D
d_A, Approach Delay [s/veh]	44.43			75.94			89.01			53.68		
Approach LOS	D			E			F			D		
d_I, Intersection Delay [s/veh]	67.34											
Intersection LOS	E											
Intersection V/C	0.937											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	69.38	69.38	69.38	69.38
l_p,int, Pedestrian LOS Score for Intersection	3.586	3.523	2.750	2.212
Crosswalk LOS	D	D	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	600	838	713	488
d_b, Bicycle Delay [s]	39.20	27.03	33.15	45.75
l_b,int, Bicycle LOS Score for Intersection	2.533	2.946	3.041	1.627
Bicycle LOS	B	C	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: SE Connector / Rio Poco (TBD)

Control Type:	Signalized	Delay (sec / veh):	29.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.845

Intersection Setup

Name	Rio Poco Rd		SE Connector		SE Connector	
Approach	Eastbound		Northwestbound		Southeastbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1
Pocket Length [ft]	250.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	25.00		25.00		45.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	Rio Poco Rd		SE Connector		SE Connector	
Base Volume Input [veh/h]	0	0	0	1275	1939	0
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]	87	197	262	322	477	154
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	87	197	262	1597	2416	154
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	50	67	407	616	39
Total Analysis Volume [veh/h]	89	201	267	1630	2465	157
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	150
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Permissive	Permissive	Protected	Permissive	Permissive	Permissive
Signal group	3	0	5	2	6	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	Lead	-	-	-
Minimum Green [s]	5	0	5	5	5	0
Maximum Green [s]	30	0	30	30	30	0
Amber [s]	3.0	0.0	3.0	3.0	3.0	0.0
All red [s]	1.0	0.0	1.0	1.0	1.0	0.0
Split [s]	35	0	37	115	78	0
Vehicle Extension [s]	3.0	0.0	3.0	3.0	3.0	0.0
Walk [s]	7	0	0	7	7	0
Pedestrian Clearance [s]	24	0	0	11	11	0
Rest In Walk	No			No	No	
I1, Start-Up Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	2.0	2.0	2.0	0.0
Minimum Recall	No		No	No	No	
Maximum Recall	No		No	No	No	
Pedestrian Recall	No		No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R	L	C	C	R
C, Cycle Length [s]	150	150	150	150	150	150
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	23	23	27	119	88	88
g / C, Green / Cycle	0.16	0.16	0.18	0.79	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.06	0.14	0.17	0.36	0.54	0.11
s, saturation flow rate [veh/h]	1603	1431	1603	4584	4584	1431
c, Capacity [veh/h]	249	222	289	3627	2680	836
d1, Uniform Delay [s]	56.64	62.24	60.50	5.07	28.01	14.55
k, delay calibration	0.11	0.22	0.28	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.86	21.90	24.58	0.40	6.53	0.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.90	0.93	0.45	0.92	0.19
d, Delay for Lane Group [s/veh]	57.50	84.13	85.08	5.48	34.54	15.04
Lane Group LOS	E	F	F	A	C	B
Critical Lane Group	No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh]	3.13	8.96	12.07	5.22	26.01	2.54
50th-Percentile Queue Length [ft]	78.17	224.10	301.68	130.38	650.18	63.38
95th-Percentile Queue Length [veh]	5.63	13.87	17.76	8.96	34.37	4.56
95th-Percentile Queue Length [ft]	140.71	346.86	444.10	224.02	859.26	114.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.50	84.13	85.08	5.48	34.54	15.04
Movement LOS	E	F	F	A	C	B
d_A, Approach Delay [s/veh]	75.96		16.68		33.38	
Approach LOS	E		B		C	
d_I, Intersection Delay [s/veh]	29.36					
Intersection LOS	C					
Intersection V/C	0.845					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	64.40	64.40	64.40
l_p,int, Pedestrian LOS Score for Intersection	2.158	3.148	3.652
Crosswalk LOS	B	C	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	75.00	75.00	75.00
l_b,int, Bicycle LOS Score for Intersection	4.132	5.176	5.575
Bicycle LOS	D	F	F

Sequence

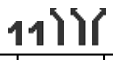
Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: SE Connecor / S Meadows Pkwy

Control Type:	Signalized	Delay (sec / veh):	50.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.838

Intersection Setup

Name	SE Connector			SE Connector			S Meadows Pkwy			South Meadows Pkwy		
Approach	Northbound			Southbound			Westbound			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	2	0	1	2	0	0	2	0	1	2	0	1
Pocket Length [ft]	475.00	100.00	350.00	500.00	100.00	100.00	400.00	100.00	425.00	525.00	100.00	300.00
Speed [mph]	45.00			45.00			30.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	SE Connector			SE Connector			S Meadows Pkwy			South Meadows Pkwy		
Base Volume Input [veh/h]	42	746	37	250	1060	544	21	74	108	421	232	99
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]	106	138	48	133	88	198	25	94	72	211	160	74
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	148	884	85	383	1148	742	46	168	180	632	392	173
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	226	22	98	293	189	12	43	0	161	100	44
Total Analysis Volume [veh/h]	151	902	87	391	1171	757	47	171	0	645	400	177
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	170
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	7	4	0	3	8	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	35	0	54	76	0	9	35	0	46	72	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	24	0	0	24	0	0	24	0	0	24	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	20.0	100.0	0.0	20.0	100.0	0.0	20.0	100.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	170	170	170	170	170	170	170	170	170	170	170	170
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	81	81	24	96	96	4	11	11	38	45	45
g / C, Green / Cycle	0.05	0.48	0.48	0.14	0.56	0.56	0.03	0.07	0.07	0.22	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.05	0.28	0.06	0.13	0.37	0.53	0.02	0.05	0.00	0.21	0.12	0.12
s, saturation flow rate [veh/h]	3113	3204	1431	3113	3204	1431	3113	3204	1431	3113	3204	1431
c, Capacity [veh/h]	165	1524	680	442	1809	808	82	214	96	690	840	375
d1, Uniform Delay [s]	80.13	32.55	24.90	71.57	25.41	34.24	81.83	78.20	0.00	64.95	52.87	52.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.61	1.70	0.39	6.06	1.81	19.67	6.25	6.72	0.00	6.60	0.42	0.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.59	0.13	0.88	0.65	0.94	0.58	0.80	0.00	0.93	0.48	0.47
d, Delay for Lane Group [s/veh]	97.73	34.25	25.29	77.63	27.21	53.91	88.08	84.92	0.00	71.55	53.29	53.72
Lane Group LOS	F	C	C	E	C	D	F	F	A	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh]	3.67	13.65	2.04	8.64	16.13	31.72	1.10	3.92	0.00	14.32	7.30	6.51
50th-Percentile Queue Length [ft]	91.72	341.31	50.88	215.91	403.14	793.00	27.48	98.02	0.00	357.97	182.59	162.71
95th-Percentile Queue Length [veh]	6.60	19.71	3.66	13.46	22.71	40.96	1.98	7.06	0.00	20.52	11.74	10.69
95th-Percentile Queue Length [ft]	165.10	492.80	91.58	336.40	567.78	1023.91	49.47	176.44	0.00	513.12	293.39	267.30

Movement, Approach, & Intersection Results

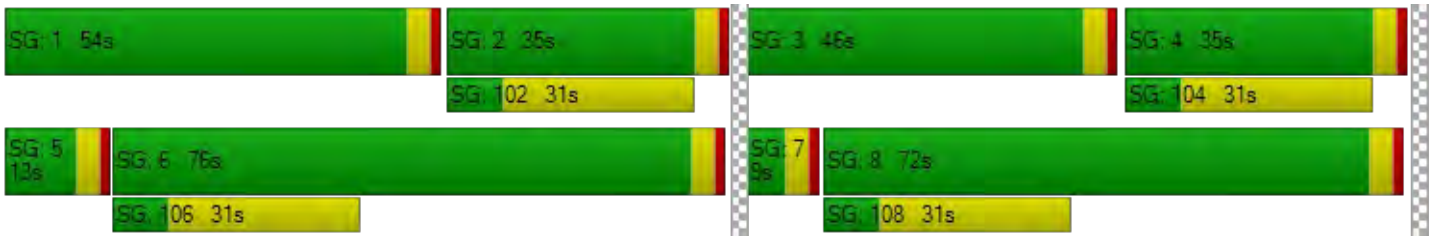
d_M, Delay for Movement [s/veh]	97.73	34.25	25.29	77.63	27.21	53.91	88.08	84.92	0.00	71.55	53.29	53.72
Movement LOS	F	C	C	E	C	D	F	F	A	E	D	D
d_A, Approach Delay [s/veh]	41.97			44.43			85.60			62.99		
Approach LOS	D			D			F			E		
d_I, Intersection Delay [s/veh]	50.32											
Intersection LOS	D											
Intersection V/C	0.838											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	74.36	74.36	74.36	74.36
l_p,int, Pedestrian LOS Score for Intersection	3.104	3.331	2.866	2.998
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	365	847	365	800
d_b, Bicycle Delay [s]	56.83	28.25	56.83	30.60
l_b,int, Bicycle LOS Score for Intersection	2.500	3.473	1.739	2.568
Bicycle LOS	B	C	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: S Meadows Pkwy / Echo Valley

Control Type:	Signalized	Delay (sec / veh):	45.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.699

Intersection Setup

Name	Echo Valley Pkwy			Road 1			South Meadows Pkwy			South Meadows Pkwy		
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	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	65.00	100.00	90.00	100.00	100.00	250.00	300.00	100.00	300.00	200.00	100.00	200.00
Speed [mph]	30.00			30.00			35.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Echo Valley Pkwy			Road 1			South Meadows Pkwy			South Meadows Pkwy		
Base Volume Input [veh/h]	115	0	10	0	0	0	0	742	275	10	650	0
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	183	0	303	470	262	0	0	189	208
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	115	0	10	183	0	303	470	1004	275	10	839	208
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	0.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	0	3	47	0	0	120	256	70	3	214	53
Total Analysis Volume [veh/h]	117	0	10	187	0	0	480	1024	281	10	856	212
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	170
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	9	31	0	9	31	0	68	121	0	9	62	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	20	0	0	20	0	0	13	0	0	13	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	170	170	170	170	170	170	170	170	170	170	170	170
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	56	47	47	56	47	47	53	100	100	2	49	49
g / C, Green / Cycle	0.33	0.28	0.28	0.33	0.28	0.28	0.31	0.59	0.59	0.01	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.09	0.00	0.01	0.14	0.00	0.00	0.30	0.32	0.20	0.01	0.27	0.15
s, saturation flow rate [veh/h]	1316	1683	1431	1316	1683	1431	1603	3204	1431	1603	3204	1431
c, Capacity [veh/h]	486	464	394	486	464	394	500	1888	843	19	925	413
d1, Uniform Delay [s]	41.54	0.00	44.91	44.24	0.00	0.00	57.43	21.08	17.85	83.55	58.67	50.48
k, delay calibration	0.50	0.50	0.50	0.31	0.50	0.50	0.32	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.17	0.00	0.12	1.42	0.00	0.00	23.78	0.24	0.23	21.78	4.57	0.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.00	0.03	0.38	0.00	0.00	0.96	0.54	0.33	0.54	0.93	0.51
d, Delay for Lane Group [s/veh]	42.71	0.00	45.03	45.66	0.00	0.00	81.21	21.33	18.08	105.34	63.23	51.46
Lane Group LOS	D	A	D	D	A	A	F	C	B	F	E	D
Critical Lane Group	Yes	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh]	3.79	0.00	0.33	6.29	0.00	0.00	23.44	12.32	5.75	0.55	18.39	7.70
50th-Percentile Queue Length [ft]	94.86	0.00	8.21	157.27	0.00	0.00	585.90	307.93	143.71	13.79	459.67	192.48
95th-Percentile Queue Length [veh]	6.83	0.00	0.59	10.40	0.00	0.00	31.38	18.07	9.68	0.99	25.42	12.25
95th-Percentile Queue Length [ft]	170.75	0.00	14.78	260.10	0.00	0.00	784.38	451.83	242.02	24.81	635.48	306.24

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.71	0.00	45.03	45.66	0.00	0.00	81.21	21.33	18.08	105.34	63.23	51.46
Movement LOS	D	A	D	D	A	A	F	C	B	F	E	D
d_A, Approach Delay [s/veh]	42.90			45.66			36.92			61.31		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	45.95											
Intersection LOS	D											
Intersection V/C	0.699											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	74.36	74.36	74.36	74.36
l_p,int, Pedestrian LOS Score for Intersection	2.263	2.375	3.054	3.064
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	318	318	1376	682
d_b, Bicycle Delay [s]	60.14	60.14	8.26	36.89
l_b,int, Bicycle LOS Score for Intersection	1.769	1.868	3.032	2.449
Bicycle LOS	A	A	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: SE Connector/Access 1

Control Type:	Signalized	Delay (sec / veh):	11.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.635

Intersection Setup

Name	SE Connector		SE Connector		Access 1	
Approach	Northbound		Southbound		Eastbound	
Lane Configuration						
Turning Movement	Left	Thru	Thru	Right	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	1	0
Pocket Length [ft]	150.00	100.00	100.00	100.00	150.00	100.00
Speed [mph]	25.00		45.00		30.00	
Grade [%]	0.00		0.00		0.00	
Curb Present	No		No		No	
Crosswalk	Yes		Yes		Yes	

Volumes

Name	SE Connector		SE Connector		Access 1	
Base Volume Input [veh/h]	0	1275	1854	0	0	0
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]	81	340	326	349	245	93
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	81	1615	2180	349	245	93
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	404	545	87	61	23
Total Analysis Volume [veh/h]	81	1615	2180	349	245	93
Presence of On-Street Parking	No	No	No	No	No	No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0		0		0	
v_di, Inbound Pedestrian Volume crossing m	0		0		0	
v_co, Outbound Pedestrian Volume crossing	0		0		0	
v_ci, Inbound Pedestrian Volume crossing mi	0		0		0	
v_ab, Corner Pedestrian Volume [ped/h]	0		0		0	
Bicycle Volume [bicycles/h]	0		0		0	

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	70
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protected	Permissive	Permissive	Permissive	Permissive	Permissive
Signal group	5	2	6	0	3	0
Auxiliary Signal Groups						
Lead / Lag	Lead	-	-	-	Lead	-
Minimum Green [s]	5	5	5	0	5	0
Maximum Green [s]	30	30	30	0	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0
Split [s]	9	35	26	0	35	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0
Walk [s]	0	7	7	0	7	0
Pedestrian Clearance [s]	0	11	11	0	24	0
Rest In Walk		No	No		No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0
Minimum Recall	No	No	No		No	
Maximum Recall	No	No	No		No	
Pedestrian Recall	No	No	No		No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C
C, Cycle Length [s]	70	70	70	70	70	70
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	52	43	43	10	10
g / C, Green / Cycle	0.06	0.74	0.62	0.62	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.05	0.35	0.48	0.24	0.11	0.11
s, saturation flow rate [veh/h]	1603	4584	4584	1431	1603	1500
c, Capacity [veh/h]	100	3389	2841	886	235	220
d1, Uniform Delay [s]	32.41	3.68	9.65	6.70	28.60	28.62
k, delay calibration	0.11	0.50	0.50	0.50	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.26	0.48	2.05	1.31	4.56	4.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.48	0.77	0.39	0.74	0.75
d, Delay for Lane Group [s/veh]	46.67	4.16	11.70	8.01	33.16	33.58
Lane Group LOS	D	A	B	A	C	C
Critical Lane Group	Yes	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh]	1.72	2.14	5.81	2.08	2.98	2.83
50th-Percentile Queue Length [ft]	43.12	53.46	145.32	52.00	74.50	70.75
95th-Percentile Queue Length [veh]	3.10	3.85	9.77	3.74	5.36	5.09
95th-Percentile Queue Length [ft]	77.61	96.23	244.17	93.61	134.10	127.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.67	4.16	11.70	8.01	33.28	33.58
Movement LOS	D	A	B	A	C	C
d_A, Approach Delay [s/veh]	6.19		11.19		33.36	
Approach LOS	A		B		C	
d_I, Intersection Delay [s/veh]	10.98					
Intersection LOS	B					
Intersection V/C	0.635					

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	24.86	24.86	24.86
l_p,int, Pedestrian LOS Score for Intersection	3.041	3.846	2.176
Crosswalk LOS	C	D	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	0
d_b, Bicycle Delay [s]	35.00	35.00	35.00
l_b,int, Bicycle LOS Score for Intersection	5.065	5.523	4.690
Bicycle LOS	F	F	E

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Road 1/Access 1

Control Type:	Roundabout	Delay (sec / veh):	9.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Road 1			Road 1						Access 1		
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	Road 1			Road 1						Access 1		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
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]	21	417	84	200	221	56	63	6	25	147	4	255
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]	21	417	84	200	221	56	63	6	25	147	4	255
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
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]	5	106	21	51	56	14	16	2	6	38	1	65
Total Analysis Volume [veh/h]	21	426	86	204	226	57	64	6	26	150	4	260
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	279			179			592			521		
Exiting Flow Rate [veh/h]	214			26			384			500		
Demand Flow Rate [veh/h]	21	417	84	200	221	56	63	6	25	147	4	255
Adjusted Demand Flow Rate [veh/h]	21	426	86	204	226	57	64	6	26	150	4	260

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	544	497	98	423
Capacity of Entry and Bypass Lanes [veh/h]	1038	1151	755	811
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1018	1128	740	796
X, volume / capacity	0.52	0.43	0.13	0.52

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	B
95th-Percentile Queue Length [veh]	3.14	2.22	0.44	3.06
95th-Percentile Queue Length [ft]	78.46	55.47	11.12	76.56
Approach Delay [s/veh]	9.98	7.76	6.24	11.94
Approach LOS	A	A	A	B
Intersection Delay [s/veh]	9.57			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 8: Road 1/Road A

Control Type:	Roundabout	Delay (sec / veh):	4.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Road 1			Road 1						Road A		
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	Road 1			Road 1						Road A		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
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]	101	136	22	30	169	39	21	0	56	24	0	17
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]	101	136	22	30	169	39	21	0	56	24	0	17
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
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]	26	35	6	8	43	10	5	0	14	6	0	4
Total Analysis Volume [veh/h]	103	139	22	31	172	40	21	0	57	24	0	17
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	53			130			232			268		
Exiting Flow Rate [veh/h]	32			105			200			163		
Demand Flow Rate [veh/h]	101	136	22	30	169	39	21	0	56	24	0	17
Adjusted Demand Flow Rate [veh/h]	103	139	22	31	172	40	21	0	57	24	0	17

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	270	248	80	42
Capacity of Entry and Bypass Lanes [veh/h]	1308	1210	1090	1050
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	1282	1186	1069	1030
X, volume / capacity	0.21	0.20	0.07	0.04

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.77	0.77	0.24	0.12
95th-Percentile Queue Length [ft]	19.34	19.21	5.90	3.11
Approach Delay [s/veh]	4.57	4.84	4.00	3.84
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	4.56			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 9: Road 1/Rio Poco Rd

Control Type:	Roundabout	Delay (sec / veh):	8.3
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Road 1			Road 1						Rio Poco 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	Road 1			Road 1						Rio Poco Rd		
Base Volume Input [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
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]	85	76	31	168	71	79	193	90	149	81	120	198
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]	85	76	31	168	71	79	193	90	149	81	120	198
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
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]	22	19	8	43	18	20	49	23	38	21	31	51
Total Analysis Volume [veh/h]	87	78	32	171	72	81	197	92	152	83	122	202
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	1			1			1			1		
Circulating Flow Rate [veh/h]	469			298			333			369		
Exiting Flow Rate [veh/h]	268			213			158			281		
Demand Flow Rate [veh/h]	85	76	31	168	71	79	193	90	149	81	120	198
Adjusted Demand Flow Rate [veh/h]	87	78	32	171	72	81	197	92	152	83	122	202

Lanes

Overwrite Calculated Critical Headway	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00
A (intercept)	1380.00	1380.00	1380.00	1380.00
B (coefficient)	0.00102	0.00102	0.00102	0.00102
HV Adjustment Factor	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	201	331	450	416
Capacity of Entry and Bypass Lanes [veh/h]	856	1019	984	947
Pedestrian Impedance	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	839	999	964	929
X, volume / capacity	0.23	0.32	0.46	0.44

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A
95th-Percentile Queue Length [veh]	0.91	1.42	2.44	2.26
95th-Percentile Queue Length [ft]	22.78	35.43	60.99	56.58
Approach Delay [s/veh]	6.78	6.95	9.13	9.06
Approach LOS	A	A	A	A
Intersection Delay [s/veh]	8.26			
Intersection LOS	A			

Intersection Level Of Service Report
Intersection 10: S Meadows Pkwy/Road 2

Control Type:	Roundabout	Delay (sec / veh):	5.6
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes		

Intersection Setup

Name	Road 2			S Meadows Pkwy			S Meadows Pkwy			Road 2		
Approach	Northbound			Eastbound			Westbound			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	0	0	0	0	0	0	0	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	800.00	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	Road 2			S Meadows Pkwy			S Meadows Pkwy			Road 2		
Base Volume Input [veh/h]	203	0	0	0	0	519	0	0	0	0	0	0
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]	19	0	0	272	35	34	0	18	0	0	0	154
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]	222	0	0	272	35	553	0	18	0	0	0	154
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
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]	57	0	0	69	9	141	0	5	0	0	0	39
Total Analysis Volume [veh/h]	227	0	0	278	36	564	0	18	0	0	0	157
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Number of Conflicting Circulating Lanes	2			2			2			2		
Circulating Flow Rate [veh/h]	320			0			515			250		
Exiting Flow Rate [veh/h]	37			0			284			250		
Demand Flow Rate [veh/h]	222	0	0	272	35	553	0	18	0	0	0	154
Adjusted Demand Flow Rate [veh/h]	227	0	0	278	36	564	0	18	0	0	0	157

Lanes

Overwrite Calculated Critical Headway	No	No	No	No	No	No	No	No
User-Defined Critical Headway [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
Overwrite Calculated Follow-Up Time	No	No	No	No	No	No	No	No
User-Defined Follow-Up Time [s]	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
A (intercept)	1350.00	1420.00	1350.00	1420.00	1350.00	1420.00	1350.00	1420.00
B (coefficient)	0.00092	0.00085	0.00092	0.00085	0.00092	0.00085	0.00092	0.00085
HV Adjustment Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Entry Flow Rate [veh/h]	232	0	321	576	9	10	0	161
Capacity of Entry and Bypass Lanes [veh/h]	1006	1082	1350	1420	841	917	1073	1149
Pedestrian Impedance	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Capacity per Entry Lane [veh/h]	986	1061	1324	1393	824	899	1052	1126
X, volume / capacity	0.23	0.00	0.24	0.41	0.01	0.01	0.00	0.14

Movement, Approach, & Intersection Results

Lane LOS	A	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh]	0.89	0.00	0.93	2.00	0.03	0.03	0.00	0.48
95th-Percentile Queue Length [ft]	22.23	0.00	23.16	50.11	0.78	0.80	0.00	12.11
Approach Delay [s/veh]	5.89		5.79		4.27		4.41	
Approach LOS	A		A		A		A	
Intersection Delay [s/veh]	5.61							
Intersection LOS	A							

Intersection Level Of Service Report
Intersection 14: McCarran Blvd/Rio Poco Dr

Control Type:	Signalized	Delay (sec / veh):	39.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.676

Intersection Setup

Name				Rio Poco			McCarran			McCarran		
Approach	Northbound			Southbound			Eastbound			Southwestbound		
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	2	0	0	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	110.00	100.00	50.00	300.00	100.00	300.00	350.00	100.00	250.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				Rio Poco			McCarran			McCarran		
Base Volume Input [veh/h]	249	24	26	30	35	25	55	1642	254	48	1150	10
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]	175	0	79	0	0	0	0	1	305	135	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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	424	24	105	30	35	25	55	1643	559	183	1150	10
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
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]	108	6	27	8	9	6	14	419	143	47	293	3
Total Analysis Volume [veh/h]	433	24	107	31	36	26	56	1677	570	187	1173	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	140
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	19	0	29	19	0	23	67	0	25	69	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	140	140	140	140	140	140	140	140	140	140	140
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	40	4	22	22	6	62	62	18	74	74
g / C, Green / Cycle	0.15	0.29	0.03	0.16	0.16	0.04	0.44	0.44	0.13	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.14	0.09	0.02	0.02	0.02	0.03	0.37	0.40	0.12	0.26	0.01
s, saturation flow rate [veh/h]	3113	1471	1603	1683	1431	1603	4584	1431	1603	4584	1431
c, Capacity [veh/h]	482	420	42	265	225	71	2035	635	208	2428	757
d1, Uniform Delay [s]	58.09	39.21	67.69	50.81	50.65	66.25	34.14	36.00	59.98	20.82	15.60
k, delay calibration	0.11	0.50	0.11	0.50	0.50	0.11	0.11	0.36	0.12	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.31	1.93	21.95	1.07	1.04	17.30	0.89	13.83	13.59	0.15	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.31	0.74	0.14	0.12	0.79	0.82	0.90	0.90	0.48	0.01
d, Delay for Lane Group [s/veh]	64.40	41.14	89.64	51.88	51.69	83.56	35.03	49.82	73.58	20.97	15.61
Lane Group LOS	E	D	F	D	D	F	D	D	E	C	B
Critical Lane Group	Yes	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	7.96	3.80	1.36	1.18	0.86	2.33	16.69	20.20	7.34	8.13	0.16
50th-Percentile Queue Length [ft]	199.09	95.05	34.07	29.46	21.42	58.28	417.16	504.93	183.48	203.13	3.91
95th-Percentile Queue Length [veh]	12.59	6.84	2.45	2.12	1.54	4.20	23.39	27.57	11.78	12.80	0.28
95th-Percentile Queue Length [ft]	314.80	171.09	61.33	53.02	38.56	104.91	584.64	689.19	294.55	320.00	7.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	64.40	41.14	41.14	89.64	51.88	51.69	83.56	35.03	49.82	73.58	20.97	15.61
Movement LOS	E	D	D	F	D	D	F	D	D	E	C	B
d_A, Approach Delay [s/veh]	59.00			64.41			39.87			28.11		
Approach LOS	E			E			D			C		
d_I, Intersection Delay [s/veh]	39.17											
Intersection LOS	D											
Intersection V/C	0.676											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	61.29	61.29	61.29	61.29
l_p,int, Pedestrian LOS Score for Intersection	2.484	2.198	3.227	3.136
Crosswalk LOS	B	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	214	214	900	929
d_b, Bicycle Delay [s]	55.80	55.80	21.18	20.09
l_b,int, Bicycle LOS Score for Intersection	2.490	1.713	2.826	2.313
Bicycle LOS	B	A	C	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 1089: Mira Loma Dr/McCrran Blvd

Control Type:	Signalized	Delay (sec / veh):	34.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.688

Intersection Setup

Name	McCarran			McCarran			Mira Loma Dr			Mira Loma Pkwy		
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	1	0	1	2	0	1	1	0	1	1	0	1
Pocket Length [ft]	375.00	100.00	525.00	440.00	100.00	250.00	190.00	100.00	190.00	110.00	100.00	200.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	McCarran			McCarran			Mira Loma Dr			Mira Loma Pkwy		
Base Volume Input [veh/h]	140	1171	179	338	1066	41	81	150	25	277	105	107
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	79	1	204	135	0	0	0	0	0	0	137
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
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	140	1250	180	542	1201	41	81	150	25	277	105	244
Peak Hour Factor	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800	0.9800
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	0.0000
Total 15-Minute Volume [veh/h]	36	319	46	138	306	10	21	38	6	71	27	0
Total Analysis Volume [veh/h]	143	1276	184	553	1226	42	83	153	26	283	107	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	Yes
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Semi-actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	0.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	5	0	5	5	0	5	5	0	5	5	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	33	0	30	45	0	28	19	0	28	19	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	0	0	5	0
Pedestrian Clearance [s]	0	10	0	0	10	0	0	10	0	0	10	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	43	43	22	53	53	7	8	8	21	22	22
g / C, Green / Cycle	0.11	0.39	0.39	0.20	0.48	0.48	0.07	0.07	0.07	0.19	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.09	0.28	0.13	0.18	0.27	0.03	0.05	0.05	0.06	0.18	0.06	0.00
s, saturation flow rate [veh/h]	1603	4584	1431	3113	4584	1431	1603	1683	1600	1603	1683	1431
c, Capacity [veh/h]	169	1777	555	620	2208	689	105	126	119	310	340	289
d1, Uniform Delay [s]	48.36	28.57	23.66	42.90	20.17	15.22	50.64	49.78	49.86	43.49	37.39	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.19	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.11	2.53	1.60	4.73	1.01	0.17	12.25	7.57	8.68	16.63	0.52	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.72	0.33	0.89	0.56	0.06	0.79	0.72	0.74	0.91	0.31	0.00
d, Delay for Lane Group [s/veh]	59.47	31.10	25.27	47.63	21.18	15.39	62.89	57.35	58.53	60.12	37.92	0.00
Lane Group LOS	E	C	C	D	C	B	E	E	E	E	D	A
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh]	4.36	9.74	3.59	7.67	7.43	0.59	2.61	2.69	2.66	8.91	2.50	0.00
50th-Percentile Queue Length [ft]	109.01	243.46	89.67	191.65	185.72	14.82	65.14	67.37	66.62	222.81	62.62	0.00
95th-Percentile Queue Length [veh]	7.79	14.86	6.46	12.21	11.90	1.07	4.69	4.85	4.80	13.81	4.51	0.00
95th-Percentile Queue Length [ft]	194.63	371.40	161.41	305.16	297.47	26.67	117.26	121.27	119.92	345.21	112.72	0.00

Movement, Approach, & Intersection Results

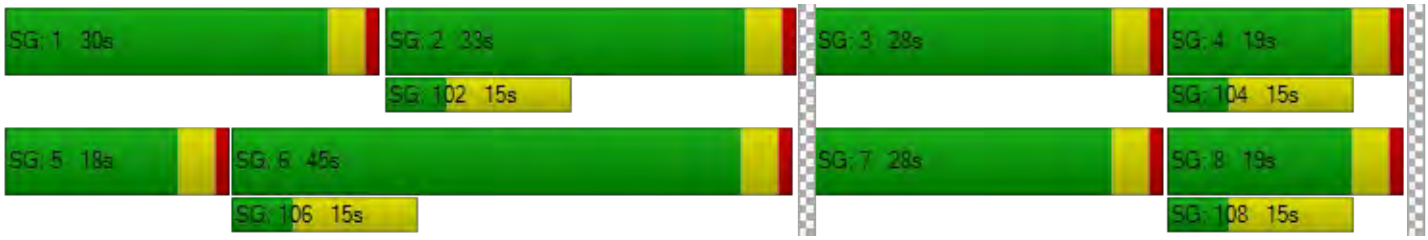
d_M, Delay for Movement [s/veh]	59.47	31.10	25.27	47.63	21.18	15.39	62.89	57.83	58.53	60.12	37.92	0.00
Movement LOS	E	C	C	D	C	B	E	E	E	E	D	A
d_A, Approach Delay [s/veh]	32.96			29.08			59.50			54.03		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	34.95											
Intersection LOS	C											
Intersection V/C	0.688											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	46.37	46.37	46.37	46.37
l_p,int, Pedestrian LOS Score for Intersection	3.119	3.205	2.277	2.582
Crosswalk LOS	C	C	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	527	745	273	273
d_b, Bicycle Delay [s]	29.82	21.64	41.02	41.02
l_b,int, Bicycle LOS Score for Intersection	2.441	2.561	1.776	2.203
Bicycle LOS	B	B	A	B

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX 3

Preliminary Stormwater Management Plan

Prepared by Wood Rodgers, Inc.

STORMWATER MANAGEMENT PLAN

FOR

DAYBREAK – PLANNED UNIT DEVELOPMENT

Prepared for:

NPLC BV Investment Company, LLC
100 Bayview Circle, Ste. 2200
Newport Beach, CA 92660

~~November 9, 2017~~
Revised October 2, 2019

Prepared by:

Wood Rodgers, Inc.
1361 Corporate Boulevard
Reno, NV 89502
(775) 823-4068
Steve Strickland, P.E. – Vice President



WOOD RODGERS
BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

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INTRODUCTION

The purpose of this report is to provide preliminary analysis of the onsite storm water plan for the Daybreak Planned Unit Development (PUD). The analysis of Steamboat Creek and Truckee River flood pool as it is related to the Daybreak project is addressed separately. That analysis is included in an executive summary of a preliminary CLOMR for Daybreak prepared by House Moran Consulting in support of the PUD.

The Daybreak project is located in east Reno. It extends from Herron's Landing in the north to South Meadows Parkway in the south directly adjacent to the new Southeast Connector as shown on the vicinity map, Figure 1. The project area contains approximately 980 acres at build-out and it will consist of approximately 3995 residential units along with some commercial areas, school sites, a park and open space. Geographically the site consists of North and South areas separated by a hillside. The "narrows" on Steamboat Creek serves as the demarcation of the two sides.

The analysis is based upon the land uses proposed with the project and the requirements of the Truckee Meadows Regional Drainage Manual (TMRDM) and the City of Reno. The proposed land uses for the project are shown in Figure 2. The analysis utilizes the Rational Method approach outlined in the TMRDM for the majority of the project. A few watersheds located on the south east side of the project are larger than typically analyzed by the Rational Method. Those watersheds were analyzed using the US Army Corp of Engineers' HEC-HMS.

The design assumptions and calculations in this report are preliminary and are intended to identify the general plan for the storm water management. As the Daybreak PUD provides for flexibility with land uses and density, technical drainage studies will be prepared prior to permit and final construction. This report includes analysis of pre and post development flow rates from the project.

LOCATION

The daybreak project is located within Townships 18 Range 20 Sections 3 and 4, and Township 19 Range 20 Sections 33 and 34 in Washoe County, Nevada.

FEMA FLOOD HAZARD INFORMATION

The project is located within Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) Panels 32029C0150D and 32031C3251G, effective January 16, 2009 and March 16, 2009 respectively. The FIRM indicates portions of the project is covered by FEMA flood zones A, AE, and Floodway AE. Zones A and AE zones have a 1% annual chance of flooding (100year).

The design of the Southeast Connector included submittal of a Conditional Letter of Map Revision (CLOMR) to correspond to the improvements proposed with the roadway construction. The FIRM panels within the project area will be updated once construction is completed and a Letter of Map Revision (LOMR) is submitted and approved by FEMA.

Development of Daybreak will include a CLOMR and LOMR based upon improvements proposed and ultimately constructed with the project. Ultimately, the LOMR will bring developed areas within the project out of the current floodplain. The CLOMR and LOMR will be submitted to the City of Reno and FEMA for review and approval. CLOMR approval will be required prior to construction within the critical flood storage area. This is addressed in the Executive Summary of the CLOMR prepared by House and Moran Consulting.

CRITICAL FLOODPOOL

Portions of the project are located with the City of Reno Critical Flood Storage Zone 1. The Ordinance pertaining to development is this area requires that flood storage volume filled within the zone below the 117 year floodplain must be mitigated by an equal (1:1) volume of excavation below the 117 year floodplain. This ordinance was developed to address the regional flooding issues that have occurred in the area. The developers of this project are committed taking additional steps to ensure compliance with this ordinance by offering to mitigate at a rate 25% higher than required by the Ordinance.

Flood storage mitigation will occur through excavation within the proposed open space areas located between the developed areas and the Southeast Connector. A typical section of the conceptual mitigation is shown in Figure 5. The proposed floodplain areas with development is shown in Figure 6.

EXISTING HYDROLOGY

The Daybreak project area covers approximately 980 acres and the watersheds moving through the project cover additional drainage area. The watersheds currently consist primarily of native sagebrush and areas of pasture. The terrain ranges from flat to very steep (>30% slope). The majority of the site drains to Steamboat Creek with a portion of the South site draining to Thomas Creek just before it reaches its terminus at Steamboat Creek. In addition, a small portion of the site in the North drains west toward the Donner Springs subdivision.

Existing land uses and proposed drainage basins are shown in Figure 2. The figure also identifies the basins analyzed using the rational method and those analyzed using HEC-HMS. Much of the existing site flows via sheet flow and the drainage basins were developed based upon proposed basin areas for comparison purposes.

DETENTION

Per the TMRDM, increases in the 5-year and 100-year storm events must be detained and released at or below predevelopment flow rates. However, the location of the Daybreak project with its close proximately to the confluence of the Truckee River and Steamboat Creek may lend itself to an alternative approach to detention. Detention requirements on stormwater discharge from development projects are aimed at the reducing the flow rates leaving the sites. Flows from the developed sites are captured in detention basins and metered out. Slowing the runoff down may have the effect of extending the peak discharge timing from a site relative to its predevelopment condition. In some cases, this lag in timing could result in a compounding of the peak flow from the new development site and the peak flow from upstream of the project, in this case Steamboat Creek. For sites near the bottom of a large watershed, such as Daybreak, there may be a benefit to the receiving water course to move the post development runoff through the system quickly. This would have the effect of moving the peak runoff from the development project and through the downstream system before the peak from upstream reaches development discharge points. With this approach, it may be beneficial to eliminate detention basins in a downstream area as a benefit to the overall system.

This alternative will require a detailed analysis of the Daybreak system and its relationship to the Steamboat Creek and Truckee River systems. The City of Reno will review the analysis and determine if there is a benefit beyond the Daybreak project and if a design exception to the TMRDM is warranted. If it determined through analysis that the alternative is not justified, standard detention will be provided for the Daybreak project.

PROPOSED HYDROLOGY – NORTH

The North area of Daybreak is located north of the "narrows". The existing watersheds consist of the old Butler Ranch house and outbuildings, pastures and sagebrush. The proposed development will consist of single family attached and detached units, multifamily, neighborhood commercial, and open space land uses.

A portion of Village 7 of the PUD in the North drains west toward the Donner Springs subdivision. This 15 acre area is located just south of the Donner Springs Elementary School. Stormwater from this area generally flows from southeast to northwest to Hombre Way. The post development runoff will be directed toward Hombre Way where it will be picked up in a detention basin. From there it will discharge into the existing public storm drain system. The discussion above regarding an alternative to stormwater detention is not applicable to this area and a detention basin will be provided regardless of the outcome of that analysis.

Stormwater flows from the remaining area in the North generally flows from southwest to northeast. It will discharge to a common area located on the east side of the project west of the

Southeast Connector. The open space in this area serves as floodplain and flood storage for Steamboat Creek and the backwater from the Truckee River. Drainage from the North will be collected in drain inlets and culverts and it will be conveyed within public storm drains located in the streets and commons areas.

The predevelopment land uses are shown in Figure 7, and Post development land uses for runoff analysis is shown in Figure 8. Preliminary pre and post development flows have been calculated and are tabulated in Table 1.

Table 1: North Area Design Flows

Basin	Area (ac)	100 YR Design Flows	
		Pre-Development (cfs)	Post Development (cfs)
P-1	57	37	82
P-2	16	21	28
P-3	178	209	195

PROPOSED HYDROLOGY – SOUTHWEST

The southwest area of Daybreak is located south of the "narrows" and west of the Southwest Connector and Steamboat Creek. The area is bisected by Thomas Creek and the drainage to and from Alexander Lake. Currently the watersheds consist of whitetop fields, sagebrush and an existing aggregate mine. The proposed development will consist of single family attached and detached units, multifamily, neighborhood commercial, and open space land uses. The villages south of Thomas Creek will drain east and west to open space that will flow north to Thomas Creek. Villages north of Thomas creek will flow from north to south and into Thomas Creek. Drainage within the developed areas will be collected in drain inlets and culverts and it will be conveyed within public storm drains located in the streets and commons areas.

Table 2: Southwest Area Design Flows

Basin	Area (ac)	100 YR Design Flows	
		Pre-Development (cfs)	Post Development (cfs)
P-4	225	476	488
P-5	17	31	44
P-8	47	37	84
P-9	29	22	59
P-10	67	43	109

Please note: development of Basins 6 and 7 is no longer proposed with the revised PUD land plan.

PROPOSED HYDROLOGY – SOUTHEAST

The southeast area of Daybreak is located east of Steamboat Creek; Villages 18 through 21. The watersheds of this area extend east of the project boundary into the Virginia Range and consist of sagebrush and existing aggregate mining operations. The proposed land uses in this area will be single family detached units. Runoff flows from east to west and into Steamboat Creek. The largest of these watersheds is approximately 400 acres. This watershed drains to what is the planned extension of South Meadows parkway. Provisions will be made with final design to incorporate this drainage into the roadway extension plans, whether in or adjacent to the proposed roadway. Due to their size, these basins were analyzed using HEC-HMS. The results of this analysis are included in Table 3.

Table 3: Southeast Area Design Flows

Basin	Area (ac)	100 YR Design Flows	
		Pre-Development (cfs)	Post Development (cfs)
P-11	295	104	128
P-12	235	11	41
P-13	401	175	175
P-14	69	145	159

CONCLUSION

The development of the Daybreak PUD will be designed to not have a negative impact on both localized and regional flood issues in the area. The stormwater system will be design in conformance with the TMRDM and the City of Reno Design Manual. Subsequent analysis will include review of the potential benefit of eliminating detention basins for the project as a method to reduce offsite peak flows. The project is located within the Critical Flood Pool Zone 1 and a mitigation rate of 125% excavation to fill within the flood storage area is proposed. A CLOMR will be submitted to the City and FEMA for approval prior to construction within the critical flood storage area.

REFERENCES

Truckee Meadows Regional Drainage Manual, April 30, 2009.
City of Reno Design Manual, Latest Edition.

Appendix A – General Figures

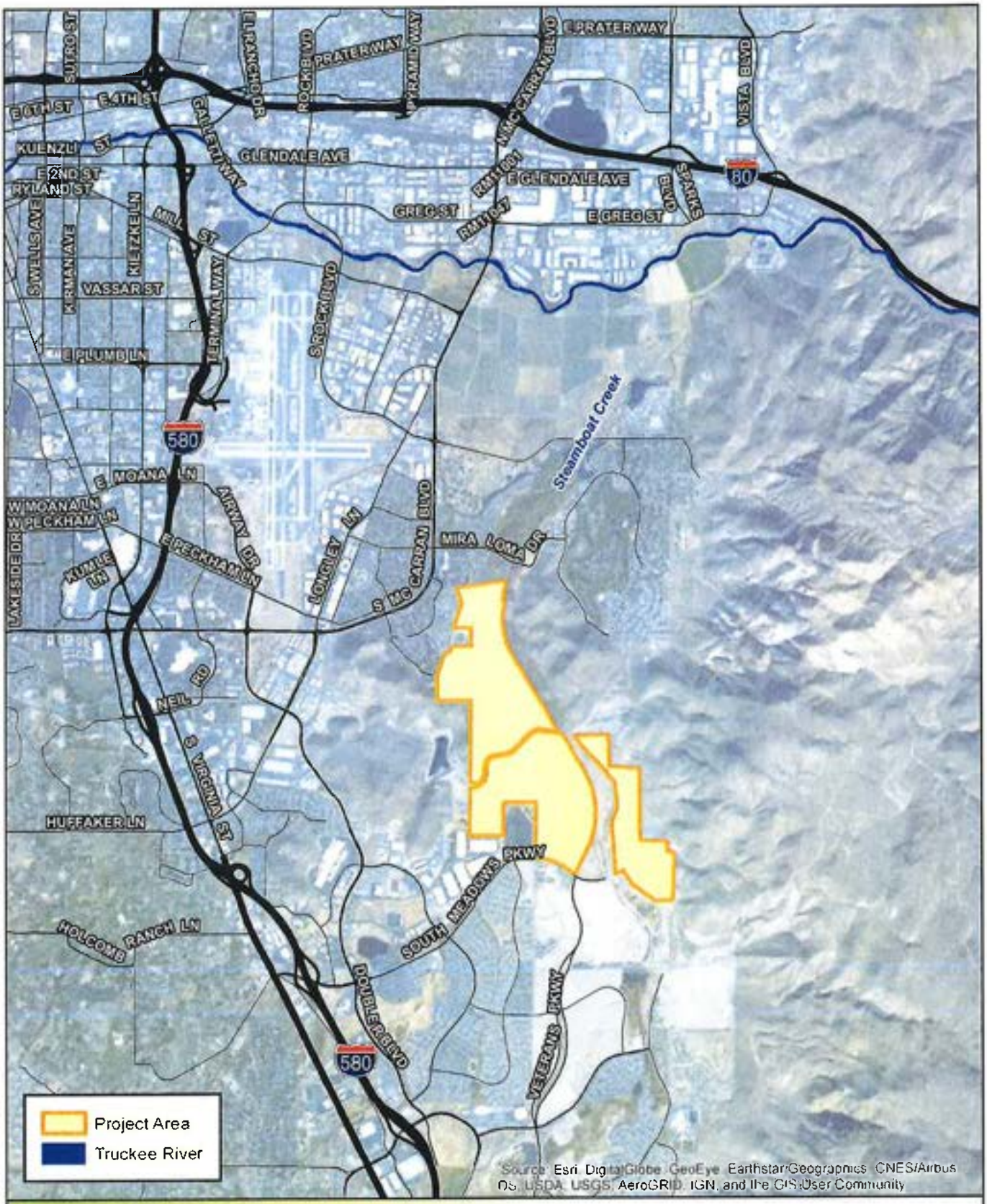


Figure 1
Vicinity Map
Daybreak
City of Reno

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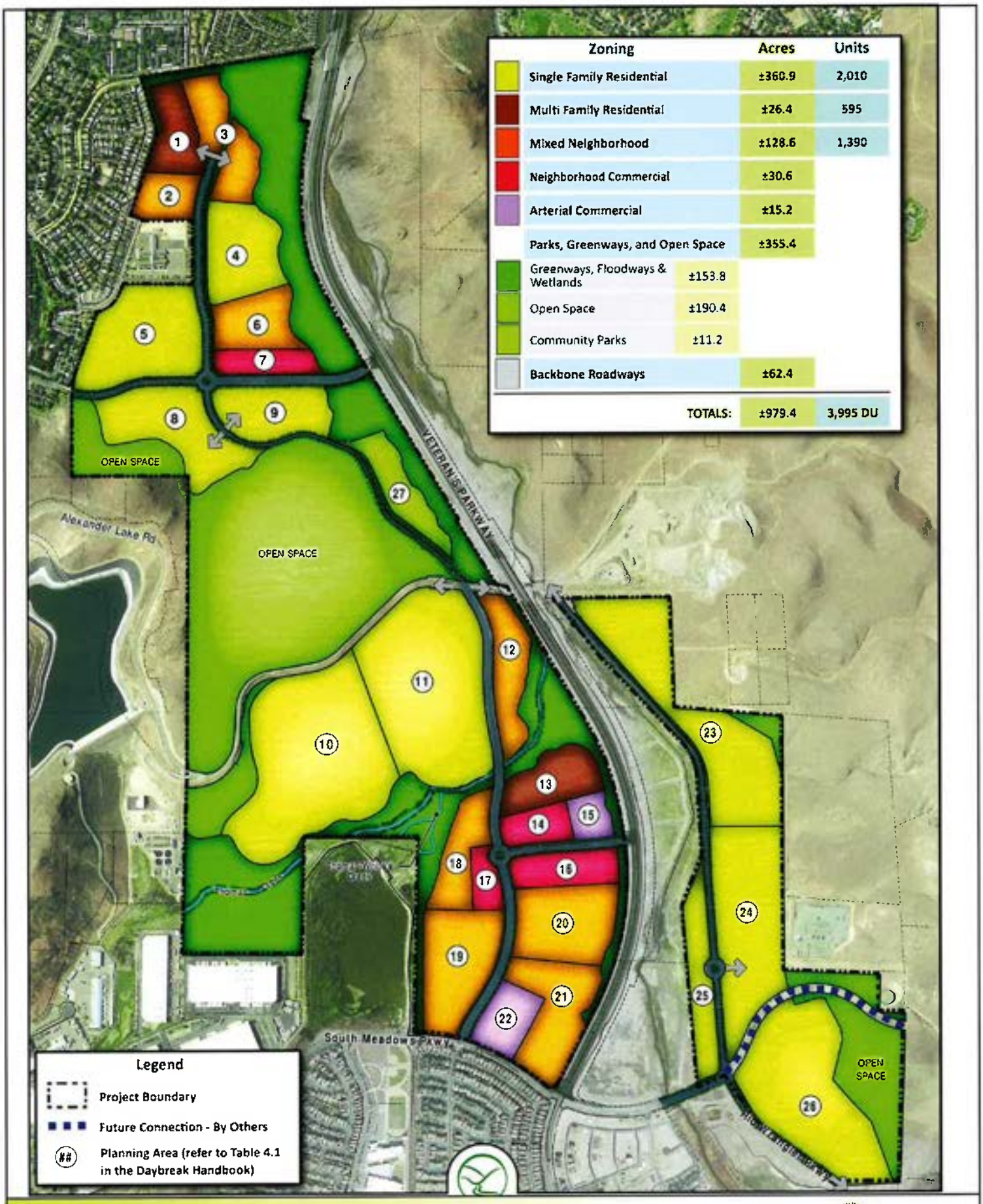


Figure 2
PUD Land Use
Daybreak
City of Reno

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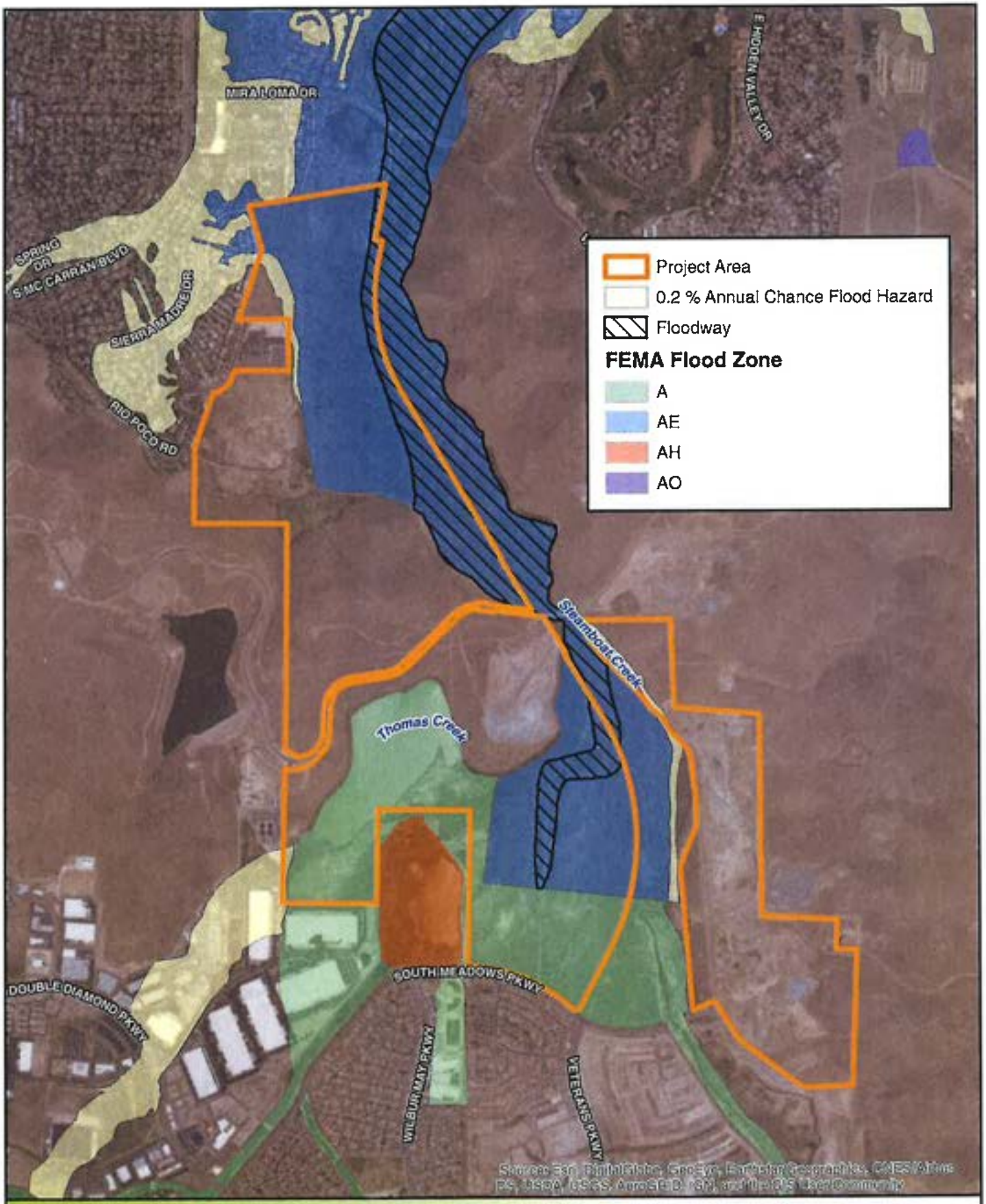


Figure 3
Existing FEMA Boundaries
Daybreak
City of Reno

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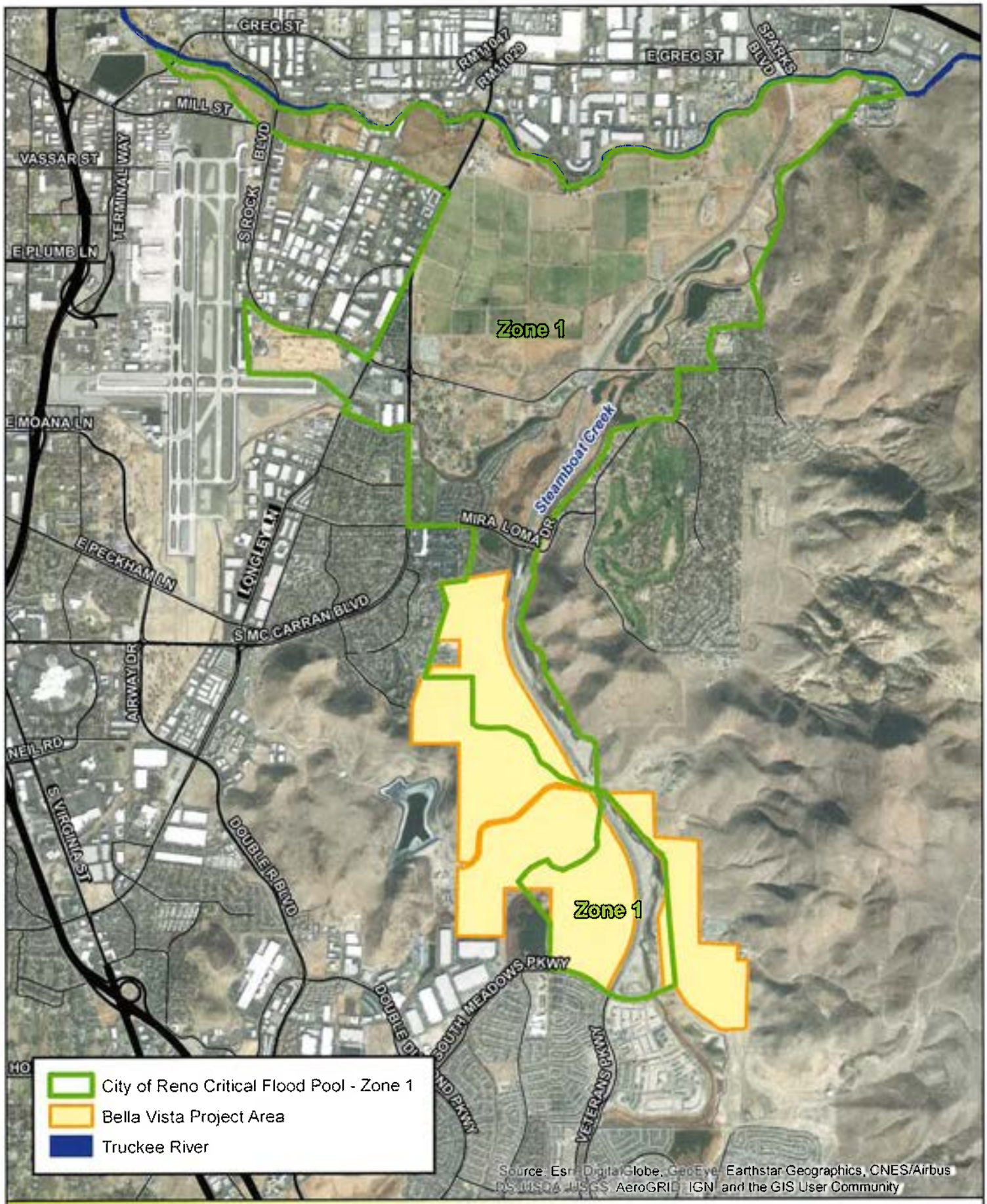


Figure 4

Critical Flood Pool Area

Daybreak

City of Reno

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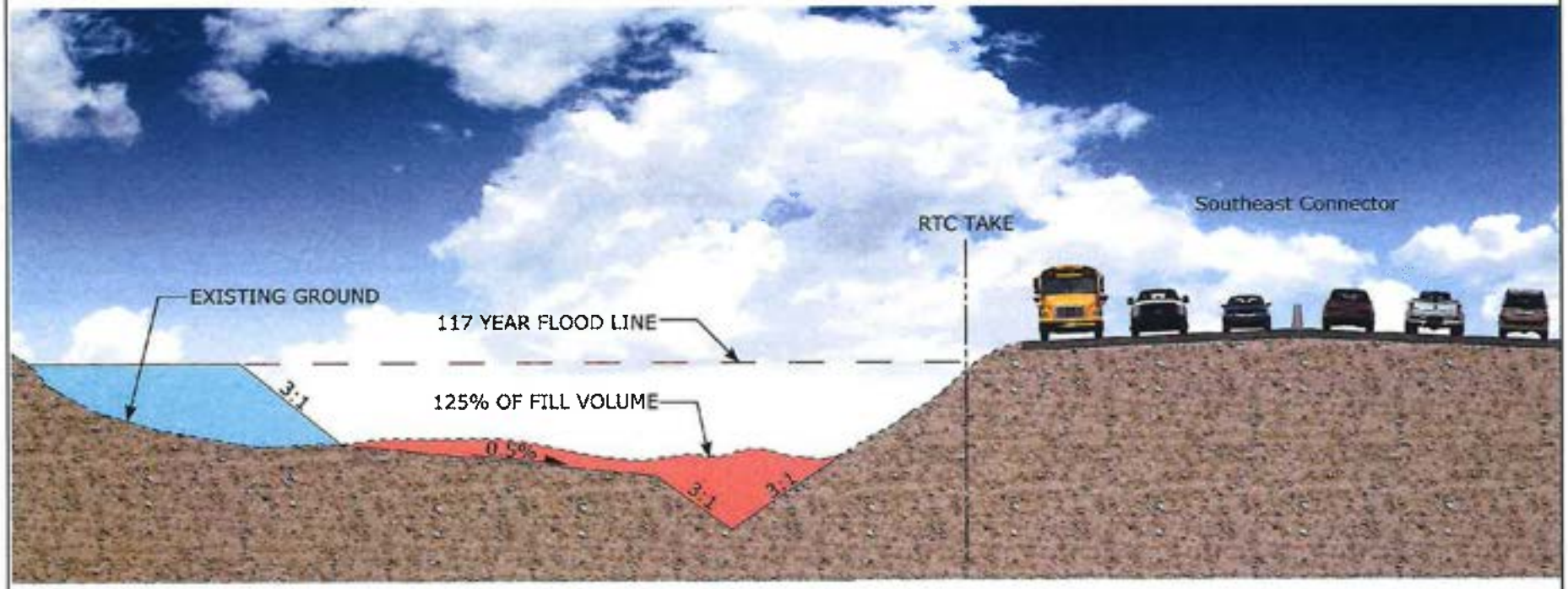


Figure 5
Typical Section
Daybreak
City of Reno

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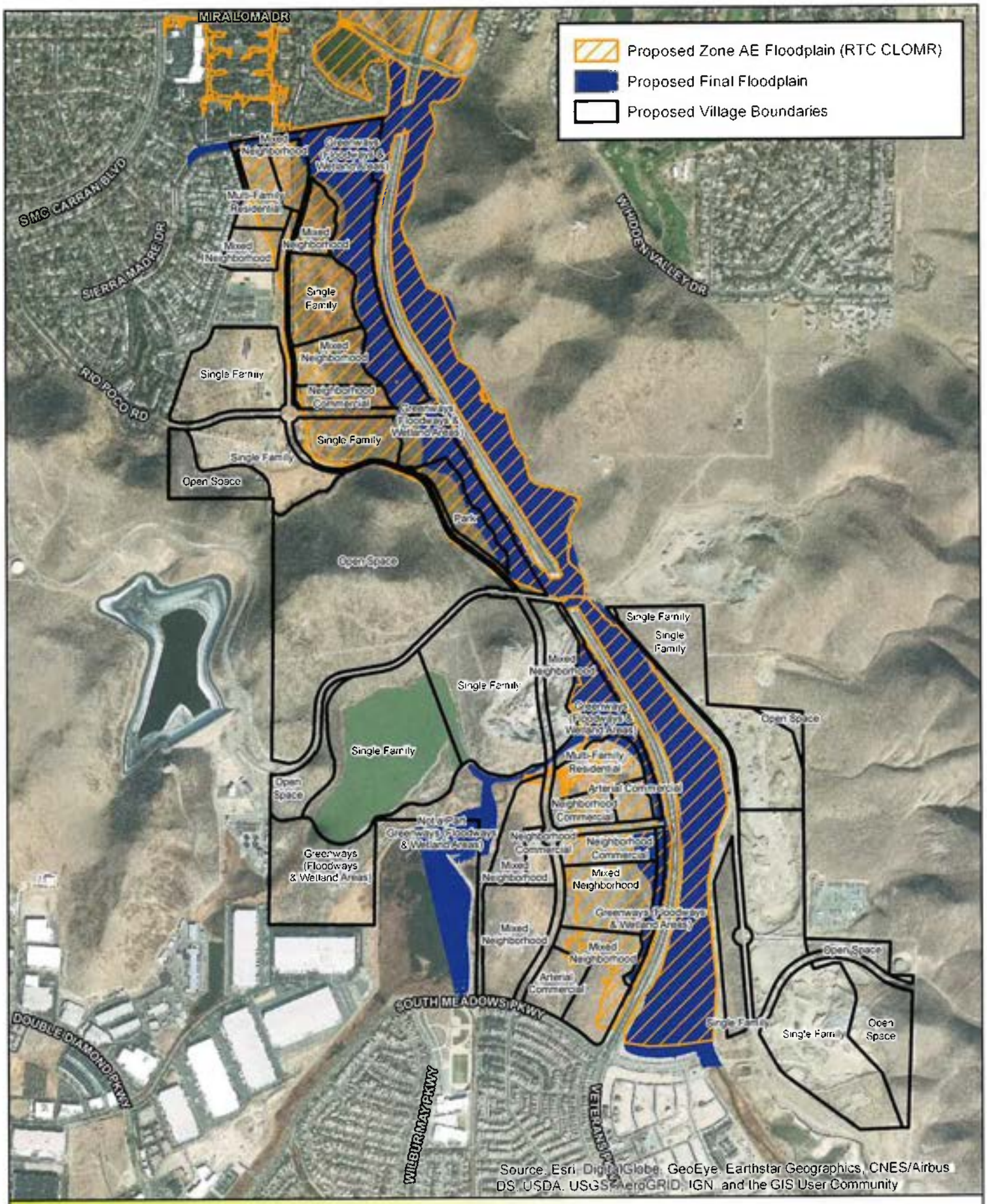


Figure 6

Proposed Floodplain

Daybreak

City of Reno

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BUILDING RELATIONSHIPS AND PROJECTS AT A TIME

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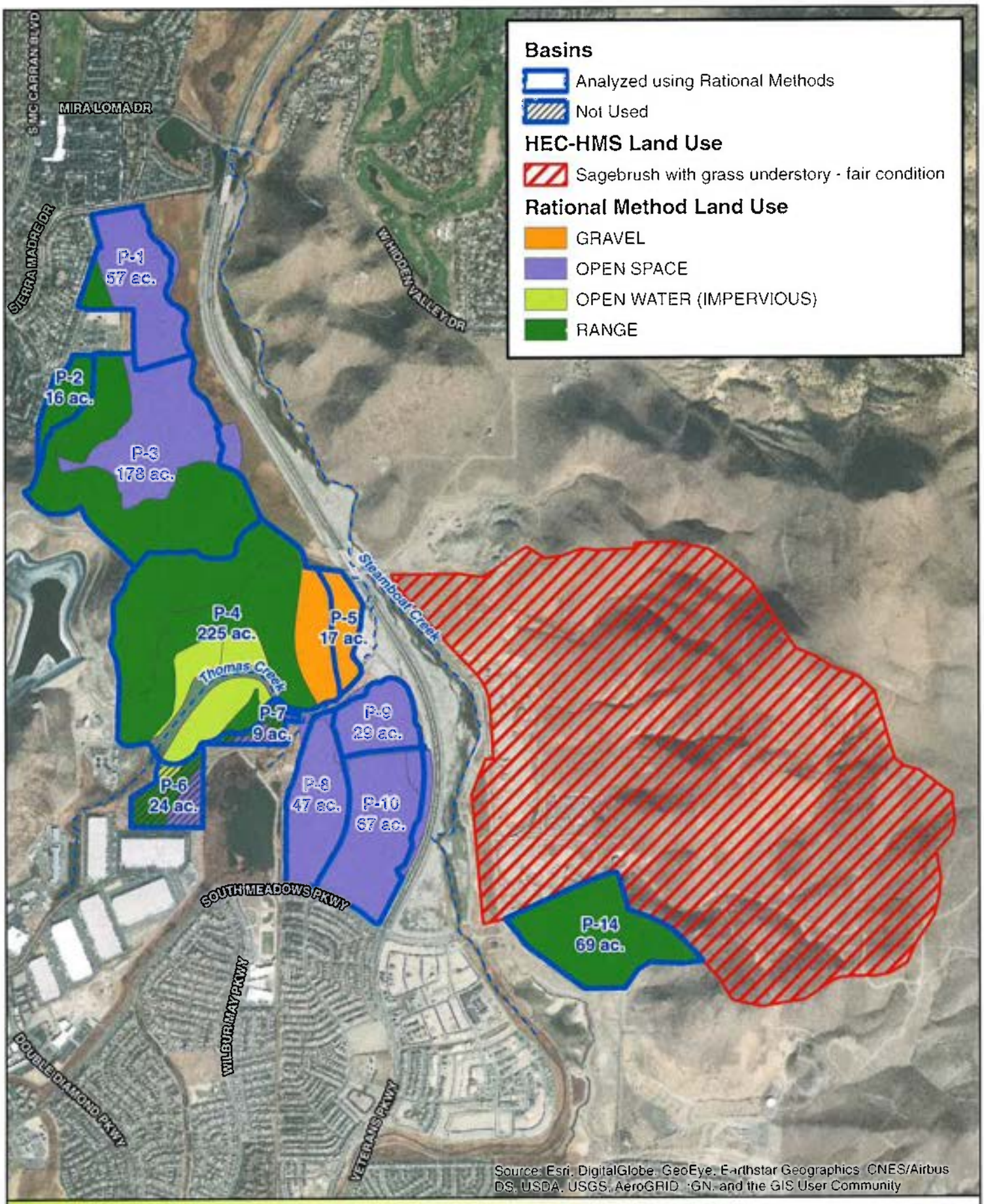


Figure 7
Existing Land Use and Basins
Daybreak
City of Reno

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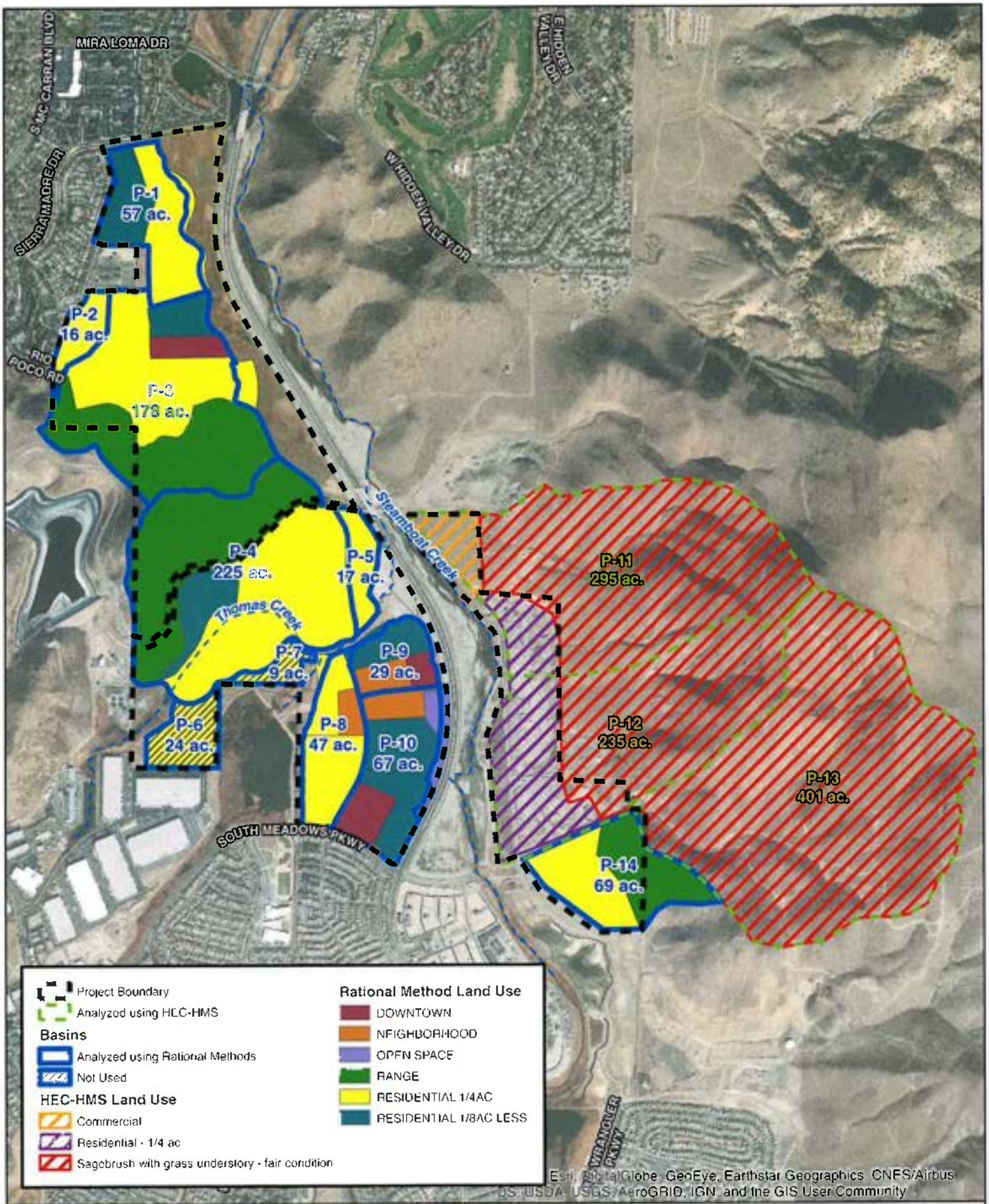


Figure 8

Proposed Land Use and Basins

Daybreak

City of Reno

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Appendix B – 100-Year Storm

NOAA Atlas 14, Volume 1, Version 5
Location name: Reno, Nevada, USA*
Latitude: 39.463°, Longitude: -119.763°
Elevation: 4567.73 ft**
* source: ESRI Maps
** source: USGS

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/hour)[1]

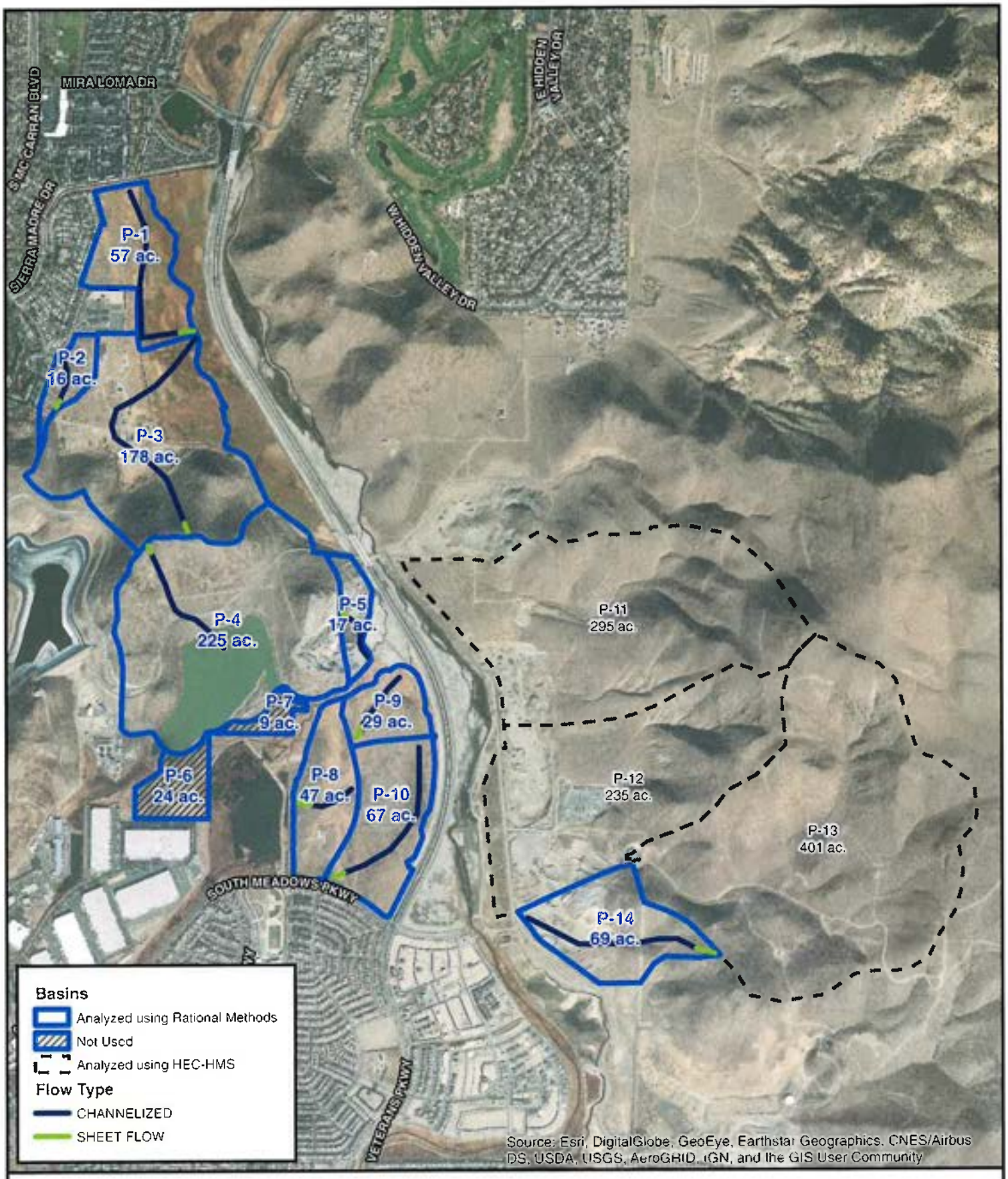
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	1.03 (0.888-1.20)	1.28 (1.09-1.52)	1.73 (1.46-2.05)	2.15 (1.81-2.56)	2.86 (2.34-3.43)	3.50 (2.77-4.27)	4.27 (3.28-5.28)	5.20 (3.82-6.59)	6.70 (4.62-8.61)	8.04 (5.32-10.8)
10-min	0.786 (0.678-0.912)	0.978 (0.828-1.16)	1.31 (1.12-1.56)	1.64 (1.38-1.94)	2.17 (1.78-2.62)	2.66 (2.11-3.25)	3.25 (2.49-4.02)	3.96 (2.90-5.01)	5.08 (3.51-6.70)	6.13 (4.04-8.26)
15-min	0.652 (0.560-0.756)	0.808 (0.684-0.956)	1.09 (0.920-1.29)	1.35 (1.14-1.61)	1.80 (1.48-2.16)	2.20 (1.74-2.69)	2.69 (2.06-3.32)	3.27 (2.40-4.14)	4.21 (2.90-5.54)	5.06 (3.34-6.82)
30-min	0.438 (0.376-0.510)	0.542 (0.462-0.642)	0.732 (0.620-0.868)	0.910 (0.768-1.08)	1.21 (0.992-1.45)	1.48 (1.17-1.81)	1.81 (1.39-2.24)	2.20 (1.62-2.70)	2.84 (1.95-3.73)	3.41 (2.25-4.59)
60-min	0.271 (0.233-0.315)	0.336 (0.286-0.397)	0.453 (0.384-0.537)	0.563 (0.475-0.669)	0.748 (0.614-0.900)	0.918 (0.725-1.12)	1.12 (0.858-1.38)	1.36 (1.00-1.73)	1.76 (1.21-2.31)	2.11 (1.39-2.84)
2-hr	0.182 (0.160-0.208)	0.224 (0.200-0.260)	0.289 (0.252-0.333)	0.343 (0.296-0.396)	0.428 (0.357-0.499)	0.502 (0.408-0.596)	0.587 (0.464-0.708)	0.698 (0.526-0.871)	0.906 (0.646-1.17)	1.09 (0.750-1.44)
3-hr	0.142 (0.128-0.162)	0.177 (0.160-0.202)	0.223 (0.199-0.253)	0.258 (0.229-0.295)	0.309 (0.268-0.355)	0.351 (0.299-0.410)	0.404 (0.337-0.479)	0.473 (0.384-0.566)	0.609 (0.472-0.784)	0.734 (0.548-0.960)
6-hr	0.098 (0.088-0.109)	0.123 (0.110-0.138)	0.153 (0.137-0.171)	0.175 (0.156-0.197)	0.205 (0.179-0.232)	0.227 (0.195-0.259)	0.249 (0.211-0.288)	0.275 (0.228-0.322)	0.317 (0.255-0.397)	0.370 (0.291-0.489)
12-hr	0.062 (0.056-0.069)	0.078 (0.070-0.087)	0.098 (0.088-0.109)	0.114 (0.102-0.127)	0.134 (0.118-0.152)	0.150 (0.130-0.171)	0.166 (0.141-0.192)	0.181 (0.151-0.213)	0.202 (0.163-0.243)	0.220 (0.173-0.269)
24-hr	0.038 (0.034-0.042)	0.047 (0.043-0.053)	0.060 (0.054-0.066)	0.070 (0.063-0.077)	0.084 (0.075-0.093)	0.095 (0.084-0.105)	0.106 (0.094-0.119)	0.118 (0.103-0.133)	0.134 (0.115-0.152)	0.146 (0.125-0.168)
2-day	0.022 (0.020-0.025)	0.028 (0.025-0.031)	0.035 (0.032-0.039)	0.041 (0.037-0.046)	0.049 (0.044-0.055)	0.056 (0.049-0.063)	0.062 (0.055-0.071)	0.069 (0.060-0.079)	0.079 (0.067-0.091)	0.086 (0.072-0.101)
3-day	0.016 (0.015-0.018)	0.020 (0.018-0.022)	0.026 (0.023-0.028)	0.030 (0.027-0.033)	0.036 (0.032-0.040)	0.041 (0.036-0.046)	0.046 (0.041-0.052)	0.052 (0.045-0.059)	0.059 (0.050-0.068)	0.065 (0.054-0.076)
4-day	0.013 (0.012-0.014)	0.016 (0.015-0.018)	0.021 (0.019-0.023)	0.024 (0.022-0.027)	0.030 (0.027-0.033)	0.034 (0.030-0.038)	0.038 (0.033-0.043)	0.043 (0.037-0.048)	0.049 (0.042-0.057)	0.055 (0.046-0.064)
7-day	0.009 (0.008-0.010)	0.011 (0.010-0.012)	0.014 (0.013-0.016)	0.016 (0.015-0.019)	0.020 (0.018-0.022)	0.023 (0.020-0.026)	0.026 (0.022-0.029)	0.029 (0.025-0.033)	0.033 (0.028-0.038)	0.036 (0.030-0.042)
10-day	0.007 (0.006-0.007)	0.008 (0.008-0.009)	0.011 (0.010-0.012)	0.013 (0.012-0.014)	0.016 (0.014-0.017)	0.018 (0.016-0.020)	0.020 (0.017-0.022)	0.022 (0.019-0.025)	0.025 (0.021-0.029)	0.027 (0.023-0.032)
20-day	0.004 (0.004-0.004)	0.005 (0.005-0.006)	0.006 (0.006-0.007)	0.008 (0.007-0.008)	0.009 (0.008-0.010)	0.010 (0.009-0.011)	0.011 (0.010-0.013)	0.013 (0.011-0.014)	0.014 (0.012-0.016)	0.015 (0.013-0.018)
30-day	0.003 (0.003-0.003)	0.004 (0.003-0.004)	0.005 (0.004-0.005)	0.006 (0.005-0.006)	0.007 (0.006-0.007)	0.008 (0.007-0.008)	0.008 (0.007-0.009)	0.009 (0.008-0.010)	0.010 (0.009-0.012)	0.011 (0.009-0.013)
45-day	0.002 (0.002-0.003)	0.003 (0.003-0.003)	0.004 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.006)	0.006 (0.006-0.007)	0.007 (0.006-0.008)	0.007 (0.007-0.008)	0.008 (0.007-0.009)
60-day	0.002 (0.002-0.002)	0.003 (0.002-0.003)	0.003 (0.003-0.004)	0.004 (0.003-0.004)	0.004 (0.004-0.005)	0.005 (0.004-0.005)	0.005 (0.005-0.006)	0.006 (0.005-0.006)	0.006 (0.005-0.007)	0.006 (0.006-0.007)

[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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EXISTING FLOWPATHS

DAYBREAK
RENO, NV
OCTOBER, 2019

NOTES

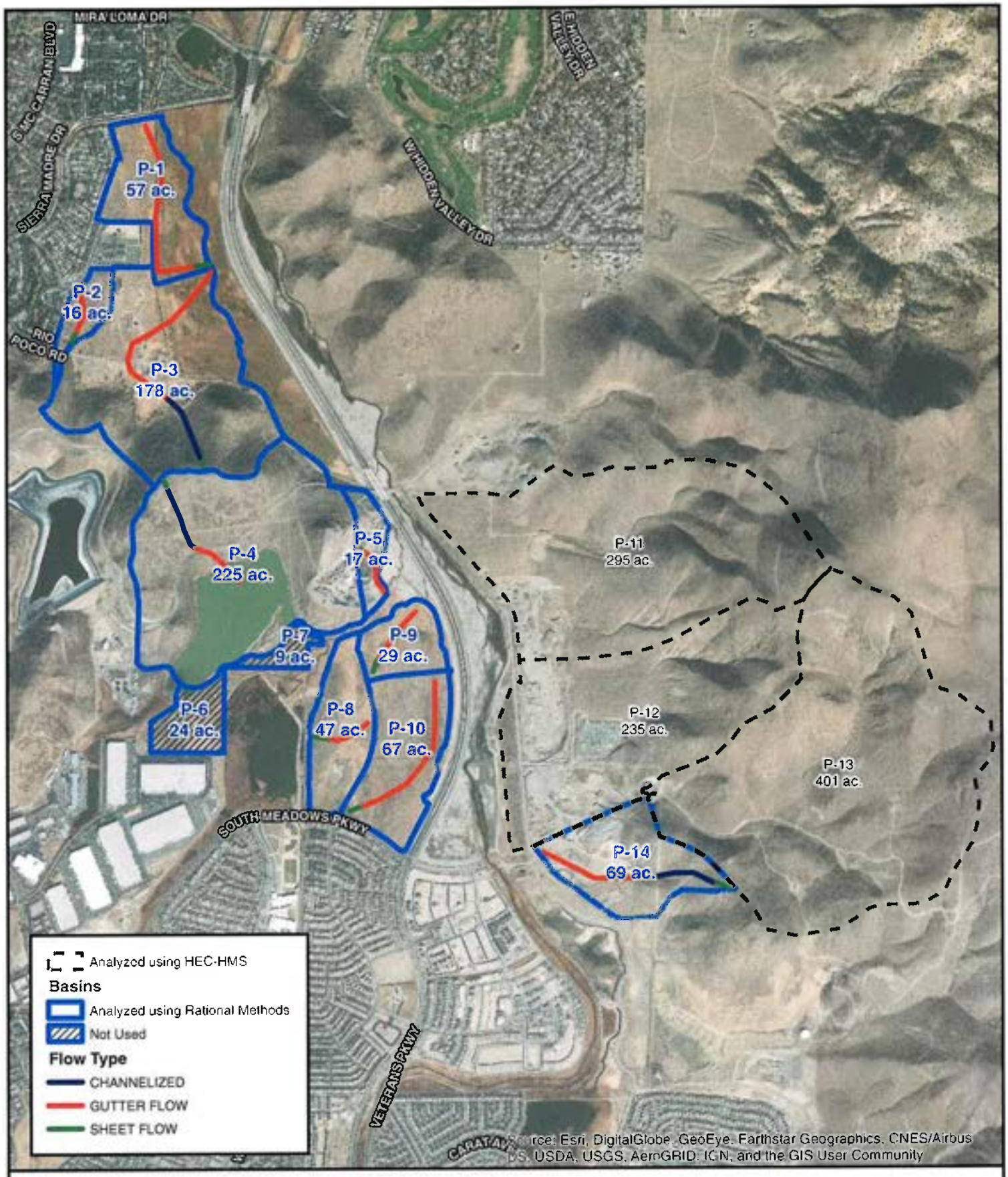
NORTH

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PROPOSED FLOWPATHS

DAYBREAK
RENO, NV
OCTOBER, 2019

NOTES

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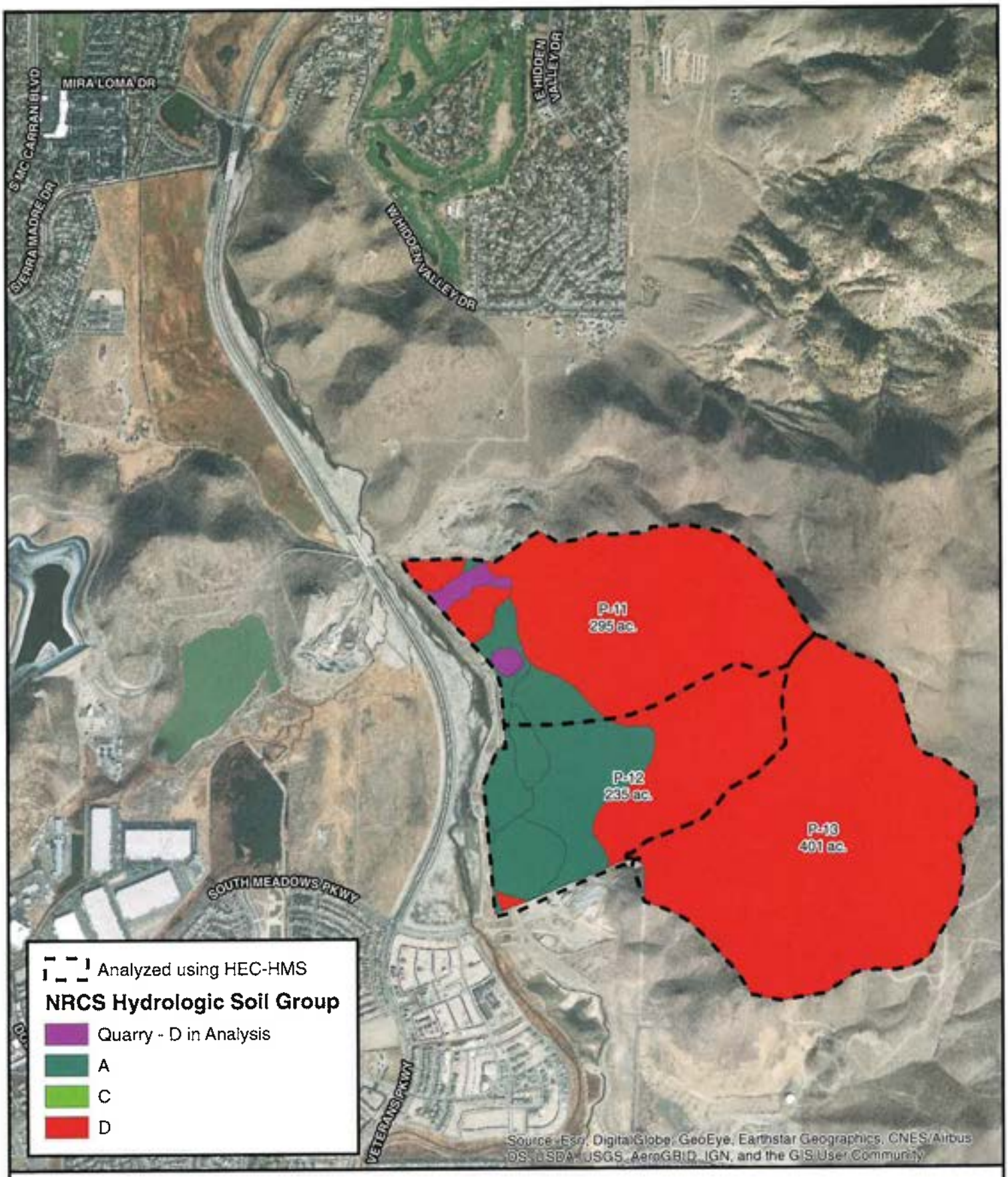
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Daybreak
Rational Method Calculation - Pre-Development Conditions
October, 2019

TIME OF CONCENTRATION													100-YEAR STORM EVENT	
Drainage Basin	Drainage Area (AC)	Weighted Average C-Factor 100-Year	Initial Flow Time, Ti			Travel Time, Tt				Total (Ti+Tt)	Urbanized Basins	Final	NOAA ATLAS 14 Rainfall Intensity	Rational Flow
			Overland Flow			Channelized Flow								
			Li (ft)	S (ft/ft)	Ti (min)	Ls(ft)	S (ft/ft)	V(ft/s)	Tt1 (min)	Tc (min)	Tc*(min)	Tc (min)	I100-year (in/hour)	Q100-year (cfs)
P-1	57	0.32	218.8	0.0011	43.3	2914.8	0.0016	0.7	74.3	43.3	27.4	27.4	2.0	36
P-2	16	0.50	119.8	0.0251	8.7	722.0	0.0066	1.3	9.2	17.9	14.7	14.7	2.7	22
P-3	178	0.42	144.5	0.4871	4.1	3890.2	0.0758	4.4	14.6	18.7	32.4	18.7	2.5	186
P-4	225	0.58	118.3	0.2588	3.5	1946.1	0.1834	6.9	4.7	8.2	21.5	8.2	3.6	476
P-5	17	0.50	84.0	0.1543	4.0	744.7	0.0324	2.9	4.3	8.3	14.6	8.3	3.6	31
P-6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
P-7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
P-8	47	0.30	191.7	0.0066	22.8	722.6	0.0027	0.8	14.3	37.1	15.1	15.1	2.7	37
P-9	29	0.30	175.6	0.0025	30.2	975.1	0.0029	0.9	18.7	48.8	16.4	16.4	2.6	22
P-10	67	0.30	155.8	0.0022	29.5	2539.5	0.0029	0.9	48.3	77.8	25.0	25.0	2.1	43
P-14	69	0.50	#N/A	#N/A	#N/A	1980.4	0.0836	4.7	7.1	7.1	21.0	7.1	3.8	133

Daybreak
Rational Method Calculation - Proposed Conditions
October, 2019

TIME OF CONCENTRATION																	100-YEAR STORM EVENT	
Drainage Basin	Drainage Area (AC)	Weighted Average C-Factor 100-Year	Initial Flow Time, Ti			Travel Time, Tt								Total (Ti+Tt)	Urbanized Basins	Final	NOAA ATLAS 14 Rainfall Intensity	Rational Flow
			Overland Flow			Channelized Flow				Gutter Flow								
			Li (ft)	S (ft/ft)	Ti (min)	Ls(ft)	S (ft/ft)	V(ft/s)	Tt1 (min)	Lt (ft)	S (ft/ft)	V (ft/s)	Tt2 (min)	Tc (min)	Tc* (min)	Tc (min)	I100-year (in/hour)	Q100-year (cfs)
P-1	57	0.70	218.8	0.0011	22.2	#N/A	#N/A	#N/A	#N/A	2914.8	0.00	0.8	58.9	81.1	27.4	27.4	2.0	78
P-2	16	0.64	119.8	0.0251	6.7	#N/A	#N/A	#N/A	#N/A	722.0	0.01	1.6	7.3	14.0	14.7	14.0	2.8	29
P-3	178	0.60	144.5	0.4871	3.0	1038.8	0.2723	8.4	2.1	2851.4	0.00	1.3	36.2	41.2	32.4	32.4	1.8	187
P-4	225	0.60	118.3	0.2588	3.4	1061.8	0.2728	8.4	2.1	884.3	0.08	5.6	2.6	8.1	21.5	8.1	3.6	488
P-5	17	0.65	84.0	0.1543	3.0	#N/A	#N/A	#N/A	#N/A	744.7	0.03	3.7	3.4	6.4	14.6	6.4	4.0	44
P-6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
P-7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
P-8	47	0.67	191.7	0.0086	12.2	#N/A	#N/A	#N/A	#N/A	722.6	0.00	1.1	11.3	23.5	15.1	15.1	2.7	84
P-9	29	0.80	175.6	0.0025	11.3	#N/A	#N/A	#N/A	#N/A	975.1	0.00	1.1	14.8	26.1	16.4	16.4	2.6	59
P-10	67	0.77	155.8	0.0022	12.1	#N/A	#N/A	#N/A	#N/A	2539.5	0.00	1.1	38.3	50.4	25.0	25.0	2.1	109
P-14	69	0.57	#N/A	#N/A	#N/A	272.5	0.2251	7.7	0.6	1707.9	0.05	5.0	5.7	6.3	21.0	6.3	4.0	159



NRCS HYDROLOGIC SOIL GROUP

DAYBREAK
RENO, NV
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Curve Number Calculations
Existing Daybreak PUD Basins

Watershed	Total Area (ac)	Total Area (sq. mi.)	Brush - fair condition						$CN_{combined}$
			Hydro Soil Group A	Hydro Soil Group A Area (ac)	Hydro Soil Group C	Hydro Soil Group C Area (ac)	Hydro Soil Group D	Hydro Soil Group D Area (ac)	
11	295.1	0.461	35	33.6	70	0.00	77	261.5	72
12	231.1	0.361	35	118.2	70	0.00	77	111.3	55
13	399.9	0.625	35	0.0	70	0.00	77	399.9	77

Notes:
CN values based on Technical Release 55 Urban Hydrology for Small Watersheds manual.

Time of Concentration
Existing Daybreak PUD Basins

TIME OF CONCENTRATION													
Drainage Basin	Drainage Area (AC)	Initial Flow Time, T_i				Travel Time, T_t				Total (T_i+T_t)	Urbanized Basins Check	Final	
		Overland Flow				Channelized Flow							
		L_i (ft)	S (ft/ft)	R	T_i (min)	L_s(ft)	S (ft/ft)	V(ft/s)	T_{t1} (min)	T_c (min)	T_c*(min)	T_c (min)	TLAG
11	295.1	322	0.12	0.56	7.6	5685	0.23	1.4	67.7	75.2	43.4	**75.2**	45
12	231.1	348	0.29	0.34	8.5	4865	0.22	1.4	57.9	67.4	39.0	**67.4**	40
13	399.9	191	0.10	0.63	5.4	6428	0.18	1.4	76.5	84.0	46.8	**84.0**	50

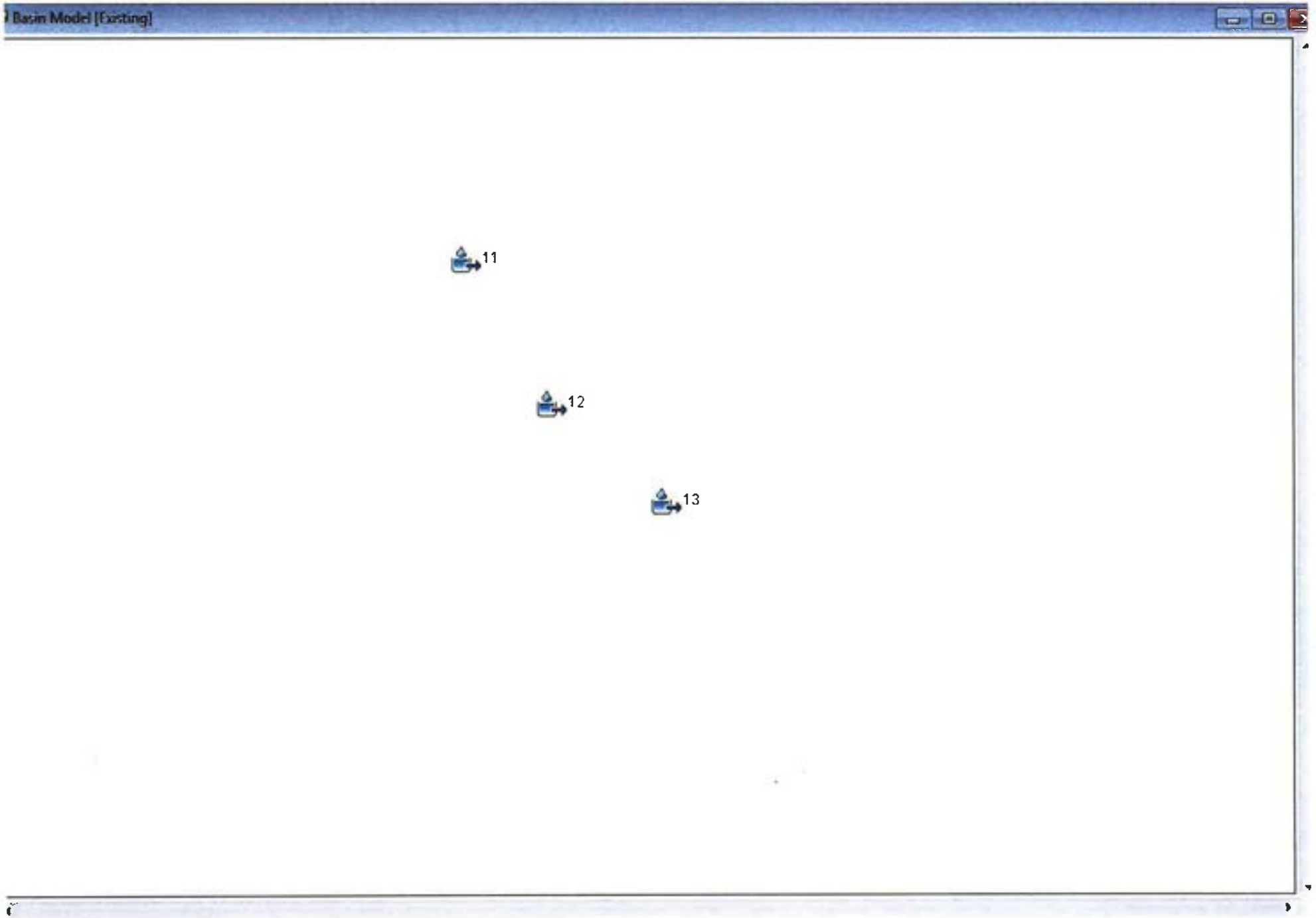
Time of Concentration
Proposed Daybreak Basins

TIME OF CONCENTRATION													
Drainage Basin	Drainage Area (AC)	Initial Flow Time, T_i				Travel Time, T_t				Total (T_i+T_t)	Urbanized Basins Check	Final	
		Overland Flow				Channelized Flow							
		L_i (ft)	S (ft/ft)	R	T_i (min)	L_s(ft)	S (ft/ft)	V(ft/s)	T_{tt} (min)	T_c (min)	T_c*(min)	T_c (min)	TLAG
11	295.1	322	0.12	0.42	9.6	5685	0.23	1.4	67.7	77.3	43.4	**77.3**	46
12	231.1	348	0.29	0.42	7.6	4865	0.22	1.4	57.9	66.5	39.0	**66.5**	40
13	399.9	191	0.10	0.42	7.9	6428	0.18	1.4	76.5	86.4	46.8	**86.4**	52

Curve Number Calculations
Existing Silver Dollar Basins

Watershed	Total Area (ac.)	Total Area (sq. mi.)	Commercial						Residential - 1/4 ac						Brush - fair condition						CN
			Hydro Soil Group A	Hydro Soil Group A Area (ac)	Hydro Soil Group C	Hydro Soil Group C Area (ac)	Hydro Soil Group D	Hydro Soil Group D Area (ac)	Hydro Soil Group A	Hydro Soil Group A Area (ac)	Hydro Soil Group C	Hydro Soil Group C Area (ac)	Hydro Soil Group D	Hydro Soil Group D Area (ac)	Hydro Soil Group A	Hydro Soil Group A Area (ac)	Hydro Soil Group C	Hydro Soil Group C Area (ac)	Hydro Soil Group D	Hydro Soil Group D Area (ac)	
11	295.1	0.461	89	0.617215	94	0.0	91	19.1	81	19.5	83	0.0	87	5.3	35	15.5	70	0.00	77	257.1	75
12	231.1	0.361	89	0.00	94	0.0	91	3.0	81	99.1	83	0.0	87	1.9	35	49.1	70	0.00	77	111.3	83
13	399.9	0.625	89	0.00	94	0.0	91	3.0	81	9.0	83	0.0	87	0.0	35	0.0	70	0.00	77	399.9	77

Notes:
CN values based on Technical Release 55 Urban Hydrology for Small Watersheds manual


Basin Model [Existing]
11
12
13

Project: Daybreak Simulation Run: 100-year Existing

Start of Run: 01Jan2017, 00:00
End of Run: 02Jan2017, 00:00
Compute Time: 02Nov2017, 15:44:29

Basin Model: Existing
Meteorologic Model: 100-year
Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
11	0.461	103.9	01Jan2017, 12:52	0.95
12	0.361	10.5	01Jan2017, 12:56	0.26
13	0.625	174.6	01Jan2017, 12:57	1.21

Project: Daybreak Simulation Run: 100-year Proposed

Start of Run: 01Jan2017, 00:00 Basin Model: Proposed
End of Run: 02Jan2017, 00:00 Meteorologic Model: 100-year
Compute Time: 02Nov2017, 15:38:42 Control Specifications: Control 1

Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
11	0.461	127.9	01Jan2017, 12:51	1.12
12	0.361	41.4	01Jan2017, 12:49	0.54
13	0.625	174.6	01Jan2017, 12:57	1.21

APPENDIX 4
Preliminary Sewer Report
Prepared by Wood Rodgers, Inc.

PRELIMINARY SANITARY SEWER REPORT

FOR

DAYBREAK – PLANNED UNIT DEVELOPMENT

Prepared for:

NPLC BV Investment Company, LLC
100 Bayview Circle, Ste. 2200
Newport Beach, CA 92660

~~November 9, 2017~~
Revised September 30, 2019

Prepared by:

Wood Rodgers, Inc.
1361 Corporate Boulevard
Reno, NV 89502
(775) 823-4068
Steve Strickland, P.E. – Vice President

PROFESSIONAL ENGINEER – STATE OF NEVADA
STEVEN P. STRICKLAND
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Figure 2 – Proposed Land Uses

Figure 3 – Preliminary Sewer System – North

Figure 4 – Preliminary Sewer System – South

INTRODUCTION

The purpose of this report is to provide preliminary analysis of providing sewer service to the Daybreak Planned Unit Development. The Daybreak project is located in east Reno. It extends from Herron's Landing in the north to South Meadows Parkway in the south directly adjacent to the new Southeast Connector as shown on the vicinity map, Figure 1. The analysis is based upon the land uses proposed with the project and the City of Reno's Design Manual. The proposed land uses for the project are shown in Figure 2. The design assumptions and calculations in this report are preliminary and are intended to identify the general plan for providing sewer service to the project. Sewer service to this project will connect to existing infrastructure in multiple locations. In some cases, the capacity of the existing infrastructure will need to be increased. As the Daybreak PUD provides for flexibility with land uses and density, technical sewer studies will be prepared prior to permit and final construction. At that time the offsite capacities and will be analyzed in further detail and specific enhancements and alignments can be identified.

LOCATION

The daybreak project is located within Townships 18 Range 20 Sections 3 and 4, and Township 19 Range 20 Sections 33 and 34 in Washoe County, Nevada.

SEWER ANALYSIS - OVERVIEW

Sewer service for the project will be provided by the City of Reno. The Daybreak project has two distinct and separate sewer sheds separated at the "narrows" of Steamboat creek. The North area will be served by the City of Reno through its sewer interceptor in Mira Loma. This sewer shed will ultimately flow to the Truckee Meadows Water Reclamation Facility (TMWRF). The south sewer shed will flow to an interceptor located in South Meadows Parkway and on to the South Truckee Meadows Water Reclamation Facility (STMWRF) operated by Washoe County. The City of Reno and Washoe County have an interlocal agreement for sewer service in the South Meadows area. The agencies are currently working to update the agreement.

Design Flows will be calculated using the guidelines of the City of Reno Design Manual.

SEWER ANALYSIS - NORTH

There are existing 8" sewer mains located adjacent to the project from the Donner Springs Area. These mains may be adequate to provide sewer service to a small portion of the Northern portion of the project. Existing sewer in this area flows to the Donner Springs Lift station located at the intersection of Snowshoe Lane and Reggie Road. The lift station pumps into an 18" diameter interceptor that flows North on McCarran Blvd where it ties into a 54" diameter interceptor in Mira Loma Drive.

The City of Reno has indicated that the Donner Springs lift station is at capacity. In order for a portion of Daybreak to utilize this facility additional analysis of the existing sewer mains, lift station as well as the capacity of the 18" interceptor will be analyzed to determine the improvements that would be necessary. These may include upsizing existing mains and increasing the pumping capacity of the Donner Springs Lift Station. For preliminary purposes, it is being assumed that 150 homes (portions of Villages 4 and 6) will sewer this direction. The actual number of homes served this direction may increase or decrease with future analysis.

The rest of the north area will require a new sewer lift station. Sewer from the north villages will flow from the south to the north into the sewer lift station. The lift station will pump flows to the existing interceptor in Mira Loma Drive. Three potential alignments have been identified for the force main to Mira Loma. Cost, constructability, and ability to obtain easements will impact the final alignment selected.

The preliminary layout of the sewer system for the north can be found in Figure 3. Preliminary design flows have been calculated in Table 1. The City of Reno design manual utilizes a per capita sewer flow rate of 350 gallons per day (gpd) for 8" and 10" mains. Mains 12" and larger can be design utilizing a flow rate of 250 gpd per capita. Preliminary pipe sizes are shown using these parameters.

Table 1: Daybreak PUD - North Sewer Shed

					DESIGN FLOWS (gpd)			
Development Area	Acres	Land Use	Units	Occupancy Rate	Small Mains		Large Mains	
					Per Capita	Flows	Per Capita	Flows
1	11.4	MFR	280	2	350	196,000	250	140,000
2	8.1	MN	85	3	350	89,250	250	63,750
3	15.0	MN	150	3	350	157,500	250	112,500
4	18.9	SFR	130	3	350	136,500	250	97,500
5	30.2	SFR	180	3	350	189,000	250	135,000
6	12.6	MN	120	3	350	126,000	250	90,000
7	7.6	NC	–	1	10,000	76,000	10,000	76,000
8	25.3	SFR	135	3	350	141,750	250	101,250
9	16.8	SFR	110	3	350	115,500	250	82,500
			1190		TOTALS	1,227,500		898,500

SEWER ANALYSIS - SOUTH

Generally, sewer flows from the south area will flow from north to south. There is an existing 30" sewer interceptor located in South Meadows Parkway that will receive sewer flows from the project. The interceptor runs along the southern boundary of Daybreak and terminates at the current end of South Meadows Parkway just west of Steamboat Creek. The interceptor will be extended to serve Daybreak and other properties east of Steamboat Creek. The depth of the existing interceptor is not deep enough to serve the entire site by gravity mains. Two additional lift stations may be required to serve the south area. One lift station will be required to serve the northeast portion of the project, Villages 19 and 20. In addition, a sewer lift station may be required to serve Villages 8 and 9. This lift station may be eliminated by raising the grade of the western portions Village 8, 9 and 13 to allow for gravity service. The final solution will be determined as the development of the project progresses.

Offsite facilities have capacity constraints that will need to be addressed.

The preliminary layout of the sewer system for the north can be found in Figure 4. Preliminary design flows have been calculated in Table 2.

Table 2: DAYBREAK PUD - SOUTH SEWER SHED

					DESIGN FLOWS (gpd)			
Development Area	Acres	Land Use	Units	Occupancy Rate	Small Mains		Large Mains	
					Per Capita	Flows	Per Capita	Flows
10	65.5	SFR	440	3	350	462,000	250	330,000
11	59.3	SFR	425	3	350	446,250	250	318,750
12	14.3	MN	170	3	350	178,500	250	127,500
13	15	MFR	315	2	350	220,500	250	157,500
14	7.2	NC	--	1	10000	72,000	10000	72,000
15	5.2	AC	--	1	10000	52,000	10000	52,000
16	10.8	NC	--	1	10000	108,000	10000	108,000
17	5	NC	--	1	10000	50,000	10000	50,000
18	11.6	MN	130	3	350	136,500	250	97,500
19	23.8	MN	255	3	350	267,750	250	191,250
20	21.7	MN	255	3	350	267,750	250	191,250
21	21.5	MN	225	3	350	236,250	250	168,750
22	9.9	AC	0	1	10000	99,000	10000	99,000
23	42.5	SFR	170	3	350	178,500	250	127,500
24	42.6	SFR	170	1	350	59,500	250	42,500
25	13.2	SFR	55	3	350	57,750	250	41,250
26	26.6	SFR	195	3	350	204,750	250	146,250
				TOTALS		3,097,000		2,321,000

CONCLUSION

The Daybreak can be developed utilizing existing and new sanitary sewer facilities. The north villages of the project will be served by gravity flows and a single lift station that will flows from the project to TMWRF. The southern villages will be served primarily via gravity with a handful of villages served by two sewer lift station. Sewer in the South area will be treated at the STMWRF plant. This study is preliminary in nature, and as design is finalized, a Technical Drainage Study will be completed with final design to determine final sizes and alignments of the sewer facilities.

REFERENCES

City of Reno (Revised January 2009). *Public Works Design Manual.*

FIGURES

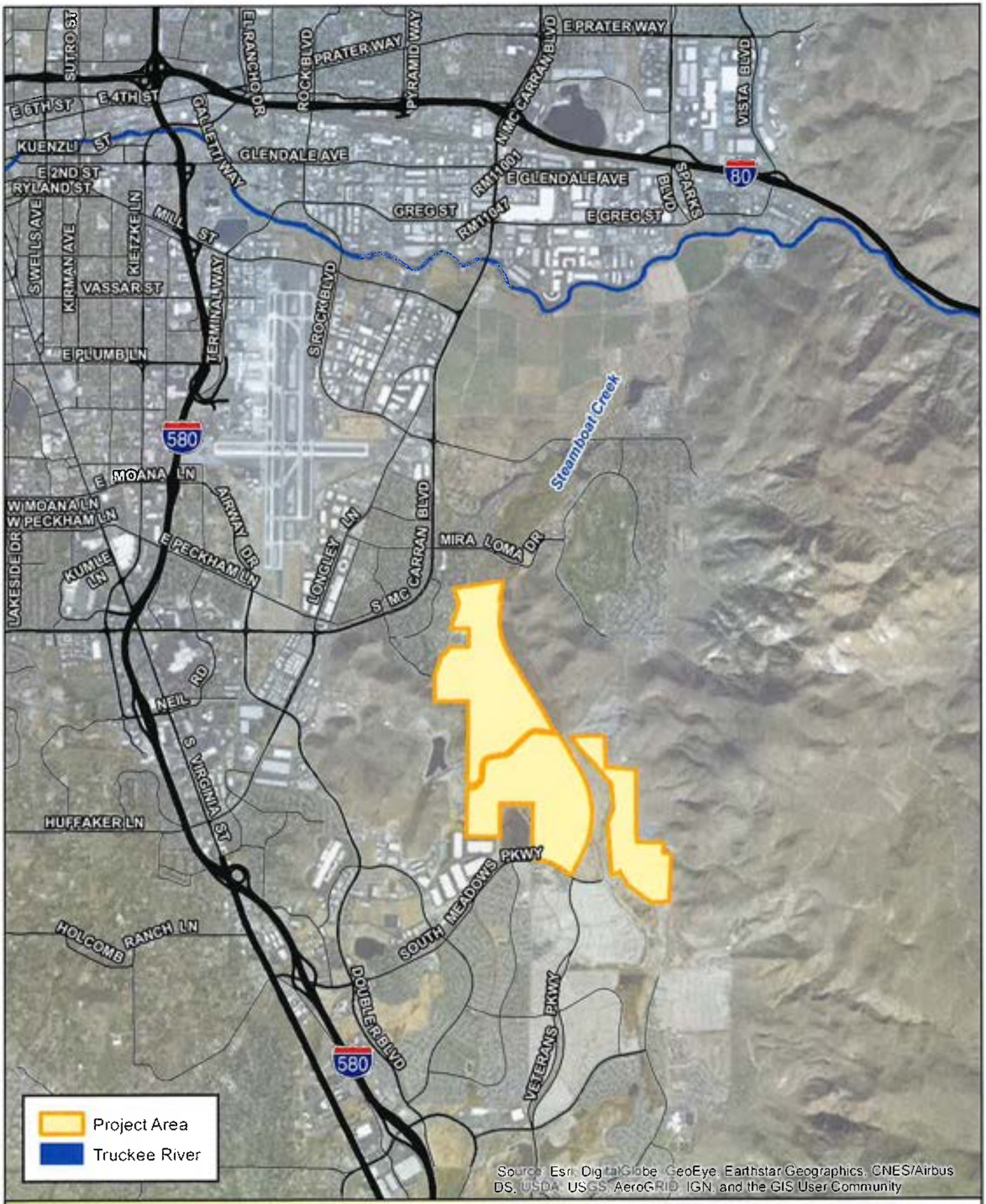


Figure 1

Vicinity Map

Daybreak

City of Reno

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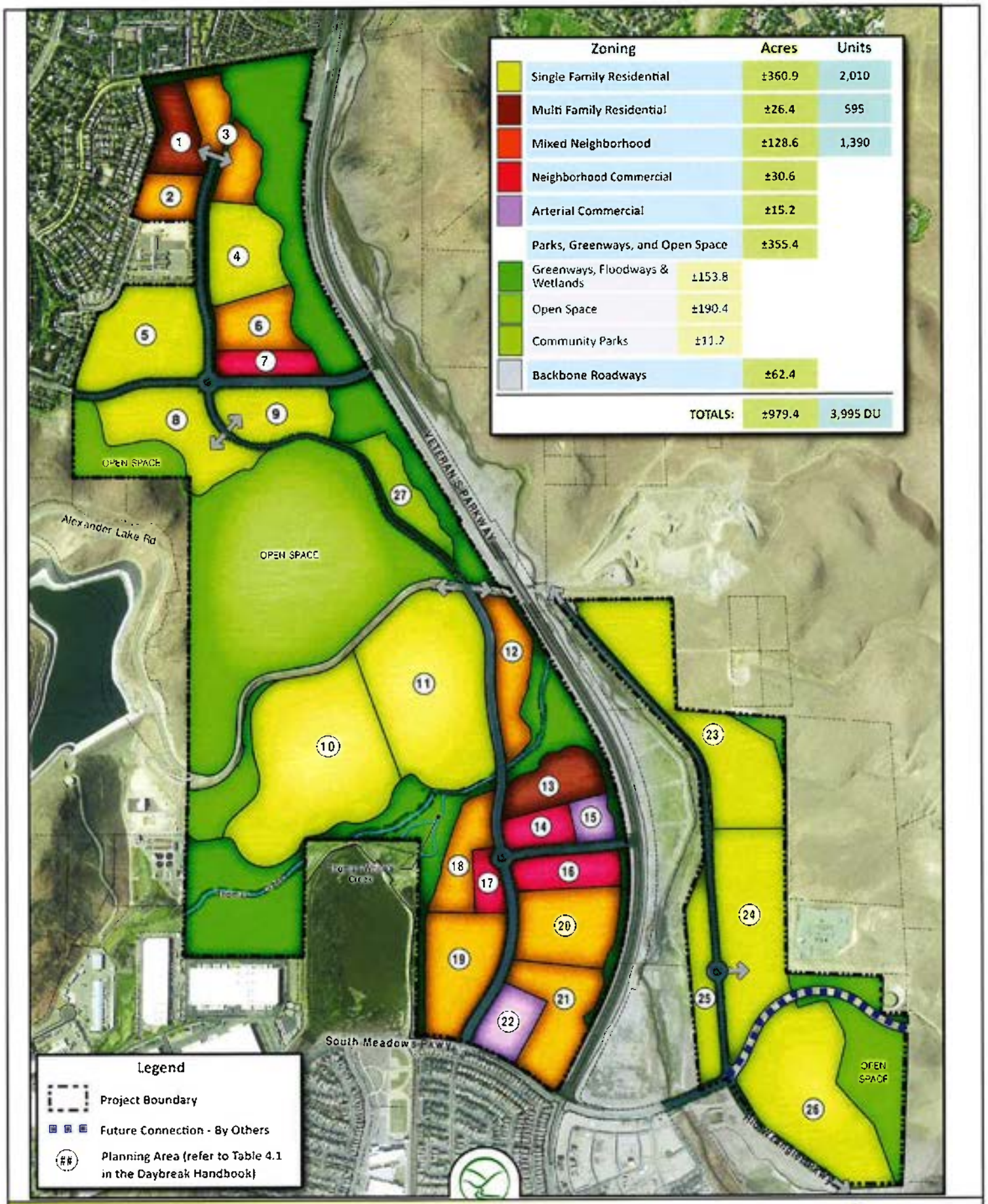


Figure 2

PUD Land Use

Daybreak

City of Reno

WOOD RODGERS

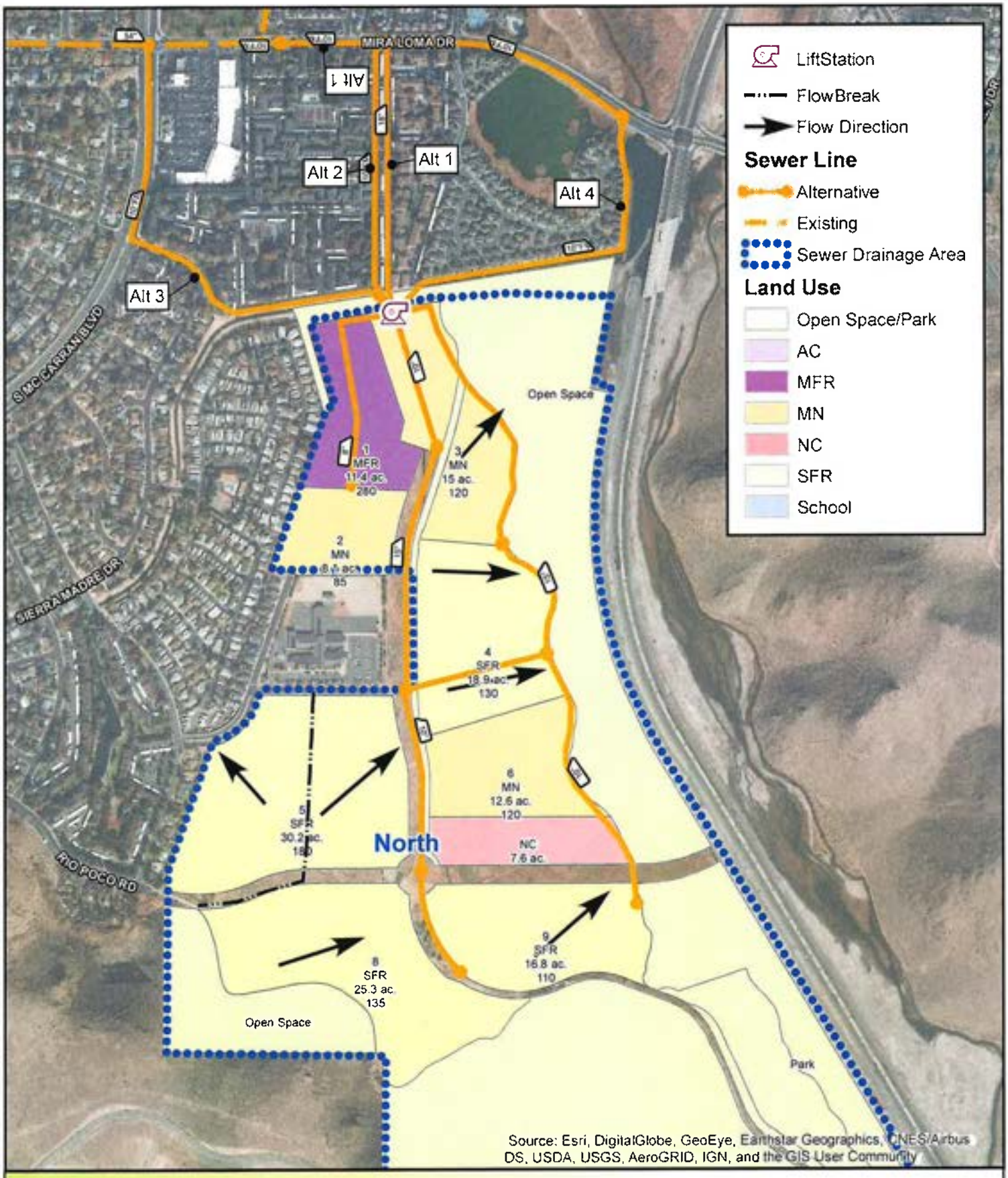


Figure 3
Preliminary Sewer System - North
Daybreak
City of Reno

WOOD RODGERS

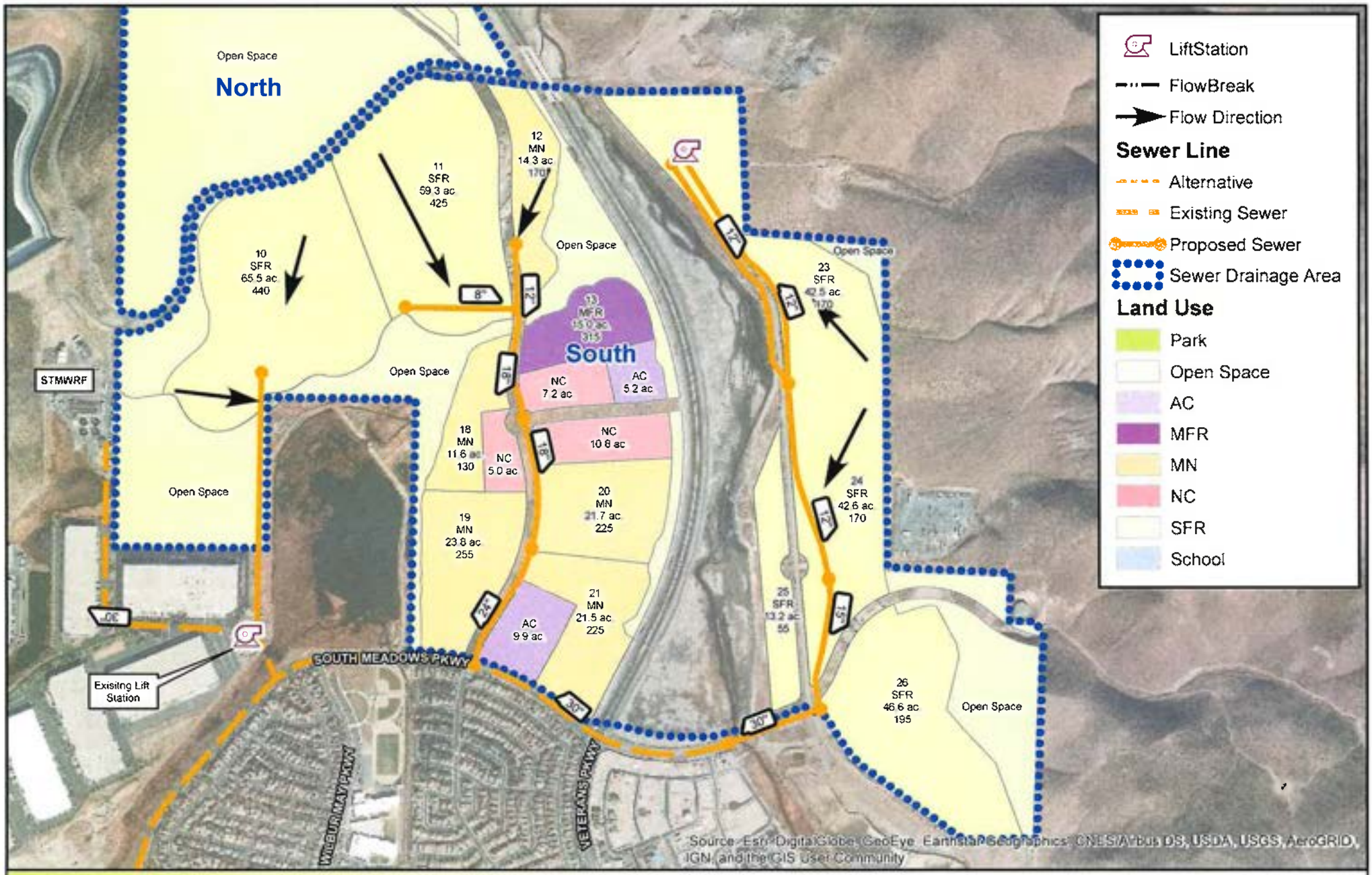


Figure 4

Preliminary Sewer System - South

Daybreak

City of Reno

WOOD RODGERS

APPENDIX 5
Wetland Delineation Report
Prepared by Salix Consulting, Inc.

Waters of the U.S.

Wetlands		Acreage
Wetland Swale		
	WS-1	0.397
	WS-2	0.015
	WS-3	0.190
	WS-4	0.347
	WS-5	0.419
	WS-6	0.047
	WS-7	0.194
	WS-8	0.121
	WS-9	0.574
	WS-10	0.078
	WS-11	0.179
	WS-12	0.421
	WS-13	0.157
	WS-14	0.144
	Subtotal	**3.283**
Seep		
	S-1	0.913
	S-2	0.327
	S-3	0.225
	S-4	0.071
	S-5	0.115
	Subtotal	**1.651**

Wetlands Cont.		Acreage
Seasonal Wetland		
	SW-1	0.535
	SW-2	0.076
	SW-3	0.389
	SW-4	2.024
	Subtotal	**3.023**
Emergent Marsh		
	EM-1	2.681
	EM-2	0.068
	EM-3	0.004
	EM-4	1.236
	Subtotal	**3.990**
Wetland Fringe		
	WF-1	3.517
	Subtotal	**3.517**
	Total Wetlands	**15.465**

Other Waters		Acreage
Intermittent Stream		
	IS-1	2.119
	Subtotal	**2.119**
Perennial Stream		
	PS-1 (Thomas Creek)	1.711
	PS-2	0.835
	PS-3 (Steamboat Creek)	1.138
	Subtotal	**3.684**
Open Water		
	Alexander Lake	55.999
	Subtotal	**55.999**
	Total Other Waters	**61.801**

Total 77.266 Acres

S McCarran Blvd
DONNER SPRINGS ELEMENTARY SCHOOL
Rio Poco Rd
Alexander Lake Rd
VETERANS PARKWAY
Steamboat Creek
39°19'32.5"N
Alexander Lake (Open Water)
Standard Culvert
Thomas Creek
S Meadows Pkwy
Veterans Pkwy
PS-1 PS-2 PS-3
EM-1 EM-2 EM-3 EM-4
WF-1
WS-1 WS-2 WS-3 WS-4 WS-5 WS-6 WS-7 WS-8 WS-9 WS-10 WS-11 WS-12 WS-13 WS-14
S-1 S-2 S-3 S-4 S-5
IS-1
SW-1 SW-2 SW-3 SW-4
1 2 3 4 5 6 7 8 10 11 12 13 14 15 16 17 18

N
1:4,200
0 180 360 540 720
Feet

Permit (±980 acres)	Culvert
Upland Data Point	Flow Direction
Wetland Data Point	5-Foot Contour
Waters Data Point	

NOTES:

COORDINATE SYSTEM: NAD 1983 State Plane Nevada West FIPS 2703 (Feet)
AERIAL IMAGE: July 13, 2016 (Google)
TOPOGRAPHIC MAP PROVIDED BY: Places Consulting Services, Inc.

Prepared By:

Salix consulting, inc.

Prepared For:

Bristol Land Company LLC
Newport Pacific Land Co.
100 Bayview Circle, Ste. 2200
Newport Beach, CA 92660

DELINEATED BY: J. GLAZNER & H. GALLANT
FIELD WORK: AUGUST - DECEMBER 2016

MAP DRAWN BY: H. GALLANT

REVISIONS:

Figure 3

WETLAND DELINEATION MAP

Daybreak

City of Reno, Washoe County, NV

October 22, 2018

WETLAND DELINEATION
FOR A

±23-ACRE PORTION OF IRRIGATED PASTURE WITHIN THE DAYBREAK STUDY AREA

CITY OF RENO, WASHOE COUNTY, NEVADA



Prepared for:
Newport Pacific Land Co., LLC
100 Bayview Circle, Suite 2200
Newport Beach, CA 92660

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11601 Blocker Drive, Ste 100
Auburn, California 95603
(530) 888-0130

NOVEMBER 2018

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WETLAND DELINEATION
FOR A ±23-ACRE PORTION OF IRRIGATED PASTURE WITHIN THE DAYBREAK STUDY AREA

INTRODUCTION

Location and Setting

Salix Consulting, Inc. (Salix) conducted a wetland delineation for a ±23-acre portion of irrigated pasture within the ±608-acre Daybreak study area located southeast of the Reno-Tahoe International Airport, Reno, Washoe County, Nevada. It is situated in Portions of Sections 33 and 34, Township 19N, and Range 20 East on the Reno, Nevada 7.5-minute USGS topographic quadrangles (Figure 1). The approximate coordinates for the center of the study area are: 39°28'12.22"N and 119°44'4.42"W.

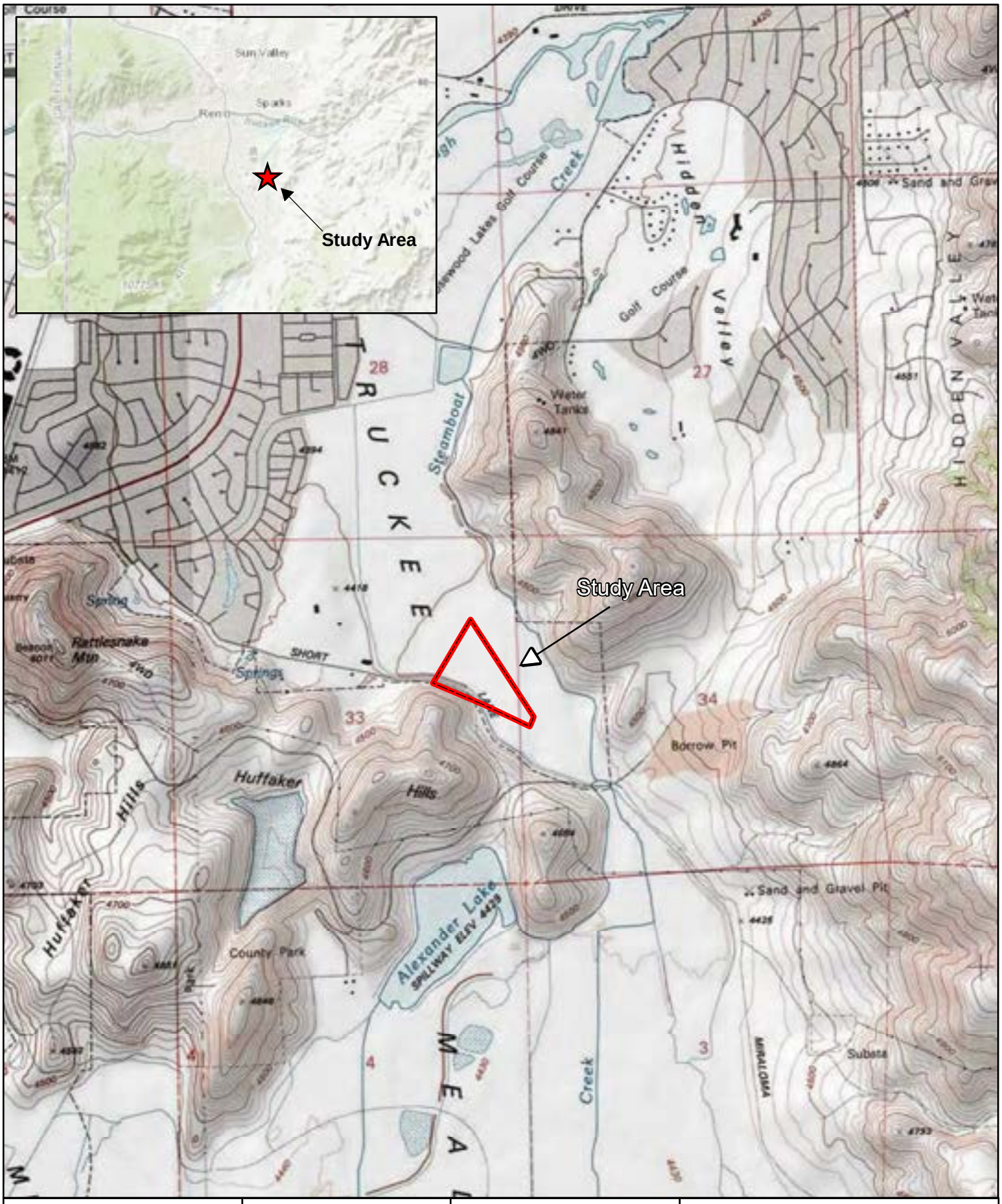
The study area occurs immediately to the west of the Huffaker Hills and to the east of and adjacent to Veterans Parkway, currently under construction. Elevations within the study area range from approximately 4403 feet to 4407 feet. Adjacent land uses are primarily agricultural and undeveloped land (Figure 2).

Background

The Study Area lies within the developing region of southeast Reno. It is situated along the Veterans Parkway, currently under construction. In 2008, a large swath of the Southeast Connector corridor was delineated by Gibson & Skordal for the Regional Transportation Commission. The Gibson & Skordal delineation included the irrigated pasture located to the west of the Parkway alignment and characterized a portion of the pasture as "seasonal wetland meadow." The source of the water supporting this feature was thought to be Steamboat Creek. Impacts to wetlands within the Parkway footprint were mitigated for that project.

Since the delineation was verified, construction has commenced on the future Veterans Parkway. The alignment lies between the pasture and the Creek, effectively removing the wetland's source of water. This delineation has been conducted to determine if, in fact, the feature to the west of the Parkway as delineated by Gibson & Skordal is still a functioning wetland.

In addition, some adjustments were needed along the southern boundary of the irrigated pasture, at the base of the hill. The drainage ditch/intermittent stream boundary configuration is a bit different than previously mapped, and there are two seeps at the toe of the hill that were not on the Gibson & Skordal map. These have been added.



Salix consulting, inc.

N

0 1,000 2,000

Feet

Source Maps: USGS Topographic Map
Reno Quad 1:24,000
Portions of Sections: 33+34
Portions of Township:19N
Range: 20E

Figure 1

SITE AND VICINITY MAP

Daybreak Irrigated Pasture

City of Reno, Washoe County, NV



Salix consulting, inc.

N

0 100 200

Feet

Study Area (±23 acres)

Irrigation Control Structure

Culvert

Imagery: 3-20-18 Salix Consulting, Inc.

Figure 2

AERIAL MAP

Daybreak Irrigated Pasture

City of Reno, Washoe County, NV

CONTACT INFORMATION

Applicant:
Newport Pacific Land Co., LLC
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Newport Beach, CA 92660
Phone: (949) 945-2297
Contact: Mark Burkes

Delineated by:
Salix Consulting, Inc.
11601 Blocker Drive, Ste. 100
Auburn, California 95603
Phone: (530) 888-0130
Contact: Jeff Glazner

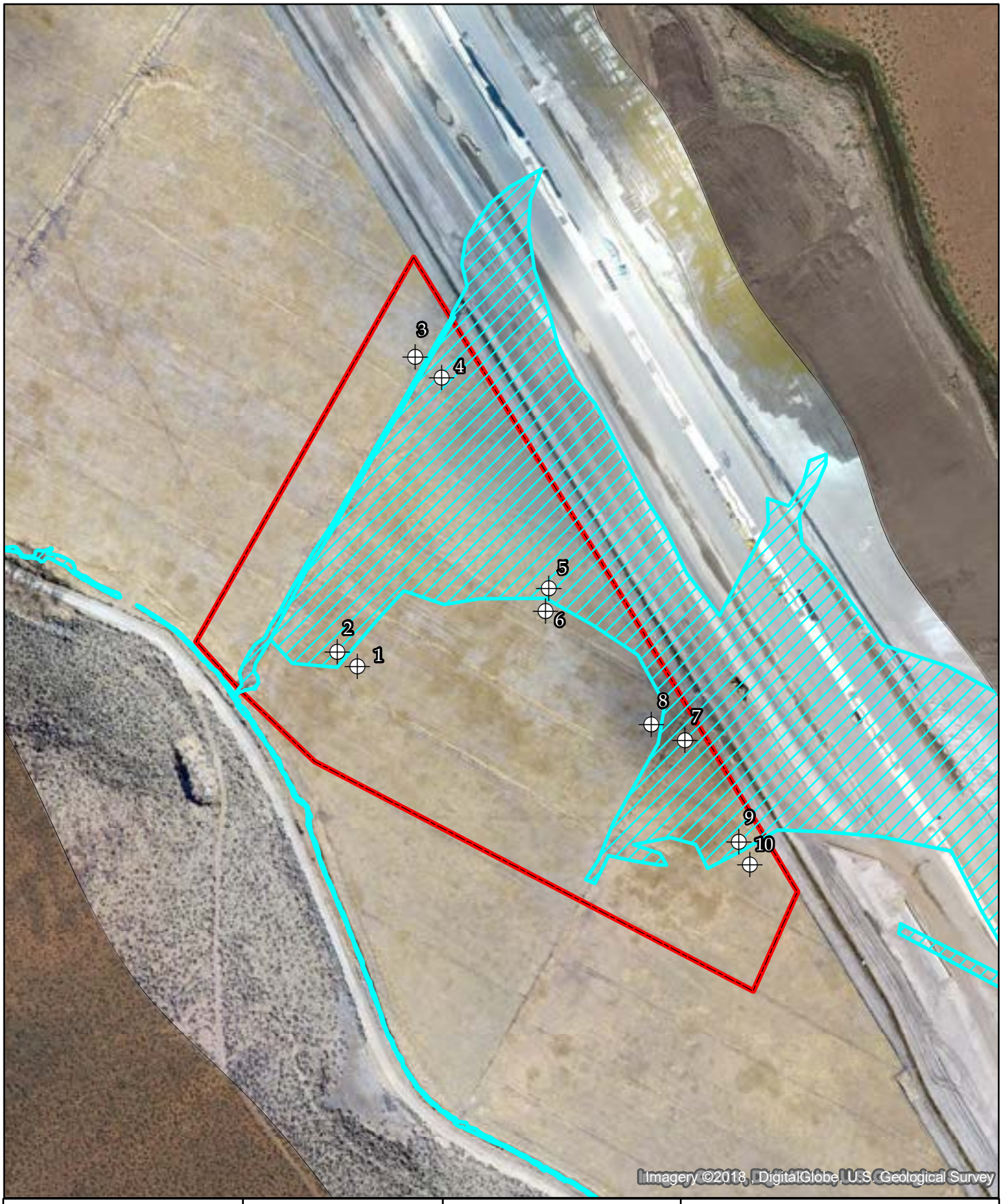
METHODOLOGY

The wetland hydrology analysis of the irrigated pasture portion of this delineation was conducted during March and April 2018 by Jeff Glazner. The timing of this delineation was chosen to coincide with the spring high groundwater period as discussed further below. Waters of the U.S. located to the south of the irrigated pasture were delineated in October 2018. The delineation was conducted according to the 1987 Corps Manual (Environmental Laboratory 1987) as amended by the Arid West Regional Supplement (U.S. Army Corps of Engineers 2008). A new orthomosaic aerial photograph was generated with a UAV, and ground photos were taken during each site visit. A Trimble GeoXT 6000 GPS (submeter) was used for location mapping of any features. Three parameter data sheets (Appendix A) were filled out at 13 locations.

Information on soils of the study area was obtained from the U.S. Department of Agriculture – National Resource Conservation Service's online Web Soil Survey (NRCS 2018). In the field, a Munsell Color chart was used to determine moist soil colors. Appendix B is a list of plants observed during the delineation, along with the scientific name and wetland status of each species. Where a plant species observed has a wetland indicator status (not UPL), plant nomenclature follows Lichvar et.al. (2016). Otherwise, species names are aligned with the *The Jepson Manual* (Baldwin et.al. 2012).

Because the majority of the site has been an irrigated pasture for decades and is regularly flooded during the warm season, hydric soils have developed, as well as a hydrophytic plant community of mostly rhizomatous species. Because of these factors, the best way to determine if the pasture area contains wetland hydrology is to observe it during the early spring when groundwater is highest, and near surface soil temperatures rise above 41^{o} F. Thus, ten backhoe pits, 30-36 inches deep, were excavated on either side of the mapped wetland line (Figure 3). The pits were dug on March 12 and observed on six occasions on March 12, 19, 27, April 5, 17, and 26, 2018. The pits were filled at the end of April for the safety of the cattle.

The purpose of digging the pits was to monitor the depth of soil saturation above the groundwater table, and measure soil temperature at a depth of twelve inches below the soil surface. Timing of these measurements was intended to coincide with the wet season and the expected peak of groundwater. The observations ceased when the depth to groundwater sustained a trend downward (in late April). All data were collected and are included in this report.



Salix consulting, inc.

N

0 100 200

Feet

Study Area (±10 acres)

2008 Skordal WD

Backhoe Pits

Imagery: 3-20-18 Salix Consulting, Inc.

Figure 3

2008 DELINEATION

Daybreak Irrigated Pasture

City of Reno, Washoe County, NV

FINDINGS

Climate

Reno sits at the western border of Nevada, in a high desert at the foot of the Sierra Nevada mountain range. Its downtown area (along with Sparks) occupies a valley informally known as the Truckee Meadows. Reno is located about 20 miles east of the Sierra Nevada and Lake Tahoe, in the rain shadow of the Sierra Nevada. Annual rainfall averages 7.48 inches. Despite this low amount of rainfall per year, Reno features a steppe climate. The city averages 300 days of sunshine per year.

Most rainfall occurs in winter and spring, averaging 7.48 inches per year. Warm season thunderstorms can occur between April and October. The eastern side of the city and the mountains east of Reno tend to be prone to thunderstorms more often. These storms may be severe because an afternoon downslope west wind (northwestern Nevada's distinctive wind, referred to as a "Washoe Zephyr") can develop in the Sierra Nevada, causing air to be pulled down in the Sierra Nevada and Reno, destroying or preventing thunderstorms, but the same wind can push air upwards against the Virginia Range and other mountain ranges east of Reno, creating powerful thunderstorms. The region is windy throughout the year.

Winter snowfall is usually light to moderate, averaging 21.5 inches annually. Snowfall varies with the lowest amounts occurring at the lowest part of the valley at and east of the Reno–Tahoe International Airport (approx. 4,404 feet elevation). The higher foothills of the Carson Range, just a few miles west of downtown, can receive up to two to three times as much annual snowfall. The mountains of the Virginia Range to the east can receive more summer thunderstorms and precipitation, and around twice as much annual snowfall above 5,500 feet. However, snowfall increases in the Virginia Range are less dramatic as elevation climbs than in the Carson Range to the west, because the Virginia Range is well within the rain shadow of the Sierra Nevada and Carson Range.

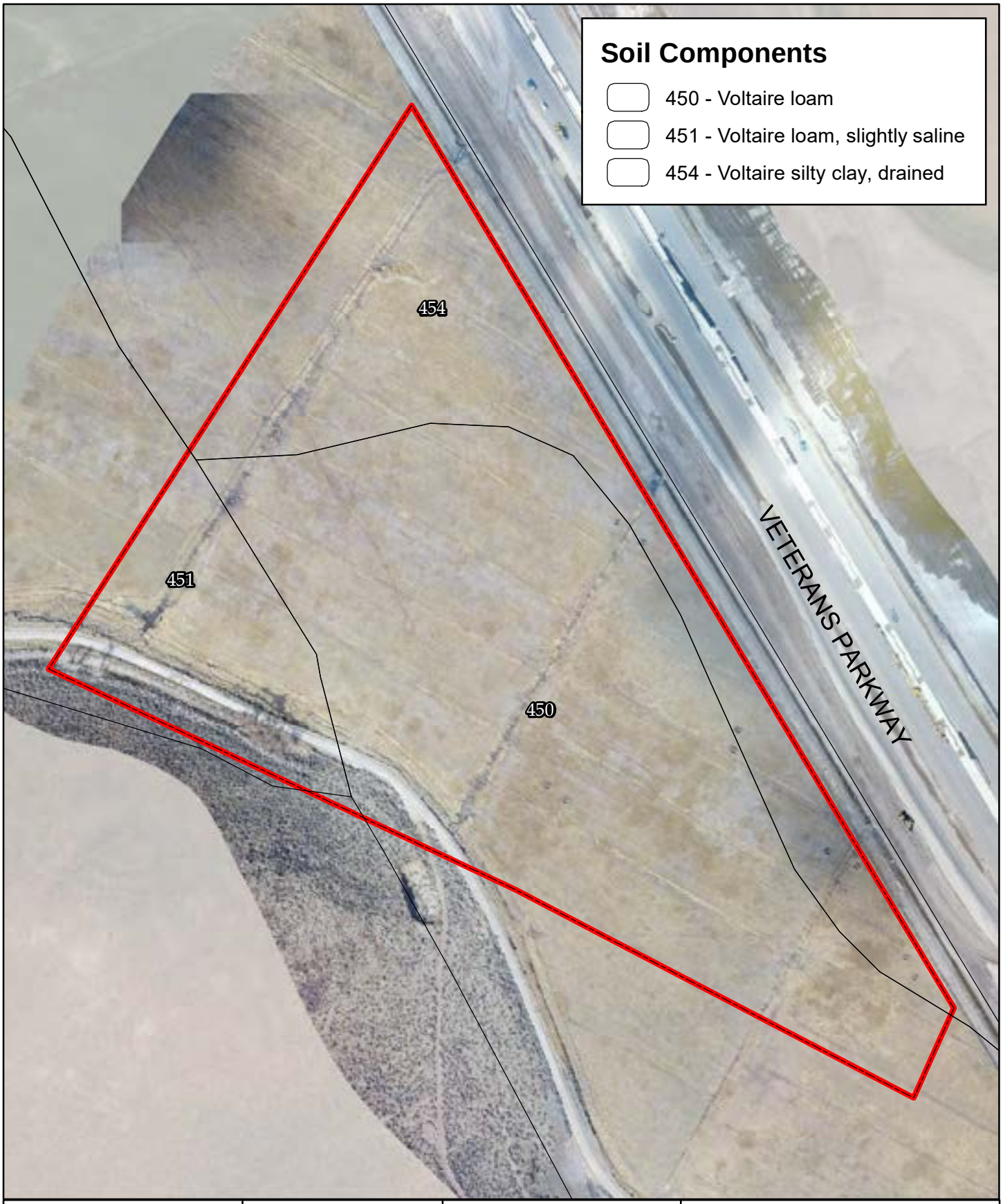
The warm season lasts from May through September, with an average daily high temperature above 84°F. On average, the hottest months are July and August with an average high of 92°F and low of 57°F. The coolest months are December and January, with an average daily high temperature around 45°F and average daily low temperature around 25°F. Temperatures in the region are mild but can fluctuate as much as 45 degrees between day and night. The temperature at night during the summer rarely rises above 60 degrees.

Soils

Two (2) soil units have been mapped within the study area (Figure 4) and are described below (NRCS 2016):

450 - Voltaire loam

The Voltaire, slightly saline component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on semibolsons, flood plains. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches.



Salix consulting, inc.

N

0 100 200

Feet

Study Area
(±23 acres)

Imagery: 3-20-18 Salix Consulting, Inc.

Figure 4

SOIL COMPONENTS MAP

Daybreak Irrigated Pasture

City of Reno, Washoe County, NV

The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 9 inches during February, March, April, May. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land capability classification is 6w. Irrigated land capability classification is 4w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 22 within 30 inches of the soil surface.

454 - Voltaire silty clay, drained

The Voltaire, drained component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains, semi-bolsons. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 66 inches during January, February, March, April, May, December. Organic matter content in the surface horizon is about 4 percent. This component is in the R026XY030NV Loamy Bottom 8-12 P.z. ecological site. Nonirrigated land capability classification is 6w. Irrigated land capability classification is 3w. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 22 within 30 inches of the soil surface.

Vegetation

The study area occurs within the Sierra Nevada-Influenced Semiarid Hills and Basins ecoregion (13aa) as defined by the U. S. Geologic Service, which includes the basins and lower mountain slopes immediately east of the Sierra Nevada that are affected by its climate or that have its characteristic granitic substrate. Ecoregion 13aa is associated with the semiarid shrub community near the Sierra Nevada front. The delineation was confined to the irrigated pasture, a non-natural habitat type.

Irrigated Pasture

Almost all of the study area lies within the irrigated pasture, located to the west and adjacent to the Veterans' Parkway (under construction), which was a part of a much larger irrigated pasture area previously delineated for the Parkway project. The pasture is used for a cow-calf operation, and cattle are present on the property from November through April. Flood irrigation is managed from April through October. Due to construction of the Parkway, this "remainder" portion of the pasture has been separated from the source of water that once supported the wetland. Vegetation in the pasture is largely rhizomatous species that were established during irrigation periods and are persistent. Typical species include Baltic rush (*Juncus balticus*), several sedge species, including Nebraska sedge (*Carex nebrascensis)*, broadleaf pepperweed (*Lepidium*

latifolium), meadow barley *(Hordeum brachyantherum*), and in a few locations where salt accumulates, saltgrass (*Distichlis spicata*). Species identification was difficult during this study because it began early in the growing season prior to flowering. And in addition, the site is heavily grazed, so the effect is similar to a "mowed lawn."

The irrigated pasture is bordered on the south by a ditch that carries the water that irrigates the pasture. The ditch is bordered by Rio Poco Ranch Road, a gravel road bisecting the ranch, much of which borders the irrigated pasture. South/upslope of the road is a steep hill that supports native vegetation, primarily sagebrush scrub habitat.

Hydrology

Surface water

The study area occurs within the Truckee watershed (Hydrologic Unit Code 16050102). The Truckee River flows northeasterly from its outlet at Lake Tahoe for 121 miles to its terminus in Pyramid Lake in the Great Basin. Pyramid Lake is the geographic sink of the Truckee River Basin, and thus, the Truckee River lies within an endorheic (closed, not draining to the ocean) basin. The Truckee River basin encompasses about 3,060 square miles. The Reno region lies within the Middle Truckee River subunit.

Water falling on the study area drains in a northerly direction and into an unnamed stream that is a tributary to Steamboat Creek along the project site's northern property line. This stream flows east for a short distance where it enters Steamboat Creek. Steamboat Creek flows north for 3 to 4 miles and into the Truckee River.

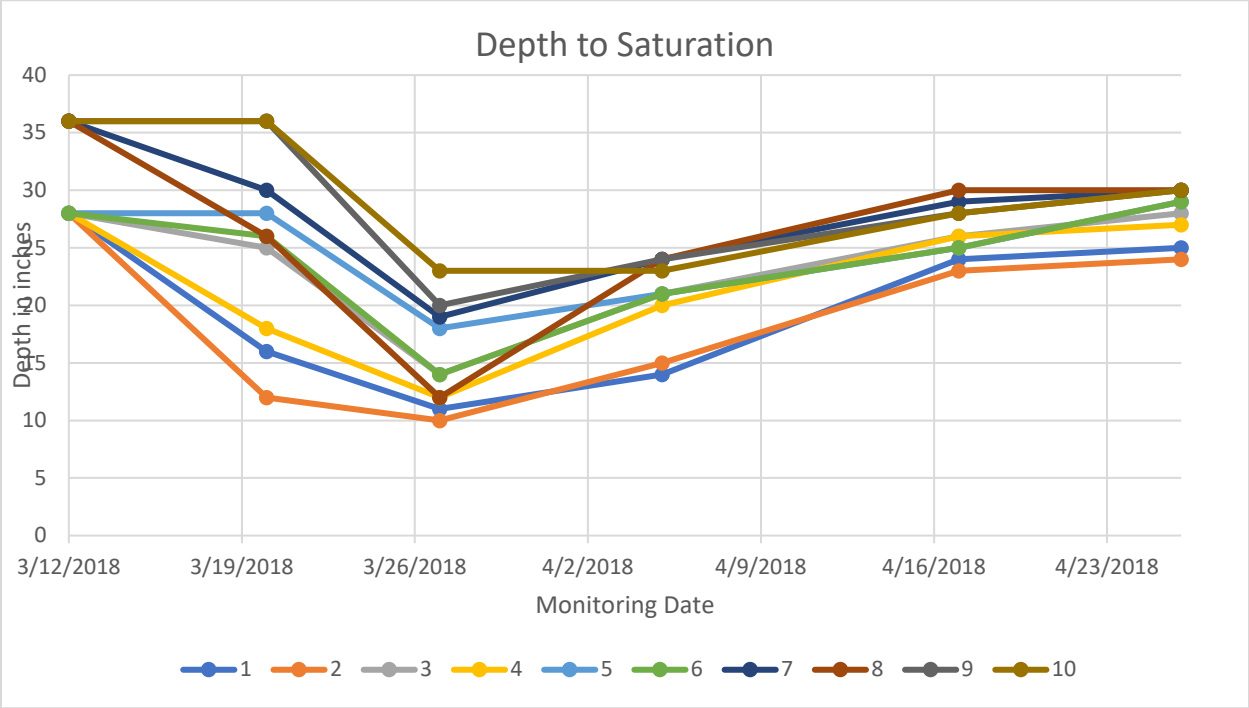
Groundwater

As explained in Methodology above, subsurface exploration was conducted at ten (10) test pits located inside and outside of the edges of the previously mapped seasonal wetland meadow (Figure 3). The pits were monitored six times at regular intervals between March 12, 2018 and April 26, 2018 to track depth to soil saturation and soil temperature at twelve inches below ground surface. Representative site photos of each test pit are included at the end of this document (Figures 5a through 5j).

Corps of Engineers guidelines for wetland hydrology indicators in the Arid West state that Indicator A2 for High Water Table "consists of the direct, visual observation of the water table 12 inches or less below the surface in a soil pit, auger hole, or shallow monitoring well" (*U.S. Army Corps of Engineers, 2008*). As expected, depth to soil saturation was shallowest at the end of March. As indicated in Table 1, depth to saturation throughout the study area ranged from ten inches to greater than thirty inches on March 27. It was ten inches at its shallowest and twenty-three at its deepest on March 27. On the last observation day (4/26), depth to saturation ranged from twenty-four inches to thirty inches below the surface. The following table and graph illustrate these findings.

Table 1

Pit #	Depth to Saturation (inches)					
	3/12/18	3/20/18	3/27/18	4/5/18	4/17/18	4/26/18
1	28	16	11	14	24	25
2	28	12	10	15	23	24
3	28	25	14	21	26	28
4	28	18	12	20	26	27
5	28	28	18	21	25	29
6	28	26	14	21	25	29
7	30+	30	19	24	29	29
8	30+	26	12	24	30	30
9	30+	30+	20	24	28	30
10	30+	30+	23	23	28	30

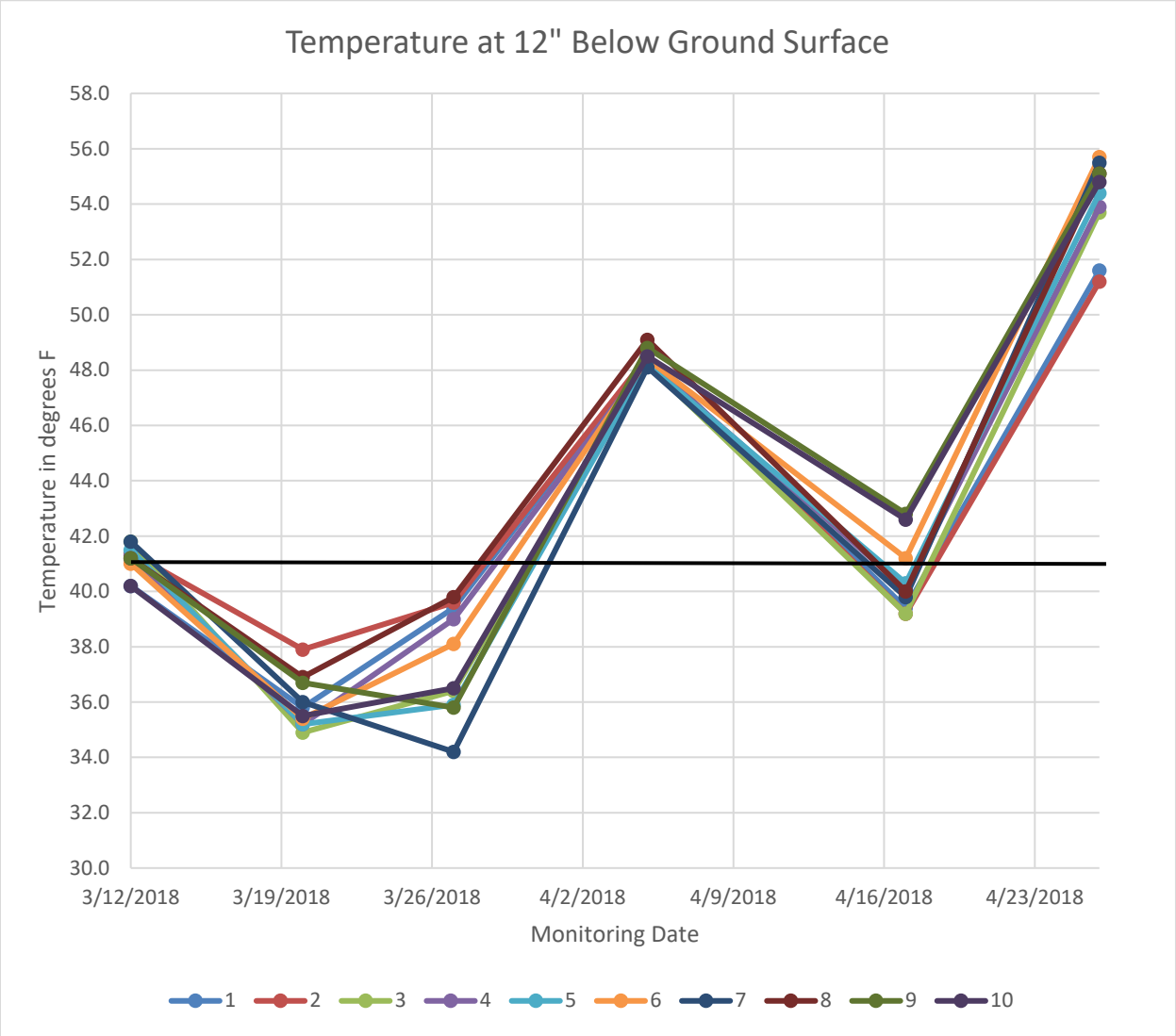


Note: Colored lines indicate numbered pits.

The Corps of Engineers guidelines for wetland hydrology indicators in the Arid West also indicate that biological activity (the growing season) has begun when the soil temperature at 12 inches depth is 41° F or higher. Soil temperatures at twelve inches below the ground surface ranged from thirty-four degrees F to fifty-six degrees F during the observation period. On the initial site observation date (3/12) soil temperatures were mostly right at 41° F. On March 20, soil temperatures ranged from 35° F to 37° F, and on March 27, soil temperatures ranged from 34° F to almost 40° F. On April 5, nearly all soils pits had soil temperatures of 48° - 49° F. The following table and graph illustrate these findings.

Table 2

Pit #	Temp at 12" below ground surface (F)					
	3/12/18	3/20/18	3/27/18	4/5/18	4/17/18	4/26/18
1	40.2	35.8	39.4	48.5	39.4	51.6
2	41.4	37.9	39.6	48.5	39.2	51.2
3	41.8	34.9	36.4	48.2	39.2	53.7
4	41.3	35.2	39	48.3	40.1	53.9
5	41.5	35.2	35.9	48.2	40.3	54.4
6	41	35.4	38.1	48.4	41.2	55.7
7	41.8	36	34.2	48.1	39.8	55.5
8	41.2	36.9	39.8	49.1	40	55.1
9	41.2	36.7	35.8	48.8	42.8	55.1
10	40.2	35.5	36.5	48.5	42.6	54.8



Note: Colored lines indicate numbered pits. Solid black horizontal line indicates 41°F.

In summary, the only time there was saturation in the upper twelve inches was on March 27 in four pits (Pit 1/11", Pit 2/10", Pit 4/12" and Pit 8/12"). No other dates exhibited soil saturation with the upper twelve inches. When soil saturation was exhibited in the upper twelve inches, in all cases, soil temperatures were below 41° F.

Waters of the United States

After analysis of the property's hydrology and features, it was determined that two types of waters of the U.S (WOUS) are present, both located to the south of the irrigated pasture: intermittent stream and seep. Table 1 provides an acreage summary of waters of the United States on the site. Site photos of the WOUS are included in Figures 5k and 5l, and Figure 6 is the wetland delineation map.

Table 3.
Waters of the United States within a Portion of Daybreak Irrigated Pasture

Type	Acreage
Waters of the U.S.:	
Intermittent Stream	0.192
Seep	0.117
Total	**±0.309**

Irrigated Pasture

The water source that supported the wetland that was mapped in 2008 by Gibson and Skordal as a part of the Southeast Connector project was eliminated with the building of the roadway. Water used to flow from Steamboat Creek west into the irrigated pasture. When the Southeast Connector was built, Steamboat Creek water was cut off from flowing directly into the irrigated pasture. The pasture is now irrigated from water that originates further southeast of the pasture and that flows through a series of channels and control structures. All water used for flood irrigation is managed through the canal system and there is no incidental flooding of the pastures through normal rainfall. These findings were confirmed during the spring of 2018 prior to initiating seasonal irrigation.

Intermittent Stream

An irrigation ditch (0.192-acre) flowing northwest along the Rio Poco Ranch Road carries water from the south. Water in this ditch is directed into it from Thomas Creek and possibly Steamboat Creek. The flow of water was recently adjusted when the Southeast Connector was built. The purpose of maintaining flows in this stream is to service the pasture. Water not used for irrigation flows into the unnamed tributary at the northern property line. The ditch is deeply incised, and the cattle have access to it, so it is highly disturbed.

Seep

Two seeps in the form of toeslope drains are mapped in the study area (0.117 acre). These features are extensions of mapped wetlands shown on our 2017 delineation, for

which a Preminary Jurisdictional Determination was issued in July 2017. The seeps extend several hundred feet further to the east in the same landscape positions. Excess water flows through a culvert under Rio Poco Ranch Road into the intermittent stream at the edge of the irrigated pasture. The seeps support a hydrophytic plant community, and the soils show evidence of well-developed hydric soils formation resulting from long term saturation (Figures 5k and 5l).



Photo date 3-12-18



Photo date 3-27-18



Photo date 4-05-18



Photo date 4-26-18

Salix consulting, inc.

Figure 5a

Pit 1 SITE PHOTOS

Daybreak Irrigated Pasture

Reno, Washoe County, NV



Photo date 3-12-18



Photo date 3-27-18



Photo date 4-05-18



Photo date 4-26-18

Salix consulting, inc.

Figure 5b

Pit 2 SITE PHOTOS

Daybreak Irrigated Pasture

Reno, Washoe County, NV



Photo date 3-12-18



Photo date 3-27-18



Photo date 4-05-18



Photo date 4-26-18

Figure 5c

Pit 3 SITE PHOTOS

Daybreak Irrigated Pasture

Reno, Washoe County, NV



Photo date 3-12-18



Photo date 3-27-18



Photo date 4-05-18



Photo date 4-26-18

Figure 5d

Pit 4 SITE PHOTOS

Daybreak Irrigated Pasture

Reno, Washoe County, NV



Photo date 3-12-18



Photo date 3-27-18



Photo date 4-05-18



Photo date 4-26-18

Figure 5e

Pit 5 SITE PHOTOS

Daybreak Irrigated Pasture

Reno, Washoe County, NV



Photo date 3-12-18



Photo date 3-27-18



Photo date 4-05-18



Photo date 4-26-18

Salix consulting, inc.

Figure 5f

Pit 6 SITE PHOTOS

Daybreak Irrigated Pasture

Reno, Washoe County, NV



Photo date 3-12-18



Photo date 3-27-18



Photo date 4-05-18



Photo date 4-26-18

Salix consulting, inc.

Figure 5g

Pit 7 SITE PHOTOS

Daybreak Irrigated Pasture

Reno, Washoe County, NV



Photo date 3-12-18



Photo date 3-27-18



Photo date 4-05-18



Photo date 4-26-18

Salix consulting, inc.

Figure 5h

Pit 8 SITE PHOTOS

Daybreak Irrigated Pasture

Reno, Washoe County, NV



Photo date 3-12-18



Photo date 3-27-18



Photo date 4-05-18



Photo date 4-26-18

Salix consulting, inc.

Figure 5i

Pit 9 SITE PHOTOS

Daybreak Irrigated Pasture

Reno, Washoe County, NV



Photo date 3-12-18



Photo date 3-27-18



Photo date 4-05-18



Photo date 4-26-18

Salix consulting, inc.

Figure 5j

Pit 10 SITE PHOTOS

Daybreak Irrigated Pasture

Reno, Washoe County, NV



Looking southwest along Rio Poco Rd. Seeps 3 and 4 located at toe of hillside on right. Intermittent stream 1 is located between road and irrigated pasture on left. *Photo Date 10-10-17*



Seep 3 at toe of slope with tule growth. *Photo Date 10-10-17*

Salix consulting, inc.

Figure 5k

SITE PHOTOS

Daybreak Irrigated Pasture

City of Reno, Washoe County, NV



Looking southeast into study area at Seeps 3 and 4 and Intermittent Stream 1.
Photo Date 10-10-18



Looking southwest at southern edge of study area and Waters of the U.S.
Photo Date 10-10-18

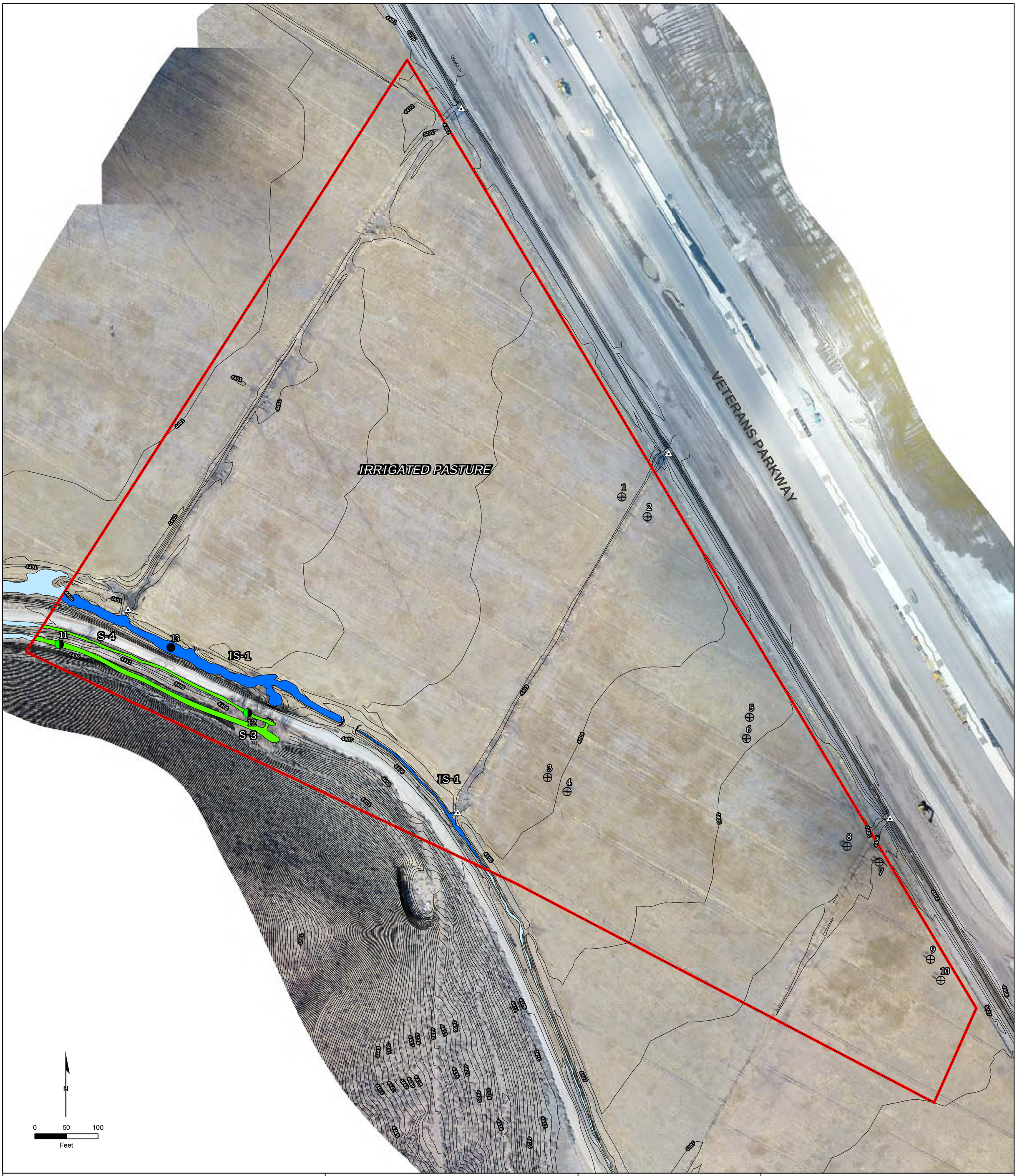
Salix consulting, inc.

Figure 5l

AERIAL PHOTOS

Daybreak Irrigated Pasture

City of Reno, Washoe County, NV



Prepared By:

Salix consulting, inc.

Prepared For:

Bristol Land Company LLC
Newport Pacific Land Co.
100 Bayview Circle, Ste. 2200
Newport Beach, CA 92660

DELINEATED BY: J. Glazner
DRAWN BY: H. Gallant

COORDINATE SYSTEM: NAD83 State Plane Nevada West

Waters of the U.S.

		Acreage
Intermittent Stream		
	IS-1	0.192
	Subtotal	**0.192**
Seep		
	S-3	0.077
	S-4	0.040
	Subtotal	**0.117**

Total 0.309 acres

- Study Area (±23 acres)
- Previously Delineated WOTUS
- Upland Data Point
- Waters Data Point
- Wetland Data Point
- Irrigation Control Structure
- Culvert
- 1-ft Contour

Imagery: 3-20-18 Salix Consulting, Inc.

Figure 6

WETLAND DELINEATION

Daybreak Irrigated Pasture

City of Reno, Washoe County, NV

November 11, 2018

REFERENCES AND OTHER SOURCES

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Appendix A.
Wetland Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Daybreak Irrigated Pasture City/County: Reno/Washoe Sampling Date: 4-17-18

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 01

Investigator(s): Jeff Glazner Section, Township, Range: S33-34, T19N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR): LRR D Lat: 39.4712498 Long: -119.7349848 Datum: NAD83

Soil Map Unit Name: 450 - Voltaire loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ____ No ✓	

Remarks:

Area just outside of previously mapped wetland. Lacks wetland hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Juncus balticus	20	X	FACW
2. unknown grasses	80	X	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Highly grazed pasture. No plants in flower, and all plants grazed. All species assumed to be FAC or FACW.

SOIL

Sampling Point: 01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1	100						sandy loam
6-16	10YR 2/1	100						clayey loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Roots and rhizomes prevalent in upper soil column. Soils have been irrigated for decades.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Observations through spring season did not indicate site has wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Daybreak Irrigated Pasture City/County: Reno/Washoe Sampling Date: 4-17-18

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 02

Investigator(s): Jeff Glazner Section, Township, Range: S33-34, T19N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR): LRR D Lat: 39.47116546 Long: -119.7348415 Datum: NAD83

Soil Map Unit Name: 450 - Voltaire loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ____ No ✓	

Remarks:

Data point within previously mapped wetland. Lacks wetland hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Juncus balticus	25	X	FACW
2. unknown grasses	75	X	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species ____	x 3 =	____
FACU species ____	x 4 =	____
UPL species ____	x 5 =	____
Column Totals: ____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Highly grazed pasture. No plants in flower, and all plants grazed. All species assumed to be FAC or FACW.

SOIL

Sampling Point: 02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/1	100						sandy loam
5-16	10YR 2/1	100						clayey loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Roots and rhizomes prevalent in upper soil column. Soils have been irrigated for decades.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Observations through spring season did not indicate site has wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Daybreak Irrigated Pasture City/County: Reno/Washoe Sampling Date: 4-17-18

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 03

Investigator(s): Jeff Glazner Section, Township, Range: S33-34, T19N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR): LRR D Lat: 39.47002641 Long: -119.7353802 Datum: NAD83

Soil Map Unit Name: 450 - Voltaire loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point just outside of previously mapped wetland. Lacks wetland hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Juncus balticus	10		FACW
2. unknown grasses	80	X	FAC
3. Carex sp.	10		FACW
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Highly grazed pasture. No plants in flower, and all plants grazed. All species assumed to be FAC or FACW.

SOIL

Sampling Point: 03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/2	100						sandy loam
5-16	10YR 3/1	100						clayey loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Roots and rhizomes prevalent in upper soil column. Soils have been irrigated for decades.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Observations through spring season did not indicate site has wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Daybreak Irrigated Pasture City/County: Reno/Washoe Sampling Date: 4-17-18

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 04

Investigator(s): Jeff Glazner Section, Township, Range: S33-34, T19N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR): LRR D Lat: 39.46996649 Long: -119.7352715 Datum: NAD83

Soil Map Unit Name: 450 - Voltaire loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

Data point within previously mapped wetland. Lacks wetland hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Juncus balticus	10		FACW
2. unknown grasses	80	X	FAC
3. Carex sp.	10		FACW
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Highly grazed pasture. No plants in flower, and all plants grazed. All species assumed to be FAC or FACW.

SOIL

Sampling Point: 04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-8	10YR 3/1	100						sandy loam
8-16	10YR 2/1	100						clayey loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Roots and rhizomes prevalent in upper soil column. Soils have been irrigated for decades.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Observations through spring season did not indicate site has wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Daybreak Irrigated Pasture City/County: Reno/Washoe Sampling Date: 4-17-18

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 05

Investigator(s): Jeff Glazner Section, Township, Range: S33-34, T19N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR): LRR D Lat: 39.4702993 Long: -119.7342544 Datum: NAD83

Soil Map Unit Name: 450 - Voltaire loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ____ No ✓	

Remarks:

Data point within previously mapped wetland. Lacks wetland hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Juncus balticus	5		FACW
2. unknown grasses	90	X	FAC
3. Carex sp.	5		FACW
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Highly grazed pasture. No plants in flower, and all plants grazed. All species assumed to be FAC or FACW.

SOIL

Sampling Point: 05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-7	10YR 3/1	100						sandy loam
7-16	10YR 2/1	100						clayey loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Roots and rhizomes prevalent in upper soil column. Soils have been irrigated for decades.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Observations through spring season did not indicate site has wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Daybreak Irrigated Pasture City/County: Reno/Washoe Sampling Date: 4-17-18

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 06

Investigator(s): Jeff Glazner Section, Township, Range: S33-34, T19N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR): LRR D Lat: 39.47020653 Long: -119.7342694 Datum: NAD83

Soil Map Unit Name: 450 - Voltaire loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

Data point just outside of previously mapped wetland. Lacks wetland hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. unknown grasses	95	X	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Highly grazed pasture. No plants in flower, and all plants grazed. All species assumed to be FAC or FACW.

SOIL

Sampling Point: 06

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-3	10YR 3/2	100						sandy loam
3-8	10YR 3/1	100						sandy loam
8-16	10YR 2/1	100						clayey loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Roots and rhizomes prevalent in upper soil column. Soils have been irrigated for decades.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Observations through spring season did not indicate site has wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Daybreak Irrigated Pasture City/County: Reno/Washoe Sampling Date: 4-17-18

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 07

Investigator(s): Jeff Glazner Section, Township, Range: S33-34, T19N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR): LRR D Lat: 39.46967827 Long: -119.7335178 Datum: NAD83

Soil Map Unit Name: 450 - Voltaire loam NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Data point within previously mapped wetland. Lacks wetland hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Juncus balticus	10		FACW
2. unknown grasses	85	X	FAC
3. Carex sp.	5		FACW
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Highly grazed pasture. No plants in flower, and all plants grazed. All species assumed to be FAC or FACW.

SOIL

Sampling Point: 07

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-2	10YR 3/2	100						sandy loam
2-6	10YR 3/1	100						sandy loam
6-16	10YR 2/1	100						clayey loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Roots and rhizomes prevalent in upper soil column. Soils have been irrigated for decades.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Observations through spring season did not indicate site has wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Daybreak Irrigated Pasture City/County: Reno/Washoe Sampling Date: 4-17-18

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 08

Investigator(s): Jeff Glazner Section, Township, Range: S33-34, T19N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR): LRR D Lat: 39.46974417 Long: -119.7336981 Datum: NAD83

Soil Map Unit Name: 450 - Voltaire loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ____ No ✓	

Remarks:

Data point just outside of previously mapped wetland. Lacks wetland hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Juncus balticus	5		FACW
2. unknown grasses	85	X	FAC
3. Carex sp.	5		FACW
4. Lepidium latifolium	5		FAC
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Highly grazed pasture. No plants in flower, and all plants grazed. All species assumed to be FAC or FACW.

SOIL

Sampling Point: 08

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-6	10YR 3/1	100						sandy loam
6-16	10YR 2/1	100						clayey loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Roots and rhizomes prevalent in upper soil column. Soils have been irrigated for decades.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Observations through spring season did not indicate site has wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Daybreak Irrigated Pasture City/County: Reno/Washoe Sampling Date: 4-17-18

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 09

Investigator(s): Jeff Glazner Section, Township, Range: S33-34, T19N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR): LRR D Lat: 39.46925922 Long: -119.7332219 Datum: NAD83

Soil Map Unit Name: 450 - Voltaire loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ____ No ✓	

Remarks:

Data point within previously mapped wetland. Lacks wetland hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Juncus balticus	10		FACW
2. unknown grasses	85	X	FAC
3. Carex sp.	5		FACW
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Highly grazed pasture. No plants in flower, and all plants grazed. All species assumed to be FAC or FACW.

SOIL

Sampling Point: 09

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-5	10YR 3/1	100						sandy loam
5-16	10YR 2/1	100						clayey loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Roots and rhizomes prevalent in upper soil column. Soils have been irrigated for decades.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Observations through spring season did not indicate site has wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Daybreak Irrigated Pasture City/County: Reno/Washoe Sampling Date: 4-17-18

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 10

Investigator(s): Jeff Glazner Section, Township, Range: S33-34, T19N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0-1

Subregion (LRR): LRR D Lat: 39.46916713 Long: -119.7331626 Datum: NAD83

Soil Map Unit Name: 450 - Voltaire loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ____ No ✓	

Remarks:

Data point just outside of previously mapped wetland. Lacks wetland hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Juncus balticus	10		FACW
2. unknown grasses	80	X	FAC
3. Carex sp.	5		FACW
4. Lepidium latifolium	5		FAC
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species ____	x 3 =	____
FACU species ____	x 4 =	____
UPL species ____	x 5 =	____
Column Totals: ____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Highly grazed pasture. No plants in flower, and all plants grazed. All species assumed to be FAC or FACW.

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/1	100						sandy loam
5-16	10YR 2/1	100						clayey loam

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ✓ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Roots and rhizomes prevalent in upper soil column. Soils have been irrigated for decades.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes ___ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Observations through spring season did not indicate site has wetland hydrology.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Daybreak Irrigated Pasture City/County: Reno/Washoe Sampling Date: 10-10-18

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 11

Investigator(s): Jeff Glazner Section, Township, Range: S33-34, T19N, R20E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): <1

Subregion (LRR): LRR D Lat: 39.47058476 Long: -119.73807153 Datum: NAD83

Soil Map Unit Name: 451 - Voltaire loam, slightly saline NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Toe of slope seepage captured by long-ago constructed toe drain, presumably to protect road below.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Nasturtium officinale	10		OBL
2. Typha latifolia	15		OBL
3. Schoenoplectus acutus	35	X	OBL
4. Epilobium ciliatum	15		FACW
5. Lemna sp.	5		OBL
6. Lepidium latifolium	10		FAC
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Hydrophytic vegetation in narrow swale that captures seepage out of hillside.

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-12	7.5YR 2.5/1	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No _____

Remarks:

Mucky, saturated soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): 1

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Standing water in toe drain.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Daybreak Irrigated Pasture City/County: Reno/Washoe Sampling Date: 10-10-18

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 12

Investigator(s): Jeff Glazner Section, Township, Range: S33-34, T19N, R20E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): <1

Subregion (LRR): LRR D Lat: 39.47029739 Long: -119.73701053 Datum: NAD83

Soil Map Unit Name: 451 - Voltaire loam, slightly saline NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

Parallel toe drain adjacent to one higher on slope. Collects less water than one above.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Euthamia occidentalis	20	X	FACW
2. Juncus balticus	20	X	FACW
3. Cynodon dactylon	10		FACU
4. Lepidium latifolium	20	X	FAC
5. Lotus corniculatus	10		FAC
6. Polypogon monspeliensis	10		FACW
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Shallow depression parallel to road with dense hydrophytic vegetation.

SOIL

Sampling Point: 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 4/1	100					loam	organics-root masses
4-12	7.5YR 4/1	100					loam	rocky

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No _____

Remarks:

Loamy organic and low chroma soil.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No _____ Depth (inches): 4

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation at 4". Appears to be moist or saturated most of the year in narrow band parallel to road.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Daybreak Irrigated Pasture City/County: Reno/Washoe Sampling Date: 10-10-18

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 13

Investigator(s): Jeff Glazner Section, Township, Range: S33-34, T19N, R20E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): channl/ditch Slope (%): <1

Subregion (LRR): LRR D Lat: 39.47057668 Long: -119.73744564 Datum: NAD83

Soil Map Unit Name: 451 - Voltaire loam, slightly saline NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No _____
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No _____	

Remarks:

Intermittent Stream (Other Waters). Typical reach of channel at edge of irrigated pasture. Slow moving water and varying width of open water. Flows to north.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Schoenoplectus acutus			OBL
2. Azolla microphylla			OBL
3. Lemna sp.			OBL
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks:

Hydrophytic vegetation associated with channel edge. Very slow-moving water allows for establishment of these plants.

SOIL

Sampling Point: 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix B.
Plant Species Observed

Appendix B. Daybreak Irrigated Pasture - Plants Observed w/Wetland Status

Taxon	Common Name	Wetland Status
Achillea millefolium	Common yarrow	FACU
Artemisia arbuscula	Low sagebrush	UPL
Artemisia douglasiana	California mugwort	FAC
Artemisia tridentata	Big sagebrush	UPL
Azolla microphylla	Mexican mosquito fern	OBL
Bromus inermis	Smooth brome	FACU
Bromus tectorum	Cheat grass	UPL
Carduus nutans	Musk thistle	FACU
Carex nebrascensis	Nebraska sedge	OBL
Carex praegracilis	Clustered field-sedge	FACW
Carex sp.	Sedge	VARIES
Cirsium vulgare	Bull thistle	FACU
Cynodon dactylon	Bermudagrass	FACU
Dactylis glomerata	Orchard grass	FACU
Distichlis spicata	Saltgrass	FAC
Eleocharis acicularis	Least spikerush	OBL
Eleocharis macrostachya	Creeping spikerush	OBL
Elymus elymoides	Squirreltail	FACU
Elymus sp.	Elymus	UPL
Elymus trachycaulus	Slender wheatgrass	FACU
Elymus triticoides	Beardless wildrye	FAC
Epilobium ciliatum	Hairy willow-herb	FACW
Equisetum arvense	Common horsetail	FAC
Ericameria nauseosa	Rubber rabbitbrush	UPL
Euthamia occidentalis	Western goldenrod	FACW
Hordeum brachyantherum	Meadow barley	FACW
Hordeum jubatum	Foxtail barley	FAC
Juncus balticus	Baltic rush	FACW
Juncus bufonius	Toad rush	FACW
Juncus effusus	Soft rush	FACW
Lactuca serriola	Prickly lettuce	FACU
Lemna sp.	Duckweed	OBL
Lepidium latifolium	Broadleaf pepperweed	FAC
Linum lewisii	Prairie flax	UPL
Lotus corniculatus	Bird's-foot trefoil	FAC
Nasturtium officinale	Watercress	OBL
Poa secunda	Secund bluegrass	FACU
Polypogon monspeliensis	Annual beard grass	FACW

Taxon	Common Name	Wetland Status
Populus fremontii	Fremont cottonwood	FAC
Purshia tridentata	Antelope bitterbrush	UPL
Rumex crispus	Curly dock	FAC
Salix laevigata	Red willow	FACW
Salsola tragus	Russian-thistle	FACU
Schoenoplectus acutus	Hardstem bulrush	OBL
Typha latifolia	Broad-leaved cattail	OBL

Appendix C.
UACOE Aquatic Resource Spreadsheet

Appendix C:
Daybreak - Portion of Irrigated Pasture WD

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
IS-1	Nevada	R4SB7	RIVERINE	Area	0.192	ACRE	DELINEATE	39.46993258	-119.7359704	Steamboat Creek
S-3	Nevada	PEM1	DEPRESS	Area	0.077	ACRE	DELINEATE	39.47038991	-119.7374694	Steamboat Creek
S-4	Nevada	PEM1	DEPRESS	Area	0.04	ACRE	DELINEATE	39.47046249	-119.7374767	Steamboat Creek

WETLAND DELINEATION
FOR THE

±608-ACRE BELLA VISTA RANCH PHASE III STUDY AREA

CITY OF RENO, WASHOE COUNTY, NEVADA



Prepared for:
Newport Pacific Land Co., LLC
100 Bayview Circle, Suite 2200
Newport Beach, CA 92660

Prepared by:

Salix consulting, inc.
11601 Blocker Drive, Ste 100
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(530) 888-0130

FEBRUARY 2017

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APPENDICES

Appendix A. Wetland Data Sheets

Appendix B. Plant Species Observed on the Project Study Area with Wetland Status

Appendix C. USACOE Aquatic Resources Sreadsheet

WETLAND DELINEATION
FOR THE
±608-ACRE BELLA VISTA RANCH, PHASE III STUDY AREA

INTRODUCTION

Location and Setting

Salix Consulting, Inc. (Salix) prepared a wetland delineation for the ±608-acre Bella Vista Ranch, Phase III study area located southeast of the Reno-Tahoe International Airport, Reno, Washoe County, Nevada. It is situated in Portions of Sections 03, 04, 33, and 34, Portions of Townships 18N, and 19N, and Range 20 East on the Reno, Nevada 7.5-minute USGS topographic quadrangles (Figure 1). The approximate coordinates for the center of the study area are: 39°27'50.88"N and 119°44'05.57"W.

The site occurs in the Huffaker Hills area with elevations ranging from approximately 4300 feet in the steppe areas to approximately 4700 feet in the hills. Alexander Lake is located in the southwestern portion of the study area and the site is bisected by Alexander Lake Road. Surrounding uses include residential development to the north, northwest and south, commercial development to the southwest, and the Southeast Connector to the east. (Figure 2).

Background

The Study Area lies within the developing region of southeast Reno. It is situated along the Southeast Connector roadway, currently under construction. A large swath west of the Southeast Connector was previously delineated by Gibson and Skordal for the Regional Transportation Commission; that delineation verification is currently valid and not a part of this study.

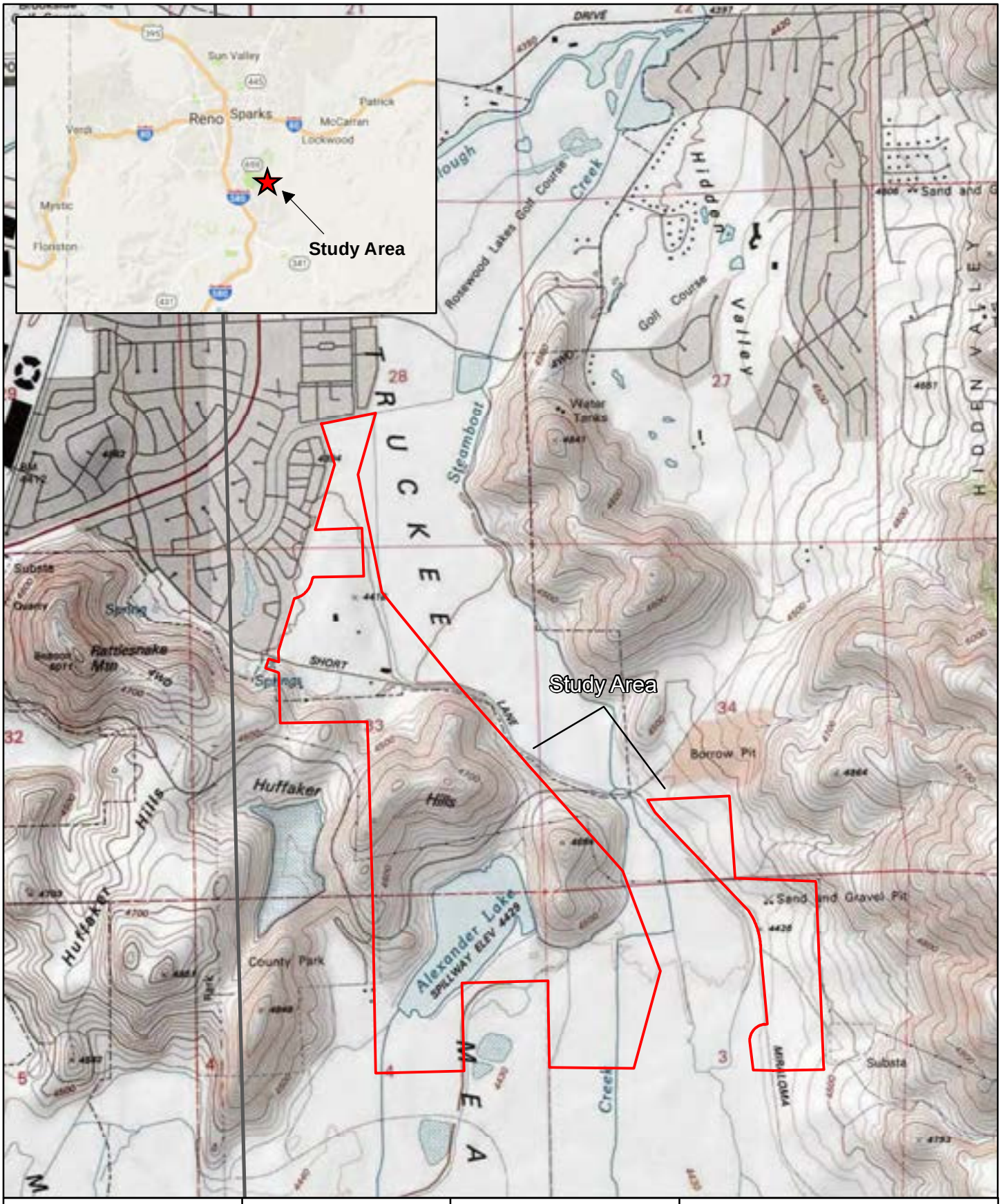
CONTACT INFORMATION

Applicant:
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100 Bayview Circle, Suite 2200
Newport Beach, CA 92660
Phone: (949) 945-2297
Contact: Mark Burkes

Delineated by:
Salix Consulting, Inc.
11601 Blocker Drive, Ste. 100
Auburn, California 95603
Phone: (530) 888-0130
Contact: Jeff Glazner

METHODOLOGY

Waters of the United States were delineated from September through December 2016 by Jeff Glazner and Hunter Gallant using the 1987 Corps Manual (Environmental Laboratory 1987) as amended by the Arid West Regional Supplement (U.S. Army Corps of Engineers 2008).





N

0 1,000 2,000

Feet

Source Maps: USGS Topographic Map
Reno Quad 1:24,000
Portions of Sections: 03+04+33+34
Portions of Townships: 18N + 19N
Range: 20E

Figure 1

SITE AND VICINITY MAP

Bella Vista Ranch Phase III

City of Reno, Washoe County, NV



Salix consulting, inc.

N

0 750 1,500

Feet

Study Area (±608 acres)

Aerial Imagery: July 2016 (Google)

Figure 2

AERIAL MAP

Bella Vista Ranch Phase III

City of Reno, Washoe County, NV

The site was observed on foot and utilizing all-terrain vehicles (ATVs) and an unmanned aerial vehicle (UAV) (DJI Phantom 3). Potential waters of the U.S. were evaluated and mapped according to the manual. Features were mapped using a Trimble GeoXT 6000 GPS (submeter). Three parameter data sheets (Appendix A) were filled out at 18 locations as indicated on the Wetland Delineation Map.

Information on soils of the study area was obtained from the U.S. Department of Agriculture – National Resource Conservation Service's online Web Soil Survey (NRCS 2016). In the field, a Munsell Color chart was used to determine moist soil colors. Appendix B is a list of plants observed during the delineation, along with the scientific name and wetland status of each species. Where a plant species observed has a wetland indicator status (not UPL), plant nomenclature follows Lichvar et.al. (2016). Otherwise, species names are aligned with the *The Jepson Manual* (Baldwin et.al. 2012).

The Corps of Engineers Aquatic Resources spreadsheet is included in Appendix C.

FINDINGS

Climate

Reno sits at the western border of Nevada, in a high desert at the foot of the Sierra Nevada mountain range. Its downtown area (along with Sparks) occupies a valley informally known as the Truckee Meadows. Reno is located about 20 miles east of the Sierra Nevada and Lake Tahoe, in the rain shadow of the Sierra Nevada. Annual rainfall averages 7.48 inches. Despite this low amount of rainfall per year, Reno features a steppe climate. The city averages 300 days of sunshine per year.

Most rainfall occurs in winter and spring, averaging 7.48 inches per year. Warm season thunderstorms can occur between April and October. The eastern side of the city and the mountains east of Reno tend to be prone to thunderstorms more often. These storms may be severe because an afternoon downslope west wind (northwestern Nevada's distinctive wind, referred to as a "Washoe Zephyr") can develop in the Sierra Nevada, causing air to be pulled down in the Sierra Nevada and Reno, destroying or preventing thunderstorms, but the same wind can push air upwards against the Virginia Range and other mountain ranges east of Reno, creating powerful thunderstorms. The region is windy throughout the year.

Winter snowfall is usually light to moderate, averaging 21.5 inches annually. Snowfall varies with the lowest amounts occurring at the lowest part of the valley at and east of the Reno–Tahoe International Airport (approx. 4,404 feet elevation). The higher foothills of the Carson Range, just a few miles west of downtown, can receive up to two to three times as much annual snowfall. The mountains of the Virginia Range to the east can receive more summer thunderstorms and precipitation, and around twice as much annual snowfall above 5,500 feet. However, snowfall increases in the Virginia Range are less dramatic as elevation climbs than in the Carson Range to the west, because the Virginia Range is well within the rain shadow of the Sierra Nevada and Carson Range.

The warm season lasts from May through September, with an average daily high temperature above 84°F. On average, the hottest months are July and August with an average high of 92°F and low of 57°F. The coolest months are December and January, with an average daily high temperature around 45°F and average daily low temperature around 25°F. Temperatures in the region are mild, but can fluctuate as much as 45 degrees between day and night. The temperature at night during the summer rarely rises above 60 degrees.

Soils

Thirty-three (33) soil units have been mapped within the study area (Figure 3) and are described below (NRCS 2016):

101 - Aquinas sandy loam, 4 to 8 percent slopes

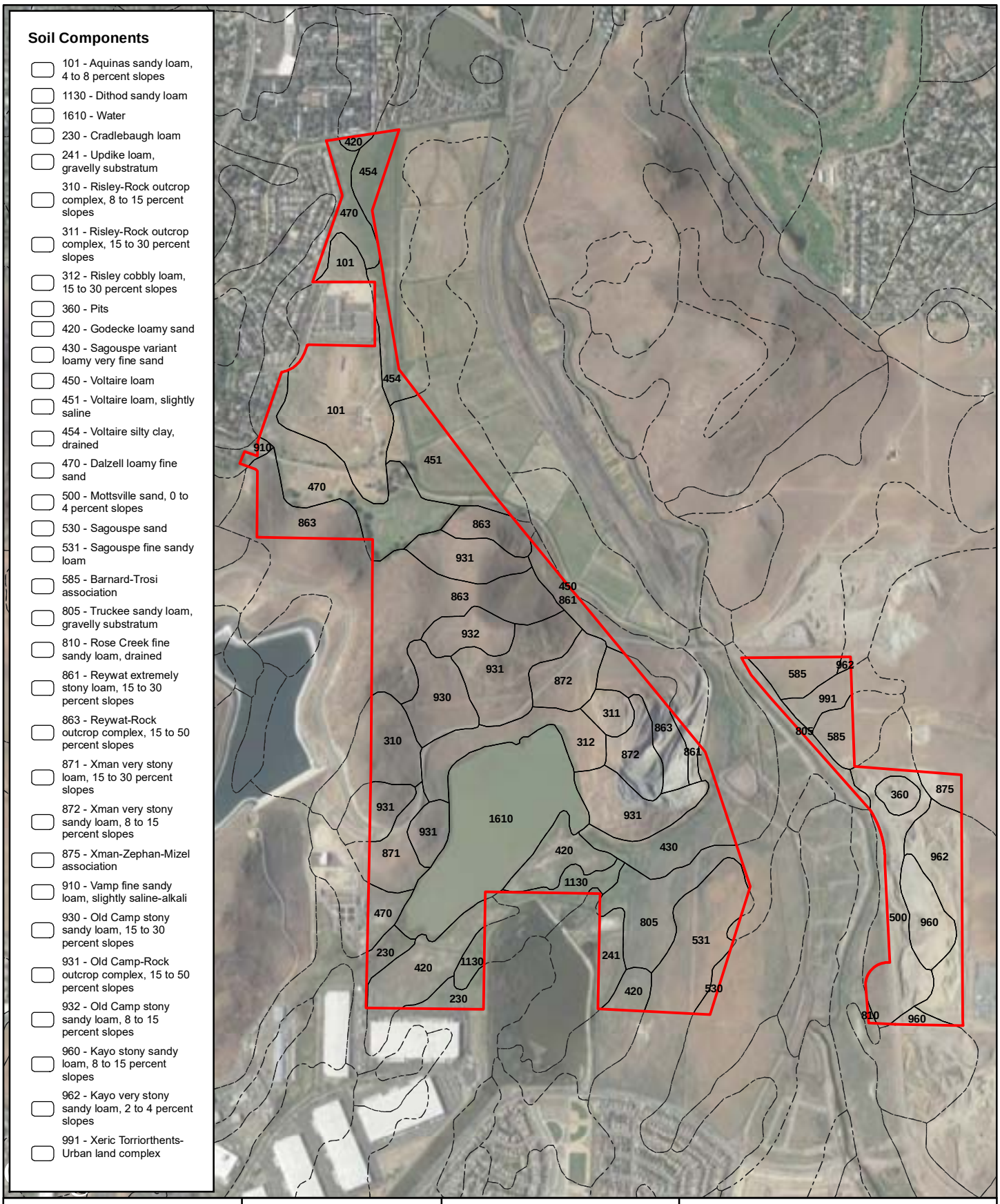
The Aquinas component makes up 85 percent of the map unit. Slopes are 4 to 8 percent. This component is on fan piedmonts, fan remnants. The parent material consists of alluvium derived from granite. Depth to a root restrictive layer, duripan, is 30 to 39 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R026XY017NV Loamy Hill 10-12 P.z. ecological site. Nonirrigated land capability classification is 6s. Irrigated land capability classification is 3e. This soil does not meet hydric criteria.

230 - Cradlebaugh loam

The Cradlebaugh component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on semi-bolsons, flood plains. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is occasionally flooded. It is not ponded. A seasonal zone of water saturation is at 18 inches during February, March, April, May, June. Organic matter content in the surface horizon is about 2 percent. This component is in the R026XY001NV Moist Floodplain ecological site. Nonirrigated land capability classification is 6w. Irrigated land capability classification is 4w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. The soil has a moderately saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 7 within 30 inches of the soil surface.

241 - Updike loam, gravelly substratum

The Updike, gravelly substratum component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on lake terraces, lake plains. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the



Salix consulting, inc.

Figure 3

SOIL COMPONENTS MAP

Bella Vista Ranch Phase III

City of Reno, Washoe County, NV

most restrictive layer is low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is high. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 60 inches during March, April, May, June, July, August. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 4s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 29 within 30 inches of the soil surface.

310 - Risley-Rock outcrop complex, 8 to 15 percent slopes

The Risley component makes up 75 percent of the map unit. The Rock outcrop is a miscellaneous area. Slopes are 8 to 15 percent. This component is on hills, hills. The parent material consists of residuum and colluvium derived from altered volcanic rocks. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 39 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R026XY017NV Loamy Hill 10-12 P.z. ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent.

311 - Risley-Rock outcrop complex, 15 to 30 percent slopes

The Risley component makes up 65 percent of the map unit. The Rock outcrop is a miscellaneous area. Slopes are 15 to 30 percent. This component is on hills, hills. The parent material consists of residuum and colluvium derived from altered volcanic rocks. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 39 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R026XY017NV Loamy Hill 10-12 P.z. ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent.

312 - Risley cobbly loam, 15 to 30 percent slopes

The Risley component makes up 85 percent of the map unit. Slopes are 15 to 30 percent. This component is on hills, hills. The parent material consists of residuum and colluvium derived from altered volcanic rocks. Depth to a root restrictive layer, bedrock, paralithic, is 20 to 39 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic

matter content in the surface horizon is about 2 percent. This component is in the R026XY017NV Loamy Hill 10-12 P.z. ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent.

360 – Pits

The Pits is a miscellaneous area.

420 - Godecke loamy sand

The Godecke component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on semi-bolsons, stream terraces. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 36 inches during January, February, March, April, May, June, December. Organic matter content in the surface horizon is about 1 percent. This component is in the R026XY012NV Dry Floodplain 8-10 P.z. ecological site. Nonirrigated land capability classification is 7w. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 8 percent. The soil has a strongly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 22 within 30 inches of the soil surface.

430 - Sagouspe variant loamy very fine sand

The Sagouspe variant component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains, semi-bolsons. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 21 inches during January, February, March, April, May, June, July. Organic matter content in the surface horizon is about 2 percent. This component is in the R026XY003NV Wet Meadow 10-14 P.z. ecological site. Nonirrigated land capability classification is 7w. Irrigated land capability classification is 3w. This soil does not meet hydric criteria.

450 - Voltaire loam

The Voltaire, slightly saline component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on semibolsons, flood plains. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 9 inches during February, March, April, May. Organic matter content in the surface horizon is about 3 percent. Nonirrigated land

capability classification is 6w. Irrigated land capability classification is 4w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 22 within 30 inches of the soil surface.

451 - Voltaire loam, slightly saline

The Voltaire, slightly saline component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains, semi-bolsons. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is very poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 9 inches during February, March, April, May. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 6w. Irrigated land capability classification is 4w. This soil meets hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. The soil has a strongly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 22 within 30 inches of the soil surface.

454 - Voltaire silty clay, drained

The Voltaire, drained component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains, semi-bolsons. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is moderately well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 66 inches during January, February, March, April, May, December. Organic matter content in the surface horizon is about 4 percent. This component is in the R026XY030NV Loamy Bottom 8-12 P.z. ecological site. Nonirrigated land capability classification is 6w. Irrigated land capability classification is 3w. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 22 within 30 inches of the soil surface.

470 - Dalzell loamy fine sand

The Dalzell component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on lake plains, lake terraces. The parent material consists of mixed alluvium. Depth to a root restrictive layer, duripan, is 20 to 39 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. A seasonal zone of water saturation is at 57 inches during March, April, May, June. Organic matter content in the surface horizon is about 1 percent. This component is in

the R026XY012NV Dry Floodplain 8-10 P.z. ecological site. Nonirrigated land capability classification is 7w. Irrigated land capability classification is 4w. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. The soil has a moderately saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 29 within 30 inches of the soil surface.

500 - Mottsville sand, 0 to 4 percent slopes

The Mottsville component makes up 85 percent of the map unit. Slopes are 0 to 4 percent. This component is on piedmonts, alluvial fans. The parent material consists of alluvium derived from granitic rocks. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is rarely flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R026XY008NV Granitic Fan 10-12 P.z. ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 4s. This soil does not meet hydric criteria.

530 - Sagouspe sand

The Sagouspe component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains, semibolsons. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 48 inches during February, March, April, May, June, July, August. Organic matter content in the surface horizon is about 1 percent. This component is in the R026XY013NV Sodic Floodplain ecological site. Nonirrigated land capability classification is 7w. Irrigated land capability classification is 4w. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 6 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 3 within 30 inches of the soil surface.

531 - Sagouspe fine sandy loam

The Sagouspe component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains, semibolsons. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 48 inches during February, March, April, May, June, July, August. Organic matter content in the surface horizon is about 1 percent. This component is in the R026XY013NV Sodic Floodplain ecological site. Nonirrigated land capability classification is 6w. Irrigated land capability classification is 3w. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not

exceed 6 percent. The soil has a very slightly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 3 within 30 inches of the soil surface.

585 - Barnard-Trosi association

Component: Barnard (50%)

The Barnard component makes up 50 percent of the map unit. Slopes are 2 to 4 percent. This component is on fan remnants, piedmonts. The parent material consists of mixed alluvium. Depth to a root restrictive layer, duripan, is 20 to 39 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R026XY017NV Loamy Hill 10-12 P.z. ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

Component: Trosi (35%)

The Trosi component makes up 35 percent of the map unit. Slopes are 4 to 8 percent. This component is on fan remnants. The parent material consists of mixed alluvium. Depth to a root restrictive layer, duripan, is 12 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R026XY023NV Claypan 10-12 P.z. ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

805 - Truckee sandy loam, gravelly substratum

The Truckee, gravelly substratum component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on semi-bolsons, flood plains. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is rarely flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 3s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. The soil has a moderately saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 7 within 30 inches of the soil surface.

810 - Rose Creek fine sandy loam, drained

The Rose Creek, drained component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on semibolsons, flood plains. The parent material

consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 60 inches during February, March, April, May, June, July. Organic matter content in the surface horizon is about 2 percent. This component is in the R026XY001NV Moist Floodplain ecological site. Nonirrigated land capability classification is 6w. Irrigated land capability classification is 2w. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. The soil has a very slightly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 3 within 30 inches of the soil surface.

861 - Reywat extremely stony loam, 15 to 30 percent slopes

The Reywat component makes up 85 percent of the map unit. Slopes are 15 to 30 percent. This component is on hills, hills. The parent material consists of residuum and colluvium derived from volcanic rocks. Depth to a root restrictive layer, bedrock, lithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R026XY015NV Shallow Loam 10-12 P.z. ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

863 - Reywat-Rock outcrop complex, 15 to 50 percent slopes

The Reywat component makes up 60 percent of the map unit. The Rock outcrop is a miscellaneous area. Slopes are 15 to 50 percent. This component is on hills, hills. The parent material consists of residuum and colluvium derived from volcanic rocks. Depth to a root restrictive layer, bedrock, lithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R026XY015NV Shallow Loam 10-12 P.z. ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

871 - Xman very stony loam, 15 to 30 percent slopes

The Xman component makes up 85 percent of the map unit. Slopes are 15 to 30 percent. This component is on hills, hills. The parent material consists of residuum derived from volcanic rocks. Depth to a root restrictive layer, bedrock, paralithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R026XY025NV Claypan 8-10 P.z.

ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

872 - Xman very stony sandy loam, 8 to 15 percent slopes

The Xman component makes up 85 percent of the map unit. Slopes are 8 to 15 percent. This component is on hills, hills. The parent material consists of residuum derived from volcanic rocks. Depth to a root restrictive layer, bedrock, paralithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R026XY025NV Claypan 8-10 P.z. ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

875 - Xman-Zephan-Mizel association

Component: Xman (35%)

The Xman component makes up 35 percent of the map unit. Slopes are 15 to 50 percent. This component is on hills, hills. The parent material consists of residuum derived from volcanic rocks. Depth to a root restrictive layer, bedrock, paralithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R026XY025NV Claypan 8-10 P.z. ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

Component: Zephan (25%)

The Zephan component makes up 25 percent of the map unit. Slopes are 15 to 50 percent. This component is on hills. The parent material consists of residuum and colluvium derived from volcanic rocks. Depth to a root restrictive layer, bedrock, paralithic, is 25 to 39 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is high. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R026XY017NV Loamy Hill 10-12 P.z. ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

Component: Mizel (25%)

The Mizel component makes up 25 percent of the map unit. Slopes are 15 to 50 percent. This component is on hills. The parent material consists of residuum derived from rhyolitic rocks. Depth to a root restrictive layer, bedrock, lithic, is 3 to 10 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low.

Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. This component is in the R026XY029NV Eroded Slope 10-12 P.z. ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

910 - Vamp fine sandy loam, slightly saline-alkali

The Vamp, slightly saline-alkali component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains, semi-bolsons. The parent material consists of mixed alluvium. Depth to a root restrictive layer, duripan, is 20 to 39 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 48 inches during February, March, April, May, June, July. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 6w. Irrigated land capability classification is 3w. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. The soil has a slightly saline horizon within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 22 within 30 inches of the soil surface.

930 - Old Camp stony sandy loam, 15 to 30 percent slopes

The Old camp component makes up 85 percent of the map unit. Slopes are 15 to 30 percent. This component is on hills, hills. The parent material consists of residuum and colluvium derived from volcanic rocks. Depth to a root restrictive layer, bedrock, lithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R026XY022NV Stony Slope 8-10 P.z. ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 3 within 30 inches of the soil surface.

931 - Old Camp-Rock outcrop complex, 15 to 50 percent slopes

The Old camp component makes up 20 percent of the map unit. The Rock outcrop is a miscellaneous area. Slopes are 15 to 30 percent. This component is on hills. The parent material consists of residuum and colluvium derived from volcanic rocks. Depth to a root restrictive layer, bedrock, lithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R026XY022NV Stony Slope 8-10 P.z. ecological site. Nonirrigated

land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 3 within 30 inches of the soil surface.

932 - Old Camp stony sandy loam, 8 to 15 percent slopes

The Old camp component makes up 85 percent of the map unit. Slopes are 8 to 15 percent. This component is on hills, hills. The parent material consists of residuum and colluvium derived from volcanic rocks. Depth to a root restrictive layer, bedrock, lithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 2 percent. This component is in the R026XY022NV Stony Slope 8-10 P.z. ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 3 within 30 inches of the soil surface.

960 - Kayo stony sandy loam, 2 to 4 percent slopes

The Kayo component makes up 85 percent of the map unit. Slopes are 2 to 4 percent. This component is on alluvial fans, piedmonts. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is rarely flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R026XY024NV Droughty Loam 8-10 P.z. ecological site. Nonirrigated land capability classification is 7s. Irrigated land capability classification is 4s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. There are no saline horizons within 30 inches of the soil surface.

962 - Kayo very stony sandy loam, 4 to 8 percent slopes

The Kayo component makes up 85 percent of the map unit. Slopes are 4 to 8 percent. This component is on piedmonts, alluvial fans. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat excessively drained. Water movement in the most restrictive layer is high. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is low. This soil is rarely flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 0 percent. This component is in the R026XY024NV Droughty Loam 8-10 P.z. ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 3 percent. There are no saline horizons within 30 inches of the soil surface.

991 - Xeric Torriorthents- Urban land complex

The Xeric Torriorthents component makes up 45 percent of the map unit. The Urban land is a miscellaneous area. Slopes are 0 to 30 percent. This component is on fan piedmonts, piedmonts. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 1 percent. Nonirrigated land capability classification is 8s. This soil does not meet hydric criteria.

1130 - Dithod sandy loam

The Dithod component makes up 85 percent of the map unit. Slopes are 0 to 2 percent. This component is on flood plains, semi-bolsons. The parent material consists of mixed alluvium. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is somewhat poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is rarely flooded. It is not ponded. A seasonal zone of water saturation is at 48 inches during January, February, March, April, May, June, July, August, December. Organic matter content in the surface horizon is about 2 percent. This component is in the R027XY002NV Moist Floodplain ecological site. Nonirrigated land capability classification is 6w. Irrigated land capability classification is 2w. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface. The soil has a maximum sodium adsorption ratio of 3 within 30 inches of the soil surface.

1610 – Water

The Water is a miscellaneous area that includes Alexander Lake.

Hydrology

The project site occurs within the Truckee watershed (Hydrologic Unit Code 16050102). The Truckee River flows northeasterly from its outlet at Lake Tahoe for 121 miles to its terminus in Pyramid Lake in the Great Basin. Pyramid Lake is the geographic sink of the Truckee River Basin, and thus, the Truckee River lies within an endorheic (closed, not draining to the ocean) basin. The Truckee River basin encompasses about 3,060 square miles. The Reno region lies within the Middle Truckee River subunit.

Water falling on the northern portion of the project site drains in a northerly direction and into an unnamed stream along the northern property line that is a tributary to Steamboat Creek. This stream flows east for a short distance where it enters Steamboat Creek. Steamboat Creek flows north for 3 to 4 miles and into the Truckee River. Water falling on the southern portion of the property (south of Alexander Lake Road) drains to Thomas Creek. Thomas Creek flows for a very short distance to the east and into Steamboat Creek.

Vegetation

The study area occurs within the Sierra Nevada-Influenced Semiarid Hills and Basins ecoregion (13aa) as defined by the U. S. Geologic Service, which includes the basins and lower mountain slopes immediately east of the Sierra Nevada that are affected by its climate or that have its characteristic granitic substrate. Ecoregion 13aa is associated with the semiarid shrub community near the Sierra Nevada front. Several vegetation types occur in the study area; the two primary types are sagebrush scrub and rabbitbrush scrub/Steppe. Broadleaf pepperweed, also called "whitetop" (*Lepidium latifolium*), an invasive species, occurs abundantly throughout the lowland areas of the study area. This species is dense in the upland areas and also occurs in the margins of wetlands.

Sagebrush Scrub

Sagebrush scrub occurs primarily in the hilly areas of the study area that border Alexander Lake Road, as well as east of Steamboat Creek in the southeast. This habitat is dominated by one or more species of sagebrush (*Artemisia tridentata*, *A. arbuscula*) and antelope bitterbrush (*Purshia tridentata*). The hilly regions of the study area are rocky and dry and do not support any wetlands or other waters.

Rabbitbrush Scrub/Steppe

Most of the flat areas of the study area are a combination of grasses and shrubs. The primary shrub species is rubber rabbitbrush (*Ericameria nauseosus*). Nearly all of the wetlands and other waters in the study area are mapped in these flat steppe areas.

Irrigated Pasture

A portion of the study area lies within the irrigated pasture adjacent to the Southeast Connector, which is a part of a much larger irrigated pasture area previously delineated for the Southeast Connector project. None of the area adjacent to this extension was mapped as wetland, and we have not included any portion of this remainder pasture as a potential waters of the U.S.

Quarry Areas

Two distinct quarry operations lie within the study area. One is just east of Alexander Lake in the hilly area (the east side of the hill facing the Southeast Connector). The second operation is located east of the Southeast Connector and east of Steamboat Creek. These areas are dry and do not support any potential waters of the U.S.

Waters of the United States

Nine categories of potential waters of the United States (WOUS) have been mapped on the study area as listed on Table 1, which provides an acreage summary of WOUS on the site. Figures 4a through 4f at the end of this section show representative site photographs of the various wetland and waters types; Figure 5, also at the end of this section, is the wetland delineation map.

Table 1.
Waters of the United States
Bella Vista Ranch Phase III Study Area

Type	Acreage
Wetland Type:	
Wetlands	
Wetland Swale	1.854
Seep	1.537
Seasonal Wetland	1.000
Spring	0.106
Emergent Marsh	2.681
Wetland Fringe	3.508
Total Wetlands	***10.686***
Other Waters	
Intermittent Stream	0.927
Perennial Stream	1.853
Open Water (Alexander Lake)	55.787
Total Other Waters	***58.567***
Total	**69.253**

Wetland Swale

Nine (9) wetland swales occur at various locations within the study area. Each wetland swale is characterized as a shallow conveyance that carries seasonal runoff to the degree that it supports hydrophytic vegetation and is considered a waters of the U.S. Wetland swales typically do not carry high velocity flows that would scour the channel, and do not support vegetative cover. Species common in the wetland swales varies with the amount of water (these features are quite variable both morphologically and hydrologically) include Baltic rush (*Juncus balticus*), species of sedges, broadleaf pepperweed (*Lepidium latifolium*), and cattail (*Typha sp.*) (Figure 4a1, 4a2).

Seep

Five (5) seeps are mapped in the study area, four (4) along the base of a large central hill, and one below the impoundment of Alexander Lake. The seeps that occur in the northern portion of the site mostly originate from the hills to the south. Anecdotal evidence from locals indicates that the seepage is tied to the large detention basin to the south, but since the basin was lined with plastic a couple years ago, the amount of water seeping is substantially reduced. The seeps in the northern area support cattail,

broadleaf pepperweed, meadow barley (*Hordeum brachyantherum*), annual beard grass (*Polypogon monspeliensis*), and watercress (*Nasturtium officinale*) (Figure 4a3, 4b1, 4b2, 4b3). The seep below the Alexander Lake impoundment structure supports primarily Baltic rush (*Juncus balticus*) and hardstem bullrush (*Schoenoplectus acutus*) (Figure 4c1)).

Seasonal Wetland

Three (3) seasonal wetlands occur in the southern area of the study area, all very different from each other. Seasonal Wetland 1 is located just east of the large offsite mitigation wetland and marsh. It is very shallow, lightly alkaline, and supports abundant saltgrass (*Distichlis spicata*). Seasonal Wetland 2 is located west of the mitigation pond. It is a linear feature constructed to drain overflow from Thomas Creek at the southern end of Alexander Lake. It does not appear to be wetted for much of the season but, nonetheless, supports a hydrophytic plant community (primarily Baltic rush) and has indicators of prolonged saturation. Seasonal Wetland 3 (Figure 4c2) is also located on the west side of the mitigation pond. It is a low-lying area in a previously graded field. It contains deep black and organic soils throughout and shows evidence of seasonal ponding. The soils indicate this area was much wetter in previous times but is now only marginally hydric.

Spring

One spring is mapped in the Study Area and occurs at the property boundary in the northwest portion of the study area at Rio Poco Road (Figure 4c3). The spring differs from the seeps in the study area in that its discharge volume is much higher than each of the seeps' discharge volume. This spring is a natural discharge area adjacent to a housing development. It forms a small pond that supports several large carp. The spring drains to the east through a constructed swale (Wetland Swale 1) and into Intermittent Stream 1 that flows to the north.

Emergent Marsh

The area in the southwest corner of the study area that borders Thomas Creek (PS-1) is mapped as an emergent marsh (Figure 4d1). This area occupies 2.68 acres and could be considered an extension of the fringe wetland of Alexander Lake. Common species include cattail, hardstem bulrush, and Baltic rush. Broadleaf pepperweed is abundant along the edges of the marsh.

Wetland Fringe

A band of hydrophytic vegetation lines the majority of the upper rim of Alexander Lake (Figure 4d2, 4d3). The band is variable in width with the widest part in the southern end of the lake. Hydrophytic species in the fringe include hardstem bulrush, small-fruit bulrush (*Scirpus microcarpus*), cocklebur (*Xanthium strumarium*), and narrow-leaved willow (*Salix exigua*).

Open Water

Alexander Lake (Figure 4d2, 4d3, 4e1, 4e2) is a large impounded open body of water in the southwest portion of the study area. This feature is fed by Thomas Creek, which flows in at the southwest corner and out along the eastern edge. There are two outlet culverts and a low concrete impoundment structure along the eastern edge.

Intermittent Stream

One intermittent stream is mapped in the study area (IS-1)(Figure 4e3). This feature flows north along the western edge of the irrigated pasture. It is a steep-sided, constructed ditch that carries primarily irrigation runoff. Vegetation is lacking along the bottom of the channel but is abundant along the sides. Common species include annual beard grass, soft rush (*Juncus effusus*), Nebraska sedge (*Carex nebrascensis*) and small-fruit bulrush.

Perennial Stream

Two perennial streams occur within the study area. Thomas Creek flows through the site from the southwest corner, through Alexander Lake, along the base of steep hill, and into Steamboat Creek east of the site (Figure 4f1). A second perennial stream flows along the northern study area boundary, carrying water from the developed areas to the west and into Steamboat Creek. Vegetation along the channel is sparse (Figure 4f2).



4a-1 Looking west along Wetland Swale-1 toward Seep-1 (the primary source of water in the swale). *Photo date 11-2-16*



4a-2 Looking southwest along Wetland Swale-9.
Photo date 11-9-16



4a-3 Toe drain fed by groundwater discharge at base of hill. Seep-2.
Photo date 11-15-16

Salix consulting, inc.

Figure 4a

SITE PHOTOS

Bella Vista Ranch Phase III

City of Reno, Washoe County, NV



4b-1 Looking south over Ranch Rd at area containing several seeps.
Photo date 11-2-16



4b-2 Upper end of Seep-1.
Photo date 11-15-16



4b-3 Seep-1 looking southwest from Ranch Rd.
Photo date 10-03-16

Salix consulting, inc.

Figure 4b

SITE PHOTOS

Bella Vista Ranch Phase III

City of Reno, Washoe County, NV



4c-1 Looking south over Seep-5 below Alexander Lake from impoundment berm.
Photo date 11-15-16



4c-2 Looking south over Seasonal Wetland-3.
Photo date 11-9-16



4c-3 Spring near Rio Poco Rd.
Photo date 12-22-16

Salix consulting, inc.

Figure 4c

SITE PHOTOS

Bella Vista Ranch Phase III

City of Reno, Washoe County, NV



4d-1 Looking east over Emergent Marsh-1 at southern end of Alexander Lake.
Photo date 11-9-16



4d-2 Looking north along east edge of Alexander Lake.
Photo date 11-15-16



4d-3 Looking south over Alexander Lake from adjacent hill.
Photo date 12-22-16

Salix consulting, inc.

Figure 4d

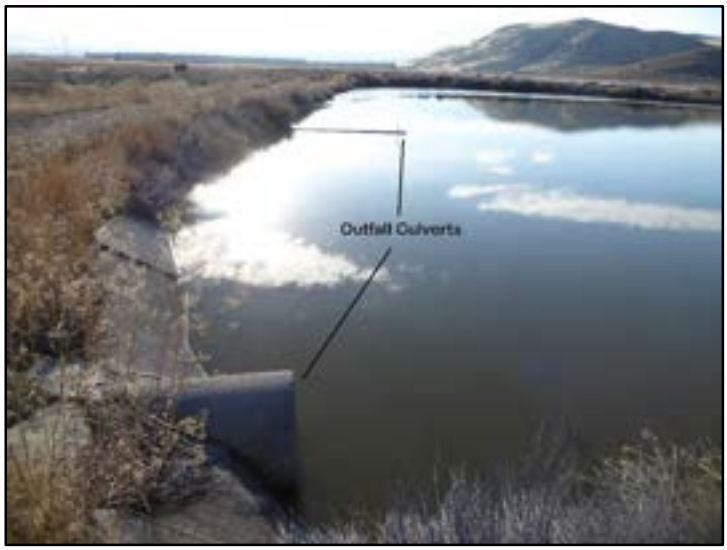
SITE PHOTOS

Bella Vista Ranch Phase III

City of Reno, Washoe County, NV



4e-1 Looking south over east shore of Alexander Lake.
Photo date 10-9-16



4e-2 East edge of Alexander lake along concrete impoundment edge. Two culverts allow water to spill to east into Thomas Creek (PS-1) channel.
Photo date 11-15-16



4e-3 Looking south along Intermittent Stream-1. Irrigated pasture to left.
Photo date 10-3-16

Salix consulting, inc.

Figure 4e

SITE PHOTOS

Bella Vista Ranch Phase III

City of Reno, Washoe County, NV



4f-1 Looking southwest over Thomas Creek (PS-1) from adjacent hill. *Photo Date 12-22-16*



4f-2 Looking east along Perennial Stream-2 at northern boundary. *Photo date 10-3-16*

Salix consulting, inc.

Figure 4f

SITE PHOTOS

Bella Vista Ranch Phase III

City of Reno, Washoe County, NV

Waters of the U.S.

Wetlands	Acreage
Wetland Swale	
WS-1	0.398
WS-2	0.015
WS-3	0.162
WS-4	0.342
WS-5	0.290
WS-6	0.047
WS-7	0.194
WS-8	0.121
WS-9	0.285
Subtotal	**1.854**
Seep	
S-1	0.913
S-2	0.327
S-3	0.151
S-4	0.031
S-5	0.115
Subtotal	**1.537**

Wetlands Cont.	Acreage
Seasonal Wetland	
SW-1	0.535
SW-2	0.076
SW-3	0.389
Subtotal	**1.000**
Spring	
Spring-1	0.106
Subtotal	**0.106**
Emergent Marsh	
EM-1	2.681
Subtotal	**2.681**
Wetland Fringe	
WF-1	3.508
Subtotal	**3.508**
Total Wetlands	**10.686**

Other Waters	Acreage
Intermittent Stream	
IS-1	0.927
Subtotal	**0.927**
Perennial Stream	
PS-1 (Thomas Creek)	1.572
PS-2	0.281
Subtotal	**1.853**
Open Water	
Alexander Lake	55.787
Subtotal	**55.787**
Total Other Waters	**58.567**

Total 69.253 Acres

Prepared By:

Salix consulting, inc.

Prepared For:

Bristol Land Company LLC
Newport Pacific Land Co.
100 Bayview Circle, Ste. 2200
Newport Beach, CA 92660

DELINEATED BY: J. GLAZNER & H. GALLANT
FIELD WORK: AUGUST - DECEMBER 2016

MAP DRAWN BY: H. GALLANT

REVISIONS:

Study Area (±608 acres)
Upland Data Point
Wetland Data Point
Waters Data Point
Culvert
Flow Direction
5-Foot Contour

NOTES:

COORDINATE SYSTEM: NAD 1983 State Plane Nevada West FIPS 2703 (Feet)
AERIAL IMAGE: July 13, 2016 (Google)
TOPOGRAPHIC MAP PROVIDED BY: Places Consulting Services, Inc.

Figure 5

WETLAND DELINEATION MAP

Bella Vista Ranch Phase III

City of Reno, Washoe County, NV

January 19, 2017

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Appendix A.
Wetland Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 11/15/2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 01

Investigator(s): Jeff Glazner Section, Township, Range: S33, T19N, R20E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): swale Slope (%): 1-2

Subregion (LRR): LRR D Lat: 39.47006 Long: 119.74305 Datum: WGS84

Soil Map Unit Name: 470-Dalzell loamy fine sand NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

Suspect swale in upper pasture. Dominated by Juncus balticus, but soils lacking redox, and wetland hydrology indicators are lacking.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Juncus balticus	85	X	FACW
2. Lepidium latifolium	5		FAC
3. Ericameria nauseosa	5		UPL
4.			
5.			
6.			
7.			
8.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Lower reach of shallow swale dominated by Juncus balticus.

SOIL

Sampling Point: 01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-12	10YR 3/2	100					loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Soils lack redox but have high organic matter content.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Location lacks evidence of prolonged saturation.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 11/15/2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 02

Investigator(s): Jeff Glazner Section, Township, Range: S33, T19N, R20E

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): LRR D Lat: 39.46880 Long: 119.74268 Datum: WGS84

Soil Map Unit Name: 470- Dalzell loamy fine sand NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Depressional area in toe drain of hill. Appears to be a constructed feature but likely several decades ago. Captures groundwater discharge.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Populus fremontii (deltoides)	40	X	FAC
2.			
3.			
4.			
	40 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. Salix exigua	40	X	FACW
2.			
3.			
4.			
5.			
	40 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Typha latifolia	10	X	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 90 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Bottom is mostly clear of vegetation - some cattail an nothing else. Banks lined with Salix exigua exhibiting advantageous route approximately 12" above bottom. Cottonwoods in overstory.

SOIL

Sampling Point: 02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
2-12	10YR 3/1	95	7.5YR 4/6	5	C	M	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Redox faint. Soil column dense with Salix exigua roots.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ✓ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 6

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation at 6". Wet at surface.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 11/15/2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 03

Investigator(s): Jeff Glazner Section, Township, Range: S33, T19N, R20E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 3

Subregion (LRR): LRR D Lat: 39.46972 Long: 119.74248 Datum: WGS84

Soil Map Unit Name: 470- Dalzell loamy fine sand NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

Suspect area on photo. Area within herbaceous area and on slope of approximately 3%. Possibly historically wetter? Lacks evidence of prolonged saturation.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Lepideum latifolium	95	X	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	95 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks:

Area is dominated by Lepideum. Due to seasonal timing, other species not identifiable.

SOIL

Sampling Point: 03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	7.5YR 4/3	100					organic l	dense roots
3-12	7.5YR 4/2	100					silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Highly organic - mostly fine roots from the whitetop in upper part. Silty/sandy loam below. Lacks redox.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sloped field lacks evidence of prolonged saturation.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 11/15/2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 04

Investigator(s): Jeff Glazner Section, Township, Range: S33, T19N, R20E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): 1

Subregion (LRR): LRR D Lat: 39.47016 Long: 119.74147 Datum: WGS84

Soil Map Unit Name: 470- Dalzell loamy fine sand NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

Suspect area. Lacks vegetation. May be due to high cattle use and possibly salt.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Plant stubble is probably Lepideum latifolium, but unclear.

SOIL

Sampling Point: 04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2							organic	
2-12	7.5YR 4/2	100	0				silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Soil lacks redox.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Area lacks evidence of prolonged saturation. Even drier than data point #3.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 11/15/2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 05

Investigator(s): Jeff Glazner Section, Township, Range: S33, T19N, R20E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): <1

Subregion (LRR): LRR D Lat: 39.47016 Long: 119.74147 Datum: WGS84

Soil Map Unit Name: 470-Dalzell loamy fine sand NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Edge of cattail marsh at bottom of field bermed by dirt road. Water source is either seepage or from swale to the southwest.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Typha domingensis	80	X	OBL
2. Lepidium latifolium	10		FAC
3.			
4.			
5.			
6.			
7.			
8.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Cattail marsh.

SOIL

Sampling Point: 05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-1	7.5YR 4/1	100	0				mucky	
1-12	7.5YR 3/1	100	0				clayey lo	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Lacks redox (or very faint) but low chroma and clearly saturated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 2

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturated to near surface

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 11/15/2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 06

Investigator(s): Jeff Glazner Section, Township, Range: S33, T19N, R20E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): channel/ditch Slope (%): <1

Subregion (LRR): LRR D Lat: 39.47084 Long: 119.74021 Datum: WGS84

Soil Map Unit Name: 451- Voltaire loam, slightly saline NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	

Remarks:

Other Waters. Typical reach of channel at edge of irrigated pasture. Slow moving water and varying width of open water. Steep sides. Flows to the north.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Schoenoplectus acutus			
2. Azolla microphylla			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks:

Tules line edge of channel; water in channel.

SOIL

Sampling Point: 06

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

Soil data not taken. Inundated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water present in channel.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 11/15/2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 07

Investigator(s): Jeff Glazner Section, Township, Range: S33, T19N, R20E

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): <1

Subregion (LRR): LRR D Lat: 39.47048 Long: 119.73907 Datum: WGS84

Soil Map Unit Name: 863- Reywat-Rock outcrop complex, 15-20% slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Toe of hill seep. Dense cattail marsh.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Typha domingensis	100	X	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Cattail marsh.

SOIL

Sampling Point: 07

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4								organics -root masses
4-12	7.5YR 4/1	100					loam	rocky

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Loamy organic soil. Lacks evident redox.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 10

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation at 10".

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 11/15/2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 08

Investigator(s): Jeff Glazner Section, Township, Range: S33, T19N, R20E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): <1

Subregion (LRR): LRR D Lat: 39.47058 Long: 119.73902 Datum: WGS84

Soil Map Unit Name: 451- Voltaire loam, slightly saline NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:

Similar to data point 07 but approximately 6' lower in landscape and separated by a berm.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Nasturtium officinale	50	X	OBL
2. Typha domingensis	30	X	OBL
3. Scirpus microcarpus	20	X	OBL
4.			
5.			
6.			
7.			
8.			
	100 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Aquatic vegetation in standing water.

SOIL

Sampling Point: 08

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-12	7.5YR 2.5/1	100					silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Mucky soil below standing water. Highly organic.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required, check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 4

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Standing water in toe drain.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 12/22/2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 09

Investigator(s): Jeff Glazner Section, Township, Range: S33, T19N, R20E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): <1

Subregion (LRR): LRR D Lat: 39.47174 Long: 119.74800 Datum: WGS84

Soil Map Unit Name: 910- Vamp fine sandy loam, slightly saline-alkali NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:

Major spring. Rio Poco Road entrance. Standing water approximately 12" deep flowing offsite into storm drain and onsite through culvert under dirt road.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Juncus balticus	20	X	FACW
2. Typha latifolia	30	X	OBL
3.			
4.			
5.			
6.			
7.			
8.			
	50 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Seep is lined with Salix exigua. Typha latifolia, Juncus balticus common at marshy edge.

SOIL

Sampling Point: 09

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

No soil data taken - inundated.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 12

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Spring. Major discharge point for water daylighting at toe of hill. Carp swimming in deepest area.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 12/22/2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 10

Investigator(s): Jeff Glazner Section, Township, Range: S33, T19N, R20E

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): LRR D Lat: 39.47201 Long: 119.74617 Datum: WGS84

Soil Map Unit Name: 470- Dalzell loamy fine sand NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____	No ✓	
Wetland Hydrology Present?	Yes ____	No ✓	

Remarks:

Suspect area. Excavated depression supporting willow and Juncus balticus. Lacks evidence of near-surface saturation.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. Salix laevigata	40	X	FACW
2. Salix exigua	20	X	FACW
3.			
4.			
5.			
	60 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Juncus balticus	20	X	FACW
2. unknown annual	15		FAC
3.			
4.			
5.			
6.			
7.			
8.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Vegetation community most likely supported by subsurface seepage from adjacent drainage swale.

SOIL

Sampling Point: 10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-12	2.5 YR 3/3	100					sandy loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

No redox.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Lacks evidence of surface or near-surface saturation.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 12/22/2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 11

Investigator(s): Jeff Glazner Section, Township, Range: S33, T19N, R20E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): swale Slope (%): 1

Subregion (LRR): LRR D Lat: 39.47309 Long: 119.74216 Datum: WGS84

Soil Map Unit Name: 101- Aquinas sandy loam, 4-8% slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓ No ____	
Wetland Hydrology Present?	Yes ✓ No ____	

Remarks:

Swale/ditch carrying seep water to to main drain (IS-1). Actually, this is a constructed drainage ditch with regular maintenance to keep it open. Prominent sidecast.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Typha latifolia	30	X	OBL
2. Eleocharis acicularis	5		OBL
3. Juncus balticus	5		FACW
4. Epilobium ciliatum	10		FACW
5.			
6.			
7.			
8.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 70 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Sparse vegetation in ditch, especially in winter.

SOIL

Sampling Point: 11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No _____

Remarks:

No soil data taken - flowing water.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Flowing at a trickle.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 12-22-2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 12

Investigator(s): Jeff Glazner Section, Township, Range: S33, T19N, R20E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): channel Slope (%): 1-2

Subregion (LRR): LRR D Lat: 39.47468 Long: 119.74198 Datum: WGS84

Soil Map Unit Name: 454- Voltaire silty clay, drained NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No _____
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No _____	

Remarks:

Other waters. Flowing stream (approx. 2 cfs) with hydrophytic vegetation edge. Drainage ditch/intermittent stream.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1. Polypogon monspeliensis			
2. Juncus balticus			
3. Eleocharis macrostachya			
4. Hordeum brachyantherum			
5. Schoenoplectus acutus			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks:

SOIL

Sampling Point: 12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

No soil data taken - flowing water.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Flowing water.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 10/3/2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 13

Investigator(s): Jeff Glazner Section, Township, Range: S28, T19N, R20E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): channel Slope (%): <1

Subregion (LRR): LRR D Lat: 39.48179 Long: 119.74440 Datum: WGS84

Soil Map Unit Name: 470- Dalzell loamy fine sand NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	

Remarks:

Other waters. Perennial stream. Flows from west through urban area and drains into Steamboat Creek just east of site.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

__ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks:

Narrow band of vegetation on steep banks.

SOIL

Sampling Point: 13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

Rocky bed below water line.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Low flow in October 2016.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 11/15/2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 14

Investigator(s): Jeff Glazner Section, Township, Range: S3, T18N, R20E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): channel Slope (%): 1

Subregion (LRR): LRR D Lat: 39.46112 Long: 119.72955 Datum: WGS84

Soil Map Unit Name: 430- Sagouspe variant loamy very fine sand NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No _____
Hydric Soil Present?	Yes _____	No _____	
Wetland Hydrology Present?	Yes _____	No _____	

Remarks:

Other waters. Perennial stream. Thomas Creek. Flows from west through Alexander Lake and along a narrow, constructed channel into Steamboat Creek.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	_____ = Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	_____ = Total Cover		
Herb Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks:

Non-woody hydrophytic band of vegetation along channel banks. No vegetation in channel.

SOIL

Sampling Point: 14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

Flowing.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Flowing channel. Beavers abundant in this system and spreading waterways.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 12/22/2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 15

Investigator(s): Jeff Glazner Section, Township, Range: S3, T18N, R20E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): channel Slope (%): 1-2

Subregion (LRR): LRR D Lat: 39.46000 Long: 119.73046 Datum: WGS84

Soil Map Unit Name: 430- Sagouspe variant loamy very fine sand NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Well-defined channel/swale, but does not appear to carry water for extended periods. This feature carries overflow of Thomas Creek.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Juncus balticus	20	X	FACW
2. Hordeum brachyantherum	20	X	FACW
3. Lepidium latifolium	10		FAC
4.			
5.			
6.			
7.			
8.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 50 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Herbaceus hydrophytes in channel bottom.

SOIL

Sampling Point: 15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
2-8	10YR 4/2	90	7.5YR 4/6	10	C	M	loam	rocky

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (LRR C)
- ___ 1 cm Muck (A9) (LRR D)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (LRR C)
- ___ 2 cm Muck (A10) (LRR B)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (Nonriverine)
- ___ Sediment Deposits (B2) (Nonriverine)
- ___ Drift Deposits (B3) (Nonriverine)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (Riverine)
- ___ Sediment Deposits (B2) (Riverine)
- ___ Drift Deposits (B3) (Riverine)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 6

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water flowing in channel. Carries overflow from Thomas Creek.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 12-22-2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 16

Investigator(s): Jeff Glazner Section, Township, Range: S3, T18N, R20E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): channel Slope (%): 1

Subregion (LRR): LRR D Lat: 39.45840 Long: 119.73236 Datum: WGS84

Soil Map Unit Name: 805- Truckee sandy loam, gravelly substratum NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Constructed field drain. Carries minor flow from south.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Juncus balticus	25	X	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	____ = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 75 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species ____	x 3 =	____
FACU species ____	x 4 =	____
UPL species ____	x 5 =	____
Column Totals: ____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Juncus common along edges of channel.

SOIL

Sampling Point: 16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
2-10	7.5YR 4/2	90	7.5YR 4/6	10	C	M	silty loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ✓ No ___ Depth (inches): 2

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water in portions of channel.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 12/22/2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 17

Investigator(s): Jeff Glazner Section, Township, Range: S3, T18N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): concave Slope (%): 0

Subregion (LRR): LRR D Lat: 39.45753 Long: 119.73303 Datum: WGS84

Soil Map Unit Name: 241- Updike loam, gravelly substratum NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ____	No ____	

Remarks:

Saline depression adjacent to mitigation area to west. Evidence of prolonged saturation, even though lacking redox.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Distichlis spicata	30	X	FAC
2. Juncus balticus	20	X	FACW
3. other unknown	10		unk
4.			
5.			
6.			
7.			
8.			
	60 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ = Total Cover		

% Bare Ground in Herb Stratum 40 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species ____	x 3 =	____
FACU species ____	x 4 =	____
UPL species ____	x 5 =	____
Column Totals: ____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Saline depression supporting primarily saltgrass but secondarily Juncus baliticus. Other unknowns present. Cressa truxillensis in other parts of basin.

SOIL

Sampling Point: 17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
1-12	10YR 4/2	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

No redox observed in soil pit (soils difficult to read).

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): _____

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 8

Wetland Hydrology Present? Yes ___ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Soils saturated to approximately 8" (no ponding anywhere).

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Bella Vista Ranch City/County: Reno/Washoe Sampling Date: 12/22/2016

Applicant/Owner: Newport Pacific Land Co., LLC State: NV Sampling Point: 18

Investigator(s): Jeff Glazner Section, Township, Range: S4, T18N, R20E

Landform (hillslope, terrace, etc.): terrace Local relief (concave, convex, none): none Slope (%): 0

Subregion (LRR): LRR D Lat: 39.45564 Long: 119.73832 Datum: WGS84

Soil Map Unit Name: 230- Cradlebaugh loam NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks:

Seasonal wetland. Unusual setting in historically manipulated field.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
	____ = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	____ = Total Cover		
Herb Stratum (Plot size: ____)			
1. Cressa truxillensis	90	X	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	90 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	90 = Total Cover		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species ____	x 3 =	____
FACU species ____	x 4 =	____
UPL species ____	x 5 =	____
Column Totals: ____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Nearly a monoculture of Cressa. Juncus balticus abundant in other areas of wetland.

SOIL

Sampling Point: 18

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	Gley2 2.5/0	100						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Soils black/gley. May have been a bottom land in the past.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): _____

Water Table Present? Yes ___ No ___ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ✓ No ___ Depth (inches): 1

Wetland Hydrology Present? Yes ✓ No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Saturation at 1" below surface.

Appendix B.
Plant Species Observed

Appendix B - Bella Vista Ranch Plants Observed with Wetland Status

Taxon	Common Name	Wetland Status
Achillea millefolium	Common yarrow	FACU
Allium sp.	Wild onion	VARIES
Artemisia arbuscula	Low sagebrush	UPL
Artemisia douglasiana	California mugwort	FAC
Artemisia tridentata	Big sagebrush	UPL
Asclepias fascicularis	Narrow-leaf milkweed	FAC
Atriplex canescens	Fourwing saltbush	UPL
Azolla microphylla	Mexican mosquito fern	OBL
Brassica rapa	Field mustard	FACU
Bromus diandrus	Ripgut grass	UPL
Bromus hordeaceus	Soft chess	FACU
Bromus inermis	Smooth brome	FACU
Bromus tectorum	Cheat grass	UPL
Carduus nutans	Musk thistle	FACU
Carex nebrascensis	Nebraska sedge	OBL
Carex praegracilis	Clustered field-sedge	FACW
Carex sp.	Sedge	VARIES
Centaurea solstitialis	Yellow starthistle	UPL
Cirsium vulgare	Bull thistle	FACU
Cressa truxillensis	Alkali weed	FACW
Cynodon dactylon	Bermudagrass	FACU
Dactylis glomerata	Orchard grass	FACU
Distichlis spicata	Saltgrass	FAC
Elaeagnus angustifolius	Russian olive	FAC
Eleocharis acicularis	Least spikerush	OBL
Eleocharis macrostachya	Creeping spikerush	OBL
Elymus cinereus	Great Basin wild-rye	FAC
Elymus elymoides	Squirreltail	FACU
Elymus trachycaulus	Slender wheatgrass	FACU
Elymus triticoides	Beardless wildrye	FAC
Ephedra viridis	Green ephedra	UPL
Epilobium ciliatum	Hairy willow-herb	FACW
Equisetum arvense	Common horsetail	FAC
Ericameria nauseosa	Rubber rabbitbrush	UPL
Eriogonum sp.	Wild buckwheat	UPL
Euthamia occidentalis	Western goldenrod	FACW
Festuca perennis	Italian ryegrass	FAC
Hordeum brachyantherum	Meadow barley	FACW

Taxon	Common Name	Wetland Status
Hordeum jubatum	Foxtail barley	FAC
Juncus balticus	Baltic rush	FACW
Juncus bufonius	Toad rush	FACW
Juncus effusus	Soft rush	FACW
Lemna sp.	Duckweed	OBL
Lepidium latifolium	Broadleaf pepperweed	FAC
Linum lewisii	Prairie flax	UPL
Muhlenbergia filiformis	Pull-up muhly	FACW
Nasturtium officinale	Watercress	OBL
Phragmites australis	Common reed	FACW
Poa secunda	Secund bluegrass	FACU
Polypogon monspeliensis	Annual beard grass	FACW
Populus fremontii	Fremont cottonwood	FAC
Purshia tridentata	Antelope bitterbrush	UPL
Rumex crispus	Curly dock	FAC
Salix exigua	Narrow-leaved willow	FACW
Salix laevigata	Red willow	FACW
Salsola tragus	Russian-thistle	FACU
Sarcobatus vermiculatus	Greasewood	FACU
Schoenoplectus acutus	Hardstem bulrush	OBL
Scirpus microcarpus	Small-fruit bulrush	OBL
Sisymbrium altissimum	Tumble mustard	FACU
Stipa hymenoides	Indian ricegrass	UPL
Tamarix sp.	Tamarisk	VARIES
Triticum aestivum	Wheat	UPL
Typha domingensis	Southern cattail	OBL
Typha latifolia	Broad-leaved cattail	OBL
Xanthium strumarium	Cocklebur	FAC

Appendix C.
USACOE Aquatic Resources Spreadsheet

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
Alexander Lake	NEVADA	L2UB	LACUSTRINF	Area	55.7874023	acre	IMPNDMNT	39.46057992	-119.7376609	Thomas Creek
EM-1	NEVADA	PEM1	RIVERINE	Area	2.68117869	acre	DELINEATE	39.45666556	-119.7420359	Thomas Creek
IS-1	NEVADA	R4SB5	RIVERINE	Area	0.92687005	acre	DELINEATE	39.47471609	-119.7419863	Steamboat Creek
PS-1 (Thomas Creek)	NEVADA	R2UB1	RIVERINE	Area	1.57218293	acre	DELINEATE	39.46014293	-119.7323829	Steamboat Creek
PS-2	NEVADA	R2UB1	SLOPE	Area	0.2806693	acre	DELINEATE	39.48193998	-119.7433985	Steamboat Creek
S-1	NEVADA	PEM1	DEPRESS	Area	0.91300588	acre	DELINEATE	39.47067729	-119.7418627	Steamboat Creek
S-2	NEVADA	PEM1	DEPRESS	Area	0.32708866	acre	DELINEATE	39.46950247	-119.7410067	Steamboat Creek
S-3	NEVADA	PEM1	DEPRESS	Area	0.15099399	acre	DELINEATE	39.47053248	-119.7393303	Steamboat Creek
S-4	NEVADA	PEM1	DEPRESS	Area	0.03144886	acre	DELINEATE	39.47066796	-119.7385082	Steamboat Creek
S-5	NEVADA	PEM1	DEPRESS	Area	0.11514179	acre	DELINEATE	39.46015641	-119.7341412	Steamboat Creek
Spring-1	NEVADA	PEM1	DEPRESS	Area	0.10579793	acre	DELINEATE	39.47183327	-119.7479424	Steamboat Creek
SW-1	NEVADA	PEM2	DEPRESS	Area	0.5349833	acre	DELINEATE	39.45755481	-119.7331835	Steamboat Creek
SW-2	NEVADA	PEM2	DEPRESS	Area	0.07564187	acre	DELINEATE	39.45658883	-119.7384729	Steamboat Creek
SW-3	NEVADA	PEM2	DEPRESS	Area	0.38880334	acre	DELINEATE	39.4559456	-119.7383694	Steamboat Creek
WF-1	NEVADA	PUB2	DEPRESS	Area	3.50820127	acre	DELINEATE	39.45965752	-119.7395398	Thomas Creek
WS-1	NEVADA	PUB3	SLOPE	Area	0.39757599	acre	DELINEATE	39.47182214	-119.7450469	Steamboat Creek
WS-2	NEVADA	PUB3	SLOPE	Area	0.01471043	acre	DELINEATE	39.47109383	-119.7412646	Steamboat Creek
WS-3	NEVADA	PUB3	SLOPE	Area	0.16175448	acre	DELINEATE	39.45884388	-119.7335671	Steamboat Creek
WS-4	NEVADA	PUB3	SLOPE	Area	0.34235104	acre	DELINEATE	39.45891994	-119.732773	Steamboat Creek
WS-5	NEVADA	PUB3	SLOPE	Area	0.28991275	acre	DELINEATE	39.45702559	-119.73265	Steamboat Creek
WS-6	NEVADA	PUB3	SLOPE	Area	0.04663496	acre	DELINEATE	39.46030503	-119.7288457	Steamboat Creek
WS-7	NEVADA	PUB3	SLOPE	Area	0.19390257	acre	DELINEATE	39.46008708	-119.7300989	Steamboat Creek
WS-8	NEVADA	PUB3	SLOPE	Area	0.12147626	acre	DELINEATE	39.45554036	-119.742448	Steamboat Creek
WS-9	NEVADA	PUB3	SLOPE	Area	0.28461766	acre	DELINEATE	39.45676807	-119.7397239	Steamboat Creek

APPENDIX 6

Environmental Site Assessment and Remedial Action Plan

Prepared by McGinley & Associates

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- Site Remediation
- Soil & Groundwater Investigations
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- NEPA Studies
- Phase I Assessments
- Indoor Air Quality
- Storm Water & Spill Plans
- Underground Tank Services
- Toxics Release Inventory
- Geographic Information Systems
- Groundwater Modeling
- Litigation Support & Expert Witness
- Mining Plans of Operations
- Mining Exploration Notices
- Abandoned Mine Lands

RESULTS OF ENVIRONMENTAL SITE ASSESSMENT ACTIVITIES AND REMEDIAL ACTION PLAN

Bella Vista Ranch and Butler Ranch Assessor Parcel Numbers 021-270-37, 021-270-38, 021-270-41, 165-011-07, 165-011-09, 165-012-02, 021-760-06, 021-760-08 and 021-760-09 Near Alexander Lake, City of Reno, Washoe County, Nevada Facility ID: D-000961

Prepared for:

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Original Submittal Date: March 3, 2017
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APPENDICES

Appendix A Chain-of Custody Records and Analytical Reports for Soil Samples
Appendix B NDEP Spill Report #161103-05
Appendix C NDEP Requested Information – “Attachment B”
Appendix D US EPA “Soil Sampling” Standard Operating Procedure

1. INTRODUCTION

On behalf of Bella Vista Ranch Company, LLC and NPLC BV Investment Company, LLC, McGinley and Associates, Inc. (MGA) has prepared this report describing environmental site assessment (ESA) activities conducted at Bella Vista Ranch and Butler Ranch, (Assessor Parcel Numbers (APNs) 021-270-37, 021-270-38, 021-270-41, 165-011-07, 165-011-09, 165-012-02, 021-760-06, 021-760-08 and 021-760-09), City of Reno, Washoe County, Nevada (Subject Property). The site location is indicated in Figure 1. Included herein are the results of the environmental site assessment activities, a plan for remedial action, and information requested in correspondence from the Nevada Division of Environmental Protection (NDEP) dated December 20, 2016.

2. SCOPE OF SERVICES

The initial ESA activities consisted of the following:

- preparation of a health and safety plan;
- soil sample collection activities;
- analytical testing of collected samples for mercury;
- regulatory reporting of a release discovery to the Nevada Division of Environmental Protection (NDEP); and,
- preparing this report.

3. BACKGROUND

The Bella Vista and Butler Ranches are planned for development as a residential/mixed-use community by NPLC BV Investment Company, LLC. The community development project is located immediately adjacent to the Regional Transportation Commission's (RTC) Southeast Connector Roadway Project. Mercury-impacted soil was discovered on the Southeast Connector Roadway Project by RTC, which resulted in awareness of the mercury by pertinent regulatory authorities. Proposed cut and fill activities within the 100-year floodplain of Steamboat Creek for site grading prompted a Conditional Letter of Map Revision (CLOMR) with the Federal Emergency Management Agency (FEMA). FEMA required an assessment of mercury impacted soil as a condition of the CLOMR and therefore, an environmental site assessment was conducted to assess for mercury within the soil proposed for cut and fill activities.

4. CONCEPTUAL SITE MODEL

The mercury-impacted soil at the Subject Property is believed to be related to legacy gold milling activities from the historic Comstock Lode mining era. Processing of the ore at Comstock's gold mills generally involved comminution of the ore with stamp mills, creating a slurry, and adding mercury to form an amalgam with the gold and silver. The gold and silver were later separated from the mercury using a distillation process and the mercury was reused. After about 1900, cyanide leaching and flotation processes replaced mercury amalgamation. The historical mills that impacted Steamboat Creek were located on Galena Creek and in

Washoe City, near Washoe Lake. Fluvial transport of the mercury is the primary means by which its mobilized in Steamboat Creek. The mercury is generally contained in the stream channel of Steamboat Creek, but decades of flood-irrigation at the Subject Property with water from Steamboat Creek allowed mercury-impacted sediment to be deposited on the irrigated areas of the Subject Property. As such, mercury-impacted soil is not expected to exist above the flood-irrigated lands and mercury concentrations within the irrigated areas are expected to decrease with distance from Steamboat Creek.

5. INITIAL ESA ACTIVITIES

The initial ESA activities described in the following sections were conducted on September 6, 2016 through September 9, 2016.

5.1 Objectives

The objectives of the initial ESA activities were to: 1) to assess for the presence of mercury in soil within areas proposed for cut and fill activities and two proposed borrow areas; 2) to assess for the presence of mercury in soil adjacent to a dewatering pond area proposed for future uses; and, 3) assess whether the mercury impacted soil is a hazardous waste.

5.2 Soil Sample Collection

The irrigated lands preliminarily proposed for cut and fill activities adjacent to Steamboat Creek were divided into four-acre grid cells, due to the proximity to Steamboat Creek, and the irrigated lands located away from Steamboat Creek were divided into 16-acre grid cells. Within each of the 55 total grid cells, a soil sample was collected from the center of the cell and homogenized with four other soil samples each collected randomly from within the four quarter-sections of the same grid cell. Soil samples were collected from the top six inches of soil using hand-tools and placed into a one-gallon Zip-loc bag for homogenization. After the soil had been thoroughly homogenized, a soil sample was collected from the Zip-loc bag and placed into a glass jar for delivery to the laboratory.

Borrow material from two nearby pits will be used as fill within the project area. The source material in the borrow pits was sampled to demonstrate that there were no mercury impacts to the borrow material. MGA collected a total of 19 discrete soil samples from within the borrow pits at random locations from the top six inches of material.

At the request of the Subject Property owner, three discrete soil samples were collected in the vicinity of a dewatering pond associated with the construction of the Southeast Connector. The soil samples were collected in undisturbed areas adjacent to the dewatering pond, from the top six inches of soil.

The soil samples were placed in laboratory-provided glass sample containers with a Teflon lid. The sample jars were filled completely to minimize head space, sealed, labeled and preserved in a cooler pending delivery to the laboratory for analysis. The 55 grid cells that were sampled and the borrow pit sample locations are shown on Figure 2. The locations of the samples collected adjacent to the dewatering pond are shown on Figure 3.

5.3 Analytical Testing

Soil samples were delivered under chain-of-custody protocol to a Nevada-certified laboratory, ESC Lab Sciences in Mt. Juliet, Tennessee, for analytical testing. The soil samples were analyzed for total solids by Method 2540-G2011 and total mercury by Method 7471A. Three composite soil samples with the highest reported concentrations of mercury were also analyzed by Toxicity Characteristic Leaching Procedure (TCLP) preparation by Method 1311 and analyzed for mercury by Method 7470A. Copies of the chain of custody records and analytical laboratory reports for the soil samples are included as Appendix A

5.4 Analytical Results

Analytical results of the soil samples are provided in Table 1. Detectable concentrations of mercury in the collected composite samples ranged from 0.0669 milligrams per kilogram (mg/kg) to 84.7 mg/kg. Detectable concentrations of mercury in the discrete samples collected from the two borrow pits ranged from 0.00535 mg/kg to 0.124 mg/kg. Detectable concentrations of mercury in the discrete samples collected adjacent to the dewatering pond ranged from 5.65 mg/kg to 15.5 mg/kg. All concentrations are reported on a dry-weight basis. The analytical results of the three composite soil samples analyzed for TCLP mercury were all reported below the laboratory detection limit, indicating the material is non-hazardous.

6. VERTICAL DELINEATION

Additional ESA activities were conducted on November 29 and 30, 2016 to assess the vertical extent of mercury impacts at the Subject Property. The site assessment activities for vertical delineation are described in the following section.

6.1 Objective

The objective of the additional ESA activities was to establish the maximum depths of mercury impacts to soils at the Subject Property.

6.2 Soil Sample Collection

Using the same grid pattern from the initial ESA activities, soil samples were collected from the ten grid cells with the highest reported concentrations of mercury based on the analytical results of the initial ESA (grid cells G013, G014, G017, G039, G045, G048, G049, G050, G053, and G055). Within each of the ten grid cells, four discrete soil samples were collected from the center of the cell at six-inch intervals down to two feet below ground surface (i.e.: 0-0.5 feet, 0.5-1.0 feet, 1.0-1.5 feet, and 1.5-2.0 feet below ground surface at each sample location).

The soil samples were placed in laboratory-provided glass sample containers with a Teflon lid. The sample jars were filled completely to minimize head space, sealed, labeled and preserved in a cooler pending delivery to the laboratory for analysis.

6.3 Analytical Testing

Soil samples were delivered under chain-of-custody protocol to ESC Lab Sciences in Mt. Juliet, Tennessee, for analytical testing. The soil samples were analyzed for total solids by Method 2540-G2011 and total mercury by Method 7471A. Five soil samples with the highest

reported concentrations of total mercury were also analyzed for methylmercury by Method 1630. Copies of the chain of custody records and analytical laboratory reports for the soil samples are included as Appendix A

6.4 Analytical Results

Analytical results of the soil samples are provided in Table 1 and Figure 4. All concentrations are reported on a dry-weight basis. Detectable concentrations of total mercury in the collected samples ranged from 0.198 mg/kg to 116 mg/kg. Grid cells G014, G048, and G053 had reported total mercury concentrations above 80 mg/kg in the discrete samples. None of the soil samples collected from 1.5 to 2.0 feet below ground surface had reported concentrations of mercury above 22 mg/Kg. Therefore, mercury impacts above the action level of 80 mg/kg are not expected below a depth of two feet at the Subject Property. Detectable concentrations of methylmercury, in the five samples with the highest concentration of total mercury, ranged from 0.875 nanograms per gram (ng/g) to 5.52 ng/g, which are all well below the United States Environmental Protection Agency Region 9 Regional Screening Level of 7,800 ng/g (7.8 mg/kg) for methylmercury. Based on these results, it does not appear that the mercury has methylated to concentrations that warrant further assessment.

7. REGULATORY REPORTING AND DETERMINATION OF REMEDIAL ACTION LEVEL

The reportable concentration for mercury in Nevada is 11 milligrams per liter (mg/kg) for residential soil and 46 mg/kg for industrial soil (based on United States Environmental Protection Agency Region 9 Regional Screening Levels). Of the 55 grid cells that were sampled, 37 grid cells had reported concentrations of mercury above the Nevada reportable concentration of 11 mg/Kg. Because mercury concentrations were detected above Nevada reportable concentrations in the collected soil samples, pursuant to the Nevada Administrative Code (NAC) 445A.345 through 445A.348 and the *NDEP Dra Guidelines for Discovery Events, June 2014*, the release was telephonically reported to the NDEP on November 3, 2016. A copy of the NDEP spill report (NDEP spill report number 161103-05) is provided in Appendix B.

MGA met with the NDEP on December 20, 2016 to engage in preliminary discussions regarding a path forward for this case. In the meeting, the NDEP determined that mercury impacts in Steamboat Creek can reasonably be attributed to the legacy mining and milling from the Comstock mining era. Therefore, this corrective action case would be administered in accordance with the Carson River Mercury Superfund Site, which has a residential remedial action level of 80 mg/kg for mercury in soil.

The NDEP subsequently issued a Request for Release/Spill Information letter dated December 20, 2016. The “Attachment B” information requested in the NDEPs December 20th letter is provided in Appendix C.

8. SUMMARY

The following is a summary of field activities and findings:

- The Bella Vista and Butler Ranches are planned for development as a residential/mixed-use community by NPLC BV Investment Company, LLC. Mercury-impacted soil was

discovered on the Southeast Connector Roadway Project by RTC. FEMA required an assessment of mercury impacted soil as a condition of a CLOMR and therefore, an environmental site assessment was conducted to assess for mercury within the soil proposed for cut and fill activities.

- The mercury-impacted soil at the Subject Property is believed to be related to legacy gold milling activities from the historic Comstock Lode mining era. The mercury is generally contained in the stream channel of Steamboat Creek, but decades of flood-irrigation at the Subject Property with water from Steamboat Creek allowed mercury-impacted sediment to be deposited on the irrigated areas of the Subject Property.
- Based on our discussions with the NDEP. this corrective action case will be administered in accordance with the Carson River Mercury Superfund Site, which has a residential remedial action level of 80 mg/kg for mercury in soil.
- During initial ESA activities, composite soil samples were collected from a total of 55 grid cells at the Subject Property. Additionally, a total of 19 discrete soil samples were collected from proposed borrow material in two nearby pits that will be used as fill within the project area to demonstrate that there were no mercury impacts in the borrow material. At the request of the property owner, three discrete soil samples were collected in the vicinity of a dewatering pond associated with the construction of the Southeast Connector.
- Detectable concentrations of mercury in the collected composite samples ranged from 0.0669 to 84.7 mg/kg. Detectable concentrations of mercury in the discrete samples collected from the two borrow pits ranged from 0.00535 to 0.124 mg/kg. Detectable concentrations of mercury in the discrete samples collected adjacent to the dewatering pond ranged from 5.65 to 15.5 mg/kg.
- Based on the results of the composite soil sampling, two grid cells were identified with mercury impacts above 80 mg/kg.
- Additional ESA activities were conducted to assess the vertical extent of mercury impacts at the Subject Property. Detectable concentrations of total mercury in the collected samples ranged from 0.198 to 116 mg/kg. None of the soil samples collected from 1.5 to 2.0 feet had reported concentrations of mercury above 22 mg/Kg. Therefore, mercury impacts above the action level of 80 mg/kg are not expected below a depth of two feet at the Subject Property.
- Detectable concentrations of methylmercury, in the five samples with the highest concentration of total mercury, ranged from 0.875 to 5.52 ng/g, which are all well below the United States Environmental Protection Agency Region 9 Regional Screening Level of 7,800 ng/g for methylmercury. Based on these results, it does not appear that the mercury has methylated to concentrations that warrant further assessment.

9. REMEDIAL ACTION PLAN

9.1 Site Grading Plan

Mass grading of the Subject Property will occur as a part of construction activities during site development. Cut and fill of soil will occur throughout the project area to raise proposed development areas out of the floodway of Steamboat Creek, while increasing the capacity of the floodway. The proposed cut and fill areas shown on Figure 2 were preliminary and have

since been updated to the current cut and fill areas shown on Figure 5. Because the balance of cut and fill from the floodplain is not enough to raise development areas out of the floodway of Steamboat Creek, additional fill material sourced from the two borrow pits that were previously assessed will be used to raise all land uses (except open space) up to final grade. Additionally, due to geotechnical considerations, at least two feet of structural fill from the two borrow pits will be required in the areas where floodplain soil was used as fill. Therefore, at least two feet of clean fill will be placed above all areas receiving fill material from the floodplain area for all proposed land uses except open space.

Based on previous assessment activities, sample grid cells G014, G048, G053 and G045 were identified as areas with mercury concentrations exceeding the action level of 80 mg/kg that will require remedial action. Remediation of the mercury impacted soil in these four grid cells will be accomplished by covering the mercury-impacted material with at least two feet of clean fill during site grading activities to eliminate the potential exposure pathway.

Sample grid cells G048 and G053 are located in areas planned entirely for non-residential use. These two grid cells are located within areas that will be cut to deepen the floodway of Steamboat Creek (see Figure 5). Previous assessment activities have demonstrated that mercury impacts above the action level do not extend beyond two feet below ground surface. As such, the soil within the extent of these two grid cells will be excavated to two feet below ground surface and stockpiled adjacent to the excavation. The remaining underlying soil within the two grid cells will continue to be excavated to the proposed final grade and used as fill in other areas of the Subject Property. After the final grade is achieved, the soil within the grid cells will be excavated at least four feet beyond the proposed final grade. This excavated material will be stockpiled separate from the shallow mercury-impacted soil to be used later as fill material. After the soil has been excavated to at least four feet below final grade, the stockpiled mercury-impacted soil will be placed within the bottom of the excavation and covered with at least two feet of the stockpiled non-mercury-impacted soil and/or clean imported fill from the two borrow pits. Any remaining non-mercury-impacted soil will be used as fill in other areas of the property.

The majority of grid cells G014 and G045 are proposed for non-residential use, however, portions have been proposed for residential use. For grid cells G014 and G045, the soil within the full extent of the grid cells will be excavated to two feet below ground surface and stockpiled adjacent to the excavation. Depending on the proposed final grade, the remaining underlying soil will either continue to be excavated and used as fill in other areas of the Subject Property or backfilled with clean imported fill from the borrow areas. After the final grade is achieved, only the soil within the floodway area will be over-excavated at least four feet beyond the proposed final grade. The portions that are designated as residential or for a road right of way are to remain at the final grade proposed. The excavated material will be stockpiled separate from the shallow mercury-impacted soil, to be used later as fill material. After the soil has been excavated to at least four feet below final grade, the stockpiled mercury-impacted soil will be placed within the bottom of the excavation and covered with at least two feet of the stockpiled non-mercury-impacted soil and/or clean imported fill from the two borrow pits. Any remaining non-mercury-impacted soil will be used as fill in other areas of the property.

10. CONFIRMATION SAMPLING

10.1 Soil Sample Collection

After the site has achieved final grade, confirmation soil samples will be collected to demonstrate that no mercury impacts above 80 mg/Kg are present within the top two feet of soil in the residential areas where cut and fill activities from the floodplain occurred. Residential areas that lie above the former flood zone that were only cut and/or only received fill from the two borrow pits will not be sampled. The four grid cells that were subject to remedial activities will also be assessed during the confirmation sampling.

The four grid cells where remedial activities occurred and the residential areas where cut or fill activities occurred will be divided into one-acre sample grid cells, totaling approximately 415 sample grid cells (see Figure 6). At the centroid of each of the sample grid cells, a discrete soil sample will be collected from the top three inches of soil at the surface and from a depth of two feet below ground surface. If the centroid of the grid cell does not lie within a proposed residential area because its located along the boundary, the discrete sample will be collected from near the center of the residential area that lies within that sample grid cell. Following sample collection, the borehole will be backfilled with the remaining soil that was excavated from the borehole.

Soil samples will be collected in accordance with the US EPA "Soil Sampling" Standard Operating Procedure (SOP) provided in Appendix D. It is anticipated soil samples will be collected with a hand auger and/or direct-push drilling rig in accordance with Section 7.2.2 of the aforementioned SOP. The soil samples will be placed in laboratory-provided glass jars with Teflon lids, sealed, labeled, placed on ice in a cooler, and delivered to the laboratory under chain-of custody protocol. The soil samples will be delivered to the laboratory within one week of sample collection.

10.2 Analytical Testing

Soil samples will be delivered under chain-of-custody protocol to ESC Lab Sciences in Mt. Juliet, Tennessee, for analytical testing. The soil samples will be analyzed for total solids by Method 2540-G2011 and total mercury by Method 7471A.

10.3 Report Preparation

Following completion of the remedial activities, MGA will prepare a report for submittal to the NDEP. The report will include a description of remedial activities, final disposition locations, confirmation soil sampling protocols and results, analytical laboratory reports and chain-of-custody documentation, and any other relevant information/documents. Additionally, if appropriate, a request for No Further Action will also be submitted with the report. MGA anticipates this report will be submitted to the NDEP within 60 to 90 days following completion of remedial activities.

11. LIMITATIONS

The conclusions presented herein are partially based on information provided by MGA. MGA makes no warranties or guarantees as to the accuracy or completeness of information provided or compiled by others. The results reported herein are applicable to the time the sampling occurred. Changes in site hydrogeology may occur as a result of rainfall, snowmelt, water usage, or other factors.

It should be recognized that definition and evaluation of environmental conditions is a difficult and inexact science. Judgments and opinions leading to conclusions and recommendations are generally made with an incomplete knowledge of the conditions present. More extensive studies, including additional environmental investigations, can tend to reduce the inherent uncertainties associated with such studies. Additional information not found or available to MGA at the time of writing this report may result in a modification to the conclusions and recommendations contained herein.

The presentation of data presented herein is intended for the purpose of the visualization of environmental conditions. A greater degree of spatial and temporal data density may result in a more accurate representation of environmental conditions. Although such data visualization techniques may aid in providing a conceptual understanding of environmental conditions, such presentations are not intended to completely depict environmental conditions.

This report is not a legal opinion. The services performed by MGA have been conducted in a manner consistent with the level of care ordinarily exercised by members of our profession currently practicing under similar conditions. No other warranty, expressed or implied, is made.

The use of the word "certify" in this document constitutes an expression of professional opinion regarding those facts or findings which are the subject of the certification and does not constitute a warranty or guarantee, either express or implied.

12. CLOSING

MGA trust the information provided herein satisfies the requirements of the NDEP at this time. Should you have any questions regarding this report, please contact us at (775) 829-2245.

Respectfully submitted,

McGinley and Associates, Inc.

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and to the best of my knowledge comply with all applicable federal, state and local statutes, regulations, and ordinances.



Benjamin Peterson, PG, CEM # 2397, Exp. 3/24/19
Project Manager

Reviewed by:



Joseph McGinley, PE, PG, C.E.M. #1036, Exp. 11/23/18
Principal

Table 1. Summary of Soil Analytical Results						
Sample ID	Sample Collection Date	Sample Type	Grid ID or Feature	Sample Depth (Feet)	Total Mercury Concentration (mg/kg-dry)	Methylmercury Concentration (ng/g)
BLC001-G001	9/6/2016	Composite	G001	0-0.5	7.03	NA
BLC001-G002	9/6/2016	Composite	G002	0-0.5	13.3	NA
BLC001-G003	9/6/2016	Composite	G003	0-0.5	10.9	NA
BLC001-G004	9/6/2016	Composite	G004	0-0.5	3.47	NA
BLC001-G005	9/6/2016	Composite	G005	0-0.5	6.07	NA
BLC001-G006	9/6/2016	Composite	G006	0-0.5	8.15	NA
BLC001-G007	9/6/2016	Composite	G007	0-0.5	28.0	NA
BLC001-G008	9/6/2016	Composite	G008	0-0.5	22.4	NA
BLC001-G009	9/6/2016	Composite	G009	0-0.5	13.3	NA
BLC001-G010	9/6/2016	Composite	G010	0-0.5	17.3	NA
BLC001-G011	9/6/2016	Composite	G011	0-0.5	22.8	NA
BLC001-G012	9/6/2016	Composite	G012	0-0.5	10.5	NA
BLC001-G013	9/7/2016	Composite	G013	0-0.5	42.9	NA
BLC001-G014	9/7/2016	Composite	G014	0-0.5	36.6	NA
BLC001-G015	9/6/2016	Composite	G015	0-0.5	11.3	NA
BLC001-G016	9/7/2016	Composite	G016	0-0.5	35.8	NA
BLC001-G017	9/7/2016	Composite	G017	0-0.5	48.7	NA
BLC001-G018	9/7/2016	Composite	G018	0-0.5	26.6	NA
BLC001-G019	9/7/2016	Composite	G019	0-0.5	26.0	NA
BLC001-G020	9/7/2016	Composite	G020	0-0.5	28.0	NA
BLC001-G021	9/7/2016	Composite	G021	0-0.5	23.7	NA
BLC001-G022	9/9/2016	Composite	G022	0-0.5	4.90	NA
BLC001-G023	9/9/2016	Composite	G023	0-0.5	8.16	NA
BLC001-G024	9/9/2016	Composite	G024	0-0.5	31.0	NA
BLC001-G025	9/9/2016	Composite	G025	0-0.5	31.3	NA
BLC001-G026	9/8/2016	Composite	G026	0-0.5	0.0669	NA
BLC001-G027	9/8/2016	Composite	G027	0-0.5	0.105	NA
BLC001-G028	9/8/2016	Composite	G028	0-0.5	0.544	NA
BLC001-G029	9/9/2016	Composite	G029	0-0.5	18.9	NA
BLC001-G030	9/9/2016	Composite	G030	0-0.5	17.2	NA
BLC001-G031	9/8/2016	Composite	G031	0-0.5	0.199	NA
BLC001-G032	9/8/2016	Composite	G032	0-0.5	8.35	NA
BLC001-G033	9/8/2016	Composite	G033	0-0.5	16.0	NA
BLC001-G034	9/8/2016	Composite	G034	0-0.5	15.8	NA
BLC001-G035	9/8/2016	Composite	G035	0-0.5	23.0	NA
BLC001-G036	9/8/2016	Composite	G036	0-0.5	16.6	NA
BLC001-G037	9/8/2016	Composite	G037	0-0.5	0.202	NA

Table 1. Summary of Soil Analytical Results						
Sample ID	Sample Collection Date	Sample Type	Grid ID or Feature	Sample Depth (Feet)	Total Mercury Concentration (mg/kg-dry)	Methylmercury Concentration (ng/g)
BLC001-G038	9/8/2016	Composite	G038	0-0.5	10.5	NA
BLC001-G039	9/8/2016	Composite	G039	0-0.5	43.4	NA
BLC001-G040	9/8/2016	Composite	G040	0-0.5	30.9	NA
BLC001-G041	9/8/2016	Composite	G041	0-0.5	1.15	NA
BLC001-G042	9/8/2016	Composite	G042	0-0.5	34.5	NA
BLC001-G043	9/8/2016	Composite	G043	0-0.5	23.3	NA
BLC001-G044	9/8/2016	Composite	G044	0-0.5	15.5	NA
BLC001-G045	9/8/2016	Composite	G045	0-0.5	**84.7**	NA
BLC001-G046	9/7/2016	Composite	G046	0-0.5	1.75	NA
BLC001-G047	9/8/2016	Composite	G047	0-0.5	16.5	NA
BLC001-G048	9/8/2016	Composite	G048	0-0.5	48.5	NA
BLC001-G049	9/8/2016	Composite	G049	0-0.5	42.2	NA
BLC001-G050	9/8/2016	Composite	G050	0-0.5	59.5	NA
BLC001-G051	9/7/2016	Composite	G051	0-0.5	3.52	NA
BLC001-G052	9/7/2016	Composite	G052	0-0.5	32.2	NA
BLC001-G053	9/7/2016	Composite	G053	0-0.5	**82.6**	NA
BLC001-G054	9/7/2016	Composite	G054	0-0.5	23.1	NA
BLC001-G055	9/7/2016	Composite	G055	0-0.5	69.9	NA
BLC001-BPEAST01	9/7/2016	Discrete	East Borrow Pit	0-0.5	0.124	NA
BLC001-BPEAST02	9/7/2016	Discrete	East Borrow Pit	0-0.5	0.00535	NA
BLC001-BPEAST03	9/7/2016	Discrete	East Borrow Pit	0-0.5	0.0461	NA
BLC001-BPEAST04	9/7/2016	Discrete	East Borrow Pit	0-0.5	0.102	NA
BLC001-BPEAST05	9/7/2016	Discrete	East Borrow Pit	0-0.5	0.00831	NA
BLC001-BPEAST06	9/7/2016	Discrete	East Borrow Pit	0-0.5	0.00842	NA
BLC001-BPEAST07	9/7/2016	Discrete	East Borrow Pit	0-0.5	0.00548	NA
BLC001-BPEAST08	9/7/2016	Discrete	East Borrow Pit	0-0.5	0.0507	NA
BLC001-BPWEST01	9/7/2016	Discrete	West Borrow Pit	0-0.5	<0.0203	NA
BLC001-BPWEST02	9/7/2016	Discrete	West Borrow Pit	0-0.5	<0.0202	NA
BLC001-BPWEST03	9/7/2016	Discrete	West Borrow Pit	0-0.5	<0.0202	NA
BLC001-BPWEST04	9/7/2016	Discrete	West Borrow Pit	0-0.5	0.00672	NA
BLC001-BPWEST05	9/7/2016	Discrete	West Borrow Pit	0-0.5	<0.0201	NA
BLC001-BPWEST06	9/7/2016	Discrete	West Borrow Pit	0-0.5	<0.0202	NA
BLC001-BPWEST07	9/7/2016	Discrete	West Borrow Pit	0-0.5	<0.0203	NA
BLC001-BPWEST08	9/7/2016	Discrete	West Borrow Pit	0-0.5	<0.0256	NA
BLC001-POND WEST	9/7/2016	Discrete	Adjacent to Pond	0-0.5	8.60	NA
BLC001-POND SOUTH	9/7/2016	Discrete	Adjacent to Pond	0-0.5	15.5	NA
BLC001-POND NORTH	9/7/2016	Discrete	Adjacent to Pond	0-0.5	5.65	NA

Table 1. Summary of Soil Analytical Results						
Sample ID	Sample Collection Date	Sample Type	Grid ID or Feature	Sample Depth (Feet)	Total Mercury Concentration (mg/kg-dry)	Methylmercury Concentration (ng/g)
BLC001-G013	11/30/2016	Discrete	G013	0-0.5	13.1	NA
BLC001-G013	11/30/2016	Discrete	G013	0.5-1	1.61	NA
BLC001-G013	11/30/2016	Discrete	G013	1-1.5	0.44	NA
BLC001-G013	11/30/2016	Discrete	G013	1.5-2	0.39	NA
BLC001-G014	11/30/2016	Discrete	G014	0-0.5	5.63	NA
BLC001-G014	11/30/2016	Discrete	G014	0.5-1	**91.3**	1.32
BLC001-G014	11/30/2016	Discrete	G014	1-1.5	18.8	NA
BLC001-G014	11/30/2016	Discrete	G014	1.5-2	6.09	NA
BLC001-G017	11/30/2016	Discrete	G017	0-0.5	38.9	NA
BLC001-G017	11/30/2016	Discrete	G017	0.5-1	20.0	NA
BLC001-G017	11/30/2016	Discrete	G017	1-1.5	9.86	NA
BLC001-G017	11/30/2016	Discrete	G017	1.5-2	5.94	NA
BLC001-G039	11/30/2016	Discrete	G039	0-0.5	30.3	NA
BLC001-G039	11/30/2016	Discrete	G039	0.5-1	61.8	0.875
BLC001-G039	11/30/2016	Discrete	G039	1-1.5	78.5	0.930
BLC001-G039	11/30/2016	Discrete	G039	1.5-2	5.36	NA
BLC001-G045	11/29/2016	Discrete	G045	0-0.5	4.47	NA
BLC001-G045	11/29/2016	Discrete	G045	0.5-1	0.739	NA
BLC001-G045	11/29/2016	Discrete	G045	1-1.5	0.199	NA
BLC001-G045	11/29/2016	Discrete	G045	1.5-2	0.198	NA
BLC001-G048	11/29/2016	Discrete	G048	0-0.5	**116**	2.51
BLC001-G048	11/29/2016	Discrete	G048	0.5-1	11.6	NA
BLC001-G048	11/29/2016	Discrete	G048	1-1.5	0.385	NA
BLC001-G048	11/29/2016	Discrete	G048	1.5-2	0.397	NA
BLC001-G049	11/29/2016	Discrete	G049	0-0.5	7.63	NA
BLC001-G049	11/29/2016	Discrete	G049	0.5-1	3.96	NA
BLC001-G049	11/29/2016	Discrete	G049	1-1.5	0.337	NA
BLC001-G049	11/29/2016	Discrete	G049	1.5-2	0.369	NA
BLC001-G050	11/29/2016	Discrete	G050	0-0.5	53.4	NA
BLC001-G050	11/29/2016	Discrete	G050	0.5-1	7.08	NA
BLC001-G050	11/29/2016	Discrete	G050	1-1.5	1.66	NA
BLC001-G050	11/29/2016	Discrete	G050	1.5-2	22	NA
BLC001-G053	11/29/2016	Discrete	G053	0-0.5	**101**	5.52
BLC001-G053	11/29/2016	Discrete	G053	0.5-1	43.5	NA
BLC001-G053	11/29/2016	Discrete	G053	1-1.5	1.54	NA
BLC001-G053	11/29/2016	Discrete	G053	1.5-2	0.761	NA
BLC001-G055	11/29/2016	Discrete	G055	0-0.5	61.7	NA

Table 1. Summary of Soil Analytical Results

Sample ID	Sample Collection Date	Sample Type	Grid ID or Feature	Sample Depth (Feet)	Total Mercury Concentration (mg/kg-dry)	Methylmercury Concentration (ng/g)
BLC001-G055	11/29/2016	Discrete	G055	0.5-1	2.26	NA
BLC001-G055	11/29/2016	Discrete	G055	1-1.5	0.606	NA
BLC001-G055	11/29/2016	Discrete	G055	1.5-2	0.556	NA
				Action Level	**80**	**7,800**

Notes: The Action Level for total mercury is based on the Carson River Mercury Superfund Site remediation standard of 80 mg/kg for total mercury. The Action Level for methylmercury is based on the EPA Region 9 Residential screening level for methylmercury.

Values in **bold** exceed the action level.

mg/Kg milligrams per kilogram

ng/g nanograms per gram

NA Not Analyzed

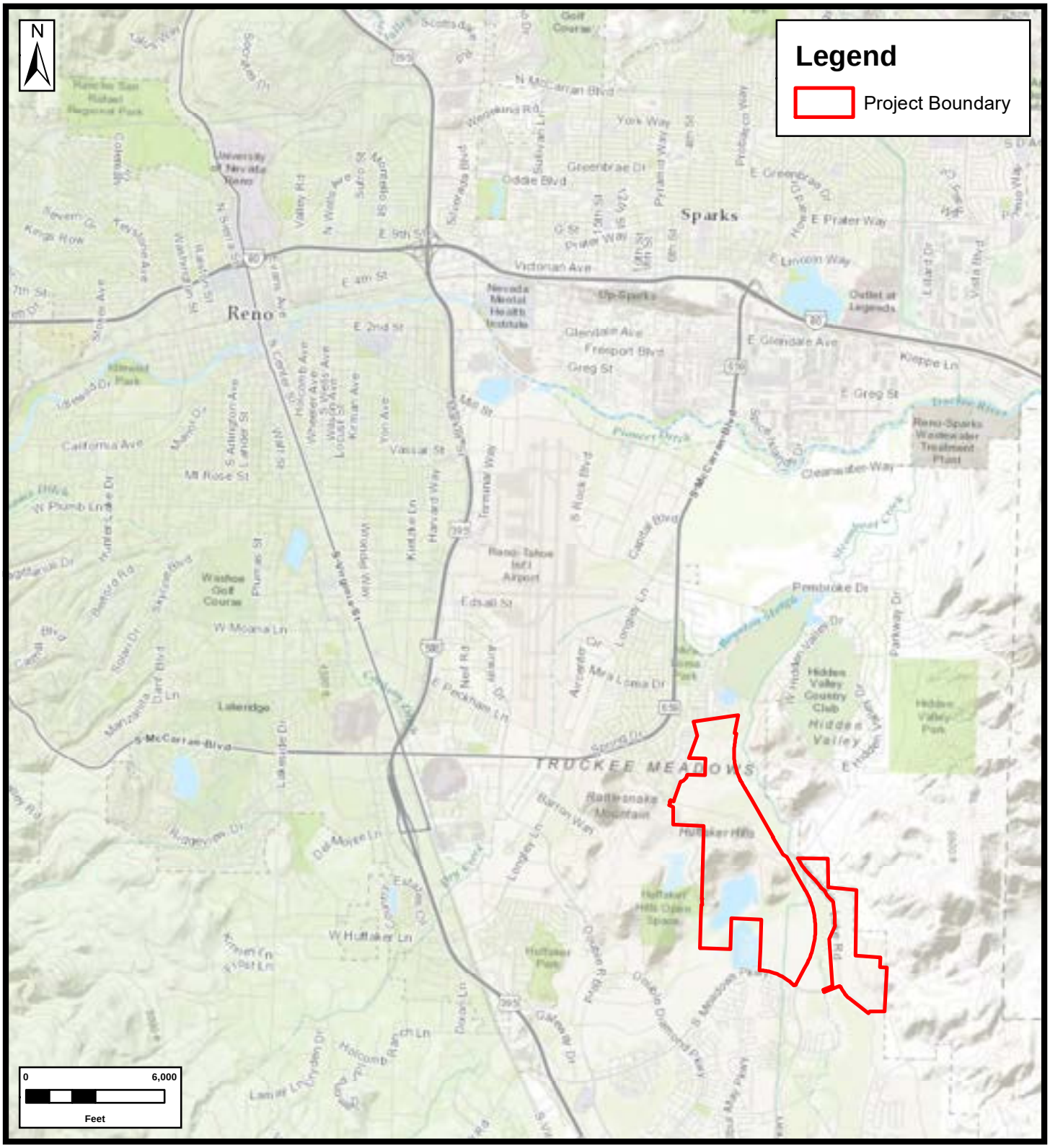




FIGURE 1

TITLE:

PROJECT LOCATION MAP
SHOWING
PROJECT BOUNDARY
BUTLER RANCH AND
BELLA VISTA RANCH
RENO, NEVADA

JOB NO.: **BLC001**

DATE: **9/27/2017**

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FILE: **Figure 1 - Project Location Map**

COORDINATE SYSTEM: **NAD 1983 UTM Zone 11N**

REF.					REVISION:
	DESIGNED	BP	CHECKED	BP	-
	DRAWN	BP	APPROVED	BP	

N

Legend

- Project Boundary
- Preliminary Cut-Fill Areas
- Approximate Location and Extent of Dewatering Pond

Borrow Pit Samples

- East Borrow Pit Sample Location
- West Borrow Pit Sample Location
- Borrow Areas

FEMA 100-year Flood Plain

- Shaded Zone X
- Zone AE

Sample Grid

- Grid Cell Below Action Level of 80 mg/Kg (residential)
- Grid Cell Exceeds Action Level of 80 mg/Kg (residential)
- G046 — Grid ID or Sample ID
- 1.75 — Mercury Concentration in Milligrams per Kilogram (mg/Kg)

G054 23.1 | G055 69.9
G051 3.52 | G052 32.2 | G053 82.6
G049 42.2 | G050 59.5
G046 1.75 | G047 16.5 | G048 48.5
G044 15.5 | G045 84.7
G041 1.15 | G042 34.5 | G043 23.3
G040 30.9
G037 0.202 | G038 10.5
G039 43.4
G035 23 | G036 16.6
G031 0.199 | G032 8.35
G033 16 | G034 15.8
G030 17.2
G026 0.0669 | G027 0.105 | G028 0.544
G029 18.9
G024 31 | G025 31.3
G022 4.9 | G023 8.16

West Borrow Pit

WEST 01 <0.0203
WEST 02 <0.0202
WEST 03 <0.0202
WEST 04 0.00672
WEST 05 <0.0201
WEST 06 <0.0202
WEST 07 <0.0203
WEST 08 <0.0256

G021 23.7
Approximate Location and Extent of Dewatering Pond
G020 28

G018 26.6 | G019 26
G015 11.3
G016 35.8 | G017 48.7
G013 42.9 | G014 36.6
G010 17.3
G011 22.8 | G012 10.5
G008 22.4 | G009 13.3
G004 3.47 | G005 6.07
G006 8.15 | G007 28
G003 10.9
G001 7.03 | G002 13.3

EAST 01 0.124
EAST 02 0.00535
EAST 03 0.0461
EAST 04 0.102
EAST 05 0.00831
EAST 06 0.00842
EAST 07 0.00548
EAST 08 0.0507

East Borrow Pit

0 1,000
Feet

All values shown are in milligrams per kilogram (mg/Kg)



FIGURE 2

TITLE:

SITE MAP
-SHOWING-
ANALYTICAL RESULTS OF
COMPOSITE SAMPLES AND
BORROW PIT SAMPLES
BUTLER RANCH AND BELLA VISTA RANCH
RENO, NEVADA

JOB NO.: **BLC001**

DATE: **9/27/2017**

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FILE: **Figure 2 - Grid Samples**

COORDINATE SYSTEM: **NAD 1983 UTM Zone 11N**

REF.					REVISION:
	DESIGNED	BP	CHECKED	TJ	-
	DRAWN	BP	APPROVED	TJ	

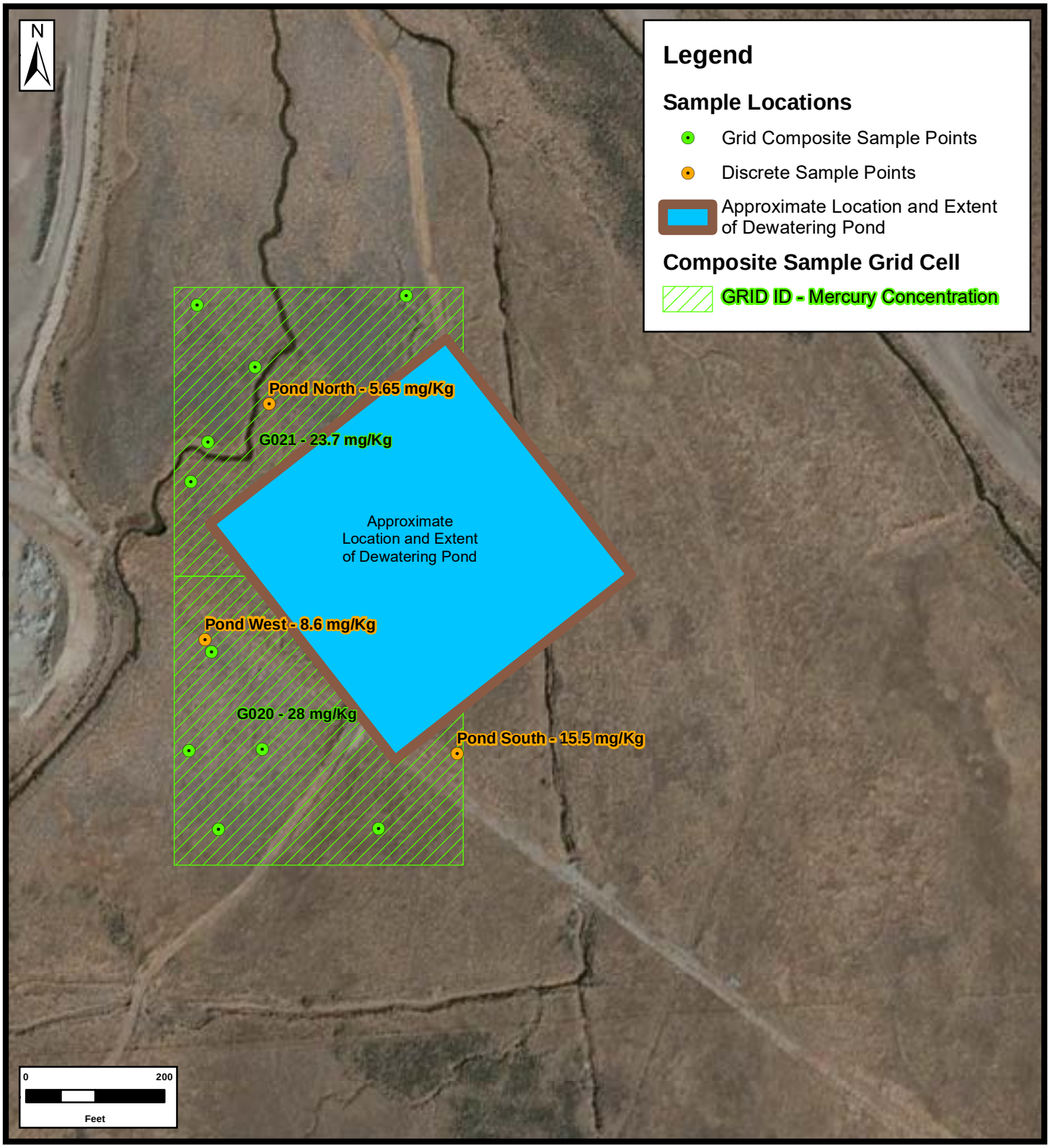




FIGURE 3

TITLE:

SITE MAP
SHOWING
MERCURY ANALYTICAL RESULTS
BUTLER RANCH AND
BELLA VISTA RANCH
RENO, NEVADA

JOB NO.: **BLC001**

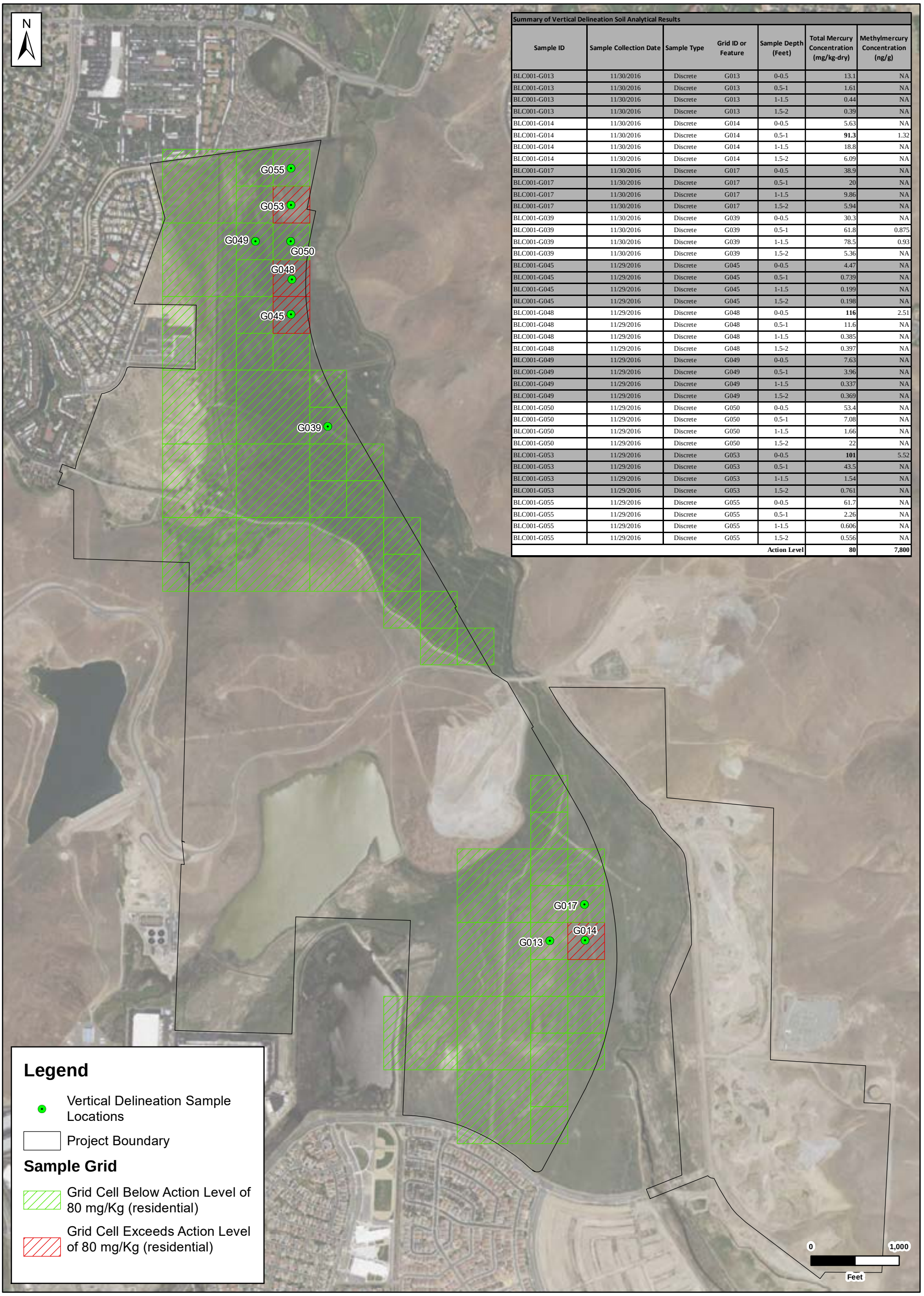
DATE: **9/5/2017**

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FILE: **Figure 3 - Pond Samples**

COORDINATE SYSTEM: **NAD 1983 UTM Zone 11N**

REF.					REVISION:
	DESIGNED	BP	CHECKED	BP	-
	DRAWN	BP	APPROVED	BP	



Summary of Vertical Delineation Soil Analytical Results

Sample ID	Sample Collection Date	Sample Type	Grid ID or Feature	Sample Depth (Feet)	Total Mercury Concentration (mg/kg-dry)	Methylmercury Concentration (ng/g)
BLC001-G013	11/30/2016	Discrete	G013	0-0.5	13.1	NA
BLC001-G013	11/30/2016	Discrete	G013	0.5-1	1.61	NA
BLC001-G013	11/30/2016	Discrete	G013	1-1.5	0.44	NA
BLC001-G013	11/30/2016	Discrete	G013	1.5-2	0.39	NA
BLC001-G014	11/30/2016	Discrete	G014	0-0.5	5.63	NA
BLC001-G014	11/30/2016	Discrete	G014	0.5-1	**91.3**	1.32
BLC001-G014	11/30/2016	Discrete	G014	1-1.5	18.8	NA
BLC001-G014	11/30/2016	Discrete	G014	1.5-2	6.09	NA
BLC001-G017	11/30/2016	Discrete	G017	0-0.5	38.9	NA
BLC001-G017	11/30/2016	Discrete	G017	0.5-1	20	NA
BLC001-G017	11/30/2016	Discrete	G017	1-1.5	9.86	NA
BLC001-G017	11/30/2016	Discrete	G017	1.5-2	5.94	NA
BLC001-G039	11/30/2016	Discrete	G039	0-0.5	30.3	NA
BLC001-G039	11/30/2016	Discrete	G039	0.5-1	61.8	0.875
BLC001-G039	11/30/2016	Discrete	G039	1-1.5	78.5	0.93
BLC001-G039	11/30/2016	Discrete	G039	1.5-2	5.36	NA
BLC001-G045	11/29/2016	Discrete	G045	0-0.5	4.47	NA
BLC001-G045	11/29/2016	Discrete	G045	0.5-1	0.739	NA
BLC001-G045	11/29/2016	Discrete	G045	1-1.5	0.199	NA
BLC001-G045	11/29/2016	Discrete	G045	1.5-2	0.198	NA
BLC001-G048	11/29/2016	Discrete	G048	0-0.5	**116**	2.51
BLC001-G048	11/29/2016	Discrete	G048	0.5-1	11.6	NA
BLC001-G048	11/29/2016	Discrete	G048	1-1.5	0.385	NA
BLC001-G048	11/29/2016	Discrete	G048	1.5-2	0.397	NA
BLC001-G049	11/29/2016	Discrete	G049	0-0.5	7.63	NA
BLC001-G049	11/29/2016	Discrete	G049	0.5-1	3.96	NA
BLC001-G049	11/29/2016	Discrete	G049	1-1.5	0.337	NA
BLC001-G049	11/29/2016	Discrete	G049	1.5-2	0.369	NA
BLC001-G050	11/29/2016	Discrete	G050	0-0.5	53.4	NA
BLC001-G050	11/29/2016	Discrete	G050	0.5-1	7.08	NA
BLC001-G050	11/29/2016	Discrete	G050	1-1.5	1.66	NA
BLC001-G050	11/29/2016	Discrete	G050	1.5-2	22	NA
BLC001-G053	11/29/2016	Discrete	G053	0-0.5	**101**	5.52
BLC001-G053	11/29/2016	Discrete	G053	0.5-1	43.5	NA
BLC001-G053	11/29/2016	Discrete	G053	1-1.5	1.54	NA
BLC001-G053	11/29/2016	Discrete	G053	1.5-2	0.761	NA
BLC001-G055	11/29/2016	Discrete	G055	0-0.5	61.7	NA
BLC001-G055	11/29/2016	Discrete	G055	0.5-1	2.26	NA
BLC001-G055	11/29/2016	Discrete	G055	1-1.5	0.606	NA
BLC001-G055	11/29/2016	Discrete	G055	1.5-2	0.556	NA
				Action Level	**80**	**7,800**



FIGURE 4

TITLE:

SITE MAP
-SHOWING-
ANALYTICAL RESULTS OF SOIL SAMPLES COLLECTED FOR VERTICAL DELINEATION
BUTLER RANCH AND BELLA VISTA RANCH
RENO, NEVADA

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Environmental Engineering and Science
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FILE: **Figure 4 - Vertical Samples**

COORDINATE SYSTEM: **NAD 1983 UTM Zone 11N**

JOB NO.: **BLC001**

DATE: **9/27/2017**

REF.

DESIGNED	BP	CHECKED	TJ	REVISION:
DRAWN	BP	APPROVED	TJ	-

N

Legend

Project Boundary

Cut and Fill Contours

Cut

Fill

Remedial Action Areas

Grid Cell Exceeds Action Level of 80 mg/Kg (residential)

G048 — Grid ID

485 — Mercury Concentration in Milligrams per Kilogram (mg/Kg)

FLOODWAY
G053 82.6
MULTI-FAMILY
NEIGHBORHOOD MIX
SCHOOL
G048 48.5
G045 84.7
MIXED USE
OPEN SPACE
SINGLE-FAMILY
SINGLE-FAMILY
SINGLE-FAMILY
OPEN SPACE
FLOODWAY
SINGLE-FAMILY
OPEN SPACE
MIX NEIGHBORHOOD
SINGLE-FAMILY
SCHOOL
OPEN SPACE
FLOODWAY
MIX NEIGHBORHOOD
MIX NEIGHBORHOOD
ROAD
MIXED USE
G014 36.6
FLOODWAY
SCHOOL
MIXED USE
FLOODWAY
INDUSTRIAL
MIXED USE
SINGLE-FAMILY
SINGLE-FAMILY
OPEN SPACE
ROAD

0 1,000 Feet



FIGURE 5

TITLE:

SITE MAP
-SHOWING-
SITE GRADING PLAN
BUTLER RANCH AND BELLA VISTA RANCH
RENO, NEVADA

McGinley & Associates
Environmental Engineering and Science
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FILE: Figure 5 - Grading Plan

COORDINATE SYSTEM: NAD 1983 UTM Zone 11N

JOB NO.: BLC001

DATE: 9/27/2017

REF.					REVISION:
DESIGNED	BP	CHECKED	TJ		-
DRAWN	BP	APPROVED	TJ		

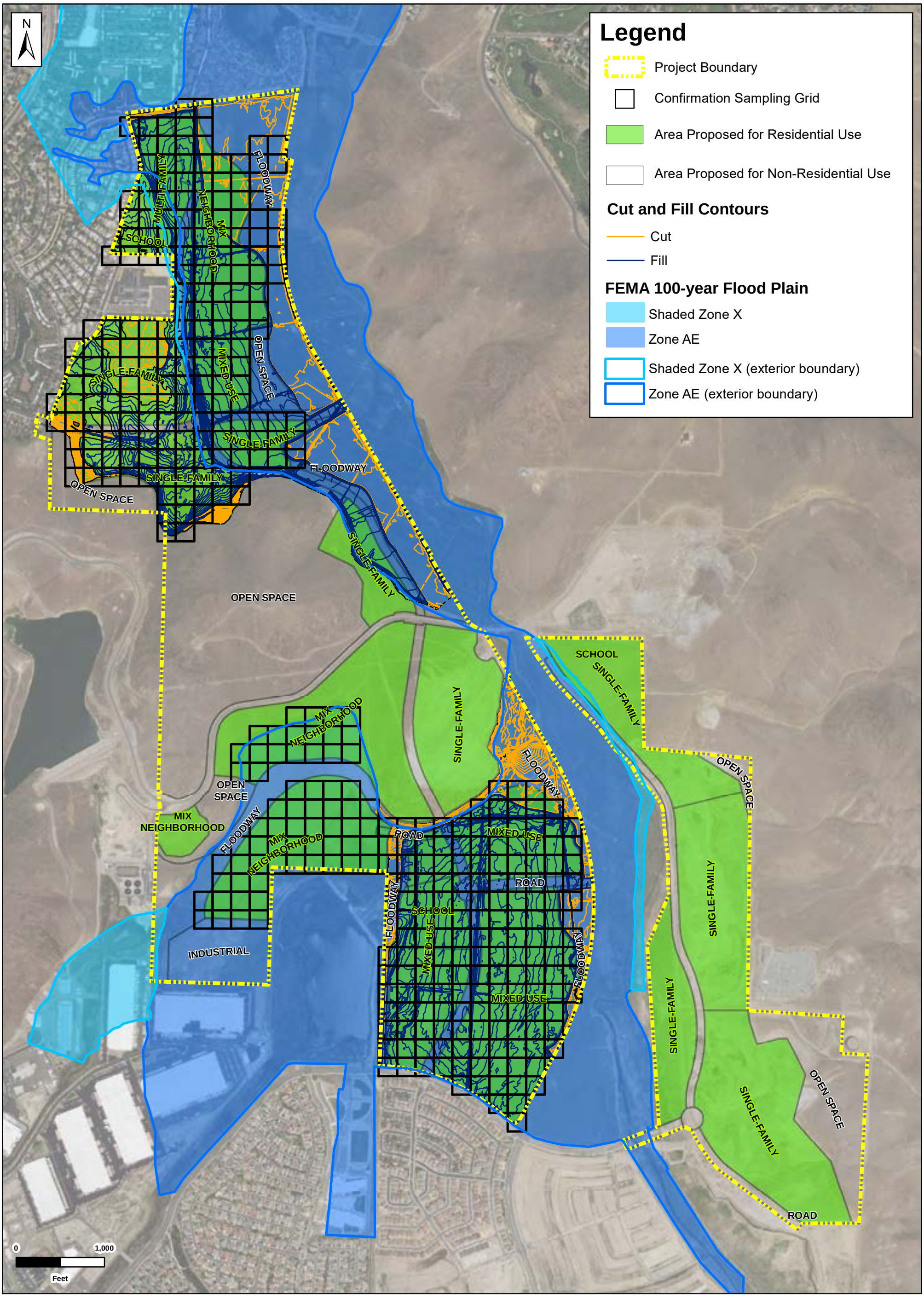




FIGURE 6

TITLE:

SITE MAP
-SHOWING-
CONFIRMATION SAMPLING GRID
AND CONCEPTUAL SITE PLAN LAYOUT
BUTLER RANCH AND BELLA VISTA RANCH
RENO, NEVADA

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Environmental Engineering and Science
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FILE: **Figure 6 - Confirmation Sampling**

COORDINATE SYSTEM: **NAD 1983 UTM Zone 11N**

JOB NO.:	DATE:	REF.					REVISION:
BLC001	9/27/2017	DESIGNED	BP	CHECKED	TJ		-
		DRAWN	BP	APPROVED	TJ		

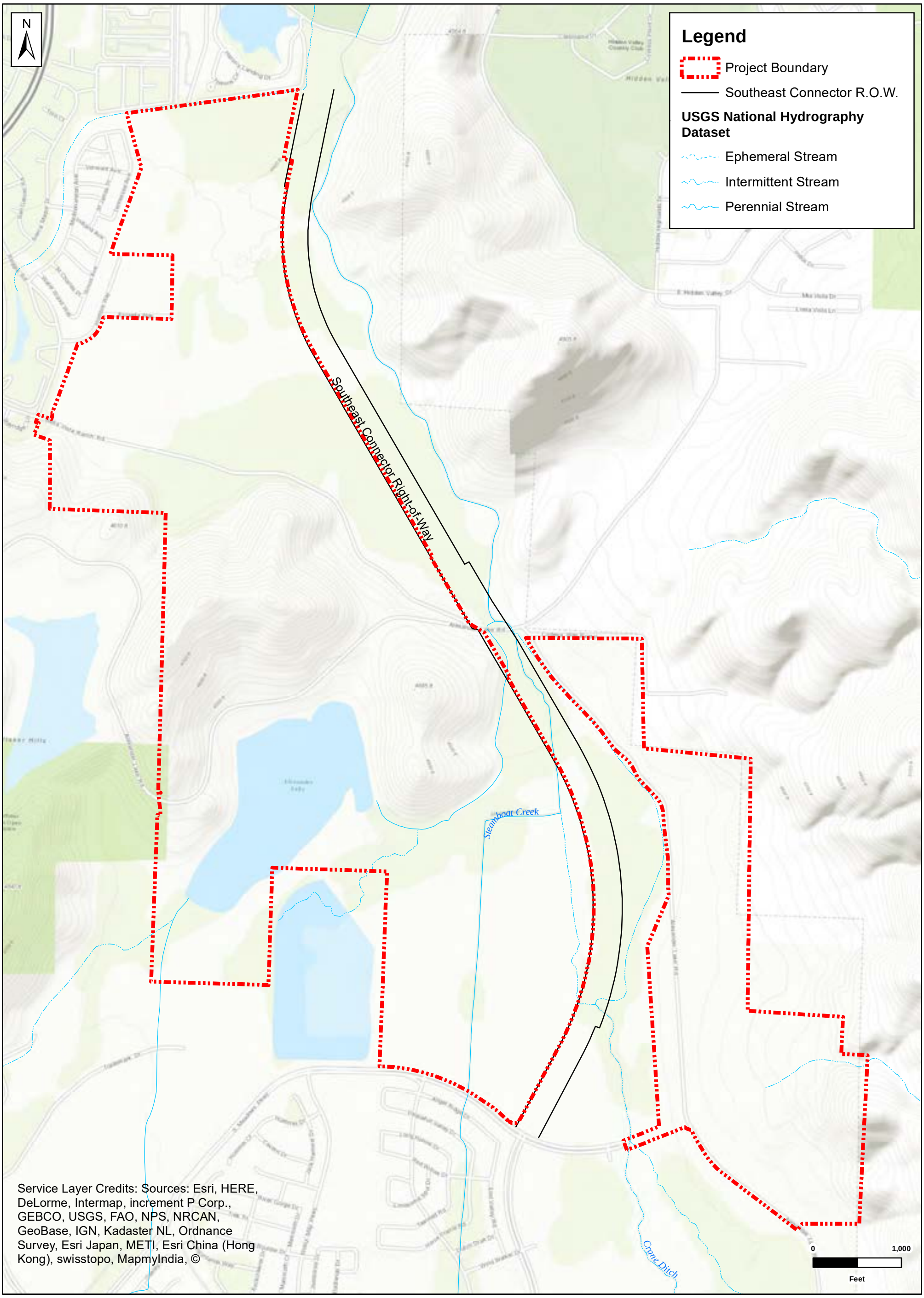




FIGURE 7

TITLE:

SITE MAP
-SHOWING-
ROADS, RIGHT-OF-WAYS,
DRAINAGES AND STRUCTURES
BUTLER RANCH AND BELLA VISTA RANCH
RENO, NEVADA

JOB NO.: **BLC001**

DATE: **9/27/2017**

McGinley & Associates
Environmental Engineering and Science
RENO | LAS VEGAS | www.mcgin.com

FILE: **Figure 7 - Drainages and Roads**

COORDINATE SYSTEM: **NAD 1983 UTM Zone 11N**

REF.					REVISION:
	DESIGNED	BP	CHECKED	TJ	-
	DRAWN	BP	APPROVED	TJ	

APPENDIX A

Chain-of-Custody Records and Analytical Reports for Soil Samples

ANALYTICAL REPORT

ne 02, 2017

inley o Reno

le eli e y G o :	L85898
les Recei e :	09/12/201
o ec N e :	BLC001
esc i ion:	Bell Vis R nc

Re o o:

Ben e e son
815 M es o i e
Reno, NV 89511

n i e Re o Re ie e By:

ne G ill
ec nic l e ice Re esen i e

esults relate only to the items tested or alibrated and are reported as rounded values. This test report shall not be reprodu ed, e ept in full, ithout ritten approval of the laboratory. here appli able, sampling ondu ted by S is performed per guidan e provided in laboratory standard operating pro edures , , and .



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BLC001-G001 L85898 -01 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G005 L85898 -02 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G00 L85898 -03 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G010 L85898 -0 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G015 L85898 -05 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G008 L85898 -0 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G00 L85898 -07 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

olle ted by rian night | olle ted date time | e eived date time

BLC001-G003 L85898 -08 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

olle ted by rian night | olle ted date time | e eived date time

BLC001-G002 L85898 -09 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

olle ted by rian night | olle ted date time | e eived date time

BLC001-G007 L85898 -10 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

olle ted by rian night | olle ted date time | e eived date time

BLC001-G009 L85898 -11 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

olle ted by rian night | olle ted date time | e eived date time

BLC001-G012 L85898 -12 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

olle ted by rian night | olle ted date time | e eived date time

BLC001-G011 L85898 -13 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

olle ted by rian night | olle ted date time | e eived date time

BLC001-B A 01 L85898 -1 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-B A 02 L85898 -15 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-B A 03 L85898 -1 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-B A 0 L85898 -17 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-B A 05 L85898 -18 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-B A 0 L85898 -19 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-B A 07 L85898 -20 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-B A 08 L85898 -21 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G01 L85898 -22 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G013 L85898 -23 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G01 L85898 -2 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G017 L85898 -25 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G019 L85898 -2 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G018 L85898 -27 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G020 L85898 -28 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

olle ted by rian night | olle ted date time | e eived date time

BLC001-G021 L85898 -29 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

olle ted by rian night | olle ted date time | e eived date time

BLC001- N L85898 -30 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

olle ted by rian night | olle ted date time | e eived date time

BLC001- N L85898 -31 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

olle ted by rian night | olle ted date time | e eived date time

BLC001- N N R L85898 -32 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				

olle ted by rian night | olle ted date time | e eived date time

BLC001-B 01 L85898 -33 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

olle ted by rian night | olle ted date time | e eived date time

BLC001-B 02 L85898 -3 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

olle ted by rian night | olle ted date time | e eived date time

BLC001-B 03 L85898 -35 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-B 0 L85898 -3 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-B 05 L85898 -37 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-B 0 L85898 -38 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-B 07 L85898 -39 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-B 08 L85898 - 0 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G0 L85898 - 1 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G051 L85898 - 2 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G05 L85898 - 3 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G055 L85898 - oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G053 L85898 - 5 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G052 L85898 - oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G0 1 L85898 - 7 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G037 L85898 - 8 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G031 L85898 - 9 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				T

BLC001-G02 L85898 -50 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G0 7 L85898 -51 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G0 9 L85898 -52 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G050 L85898 -53 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G0 8 L85898 -5 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G0 5 L85898 -55 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G0 L85898 -5 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G038 L85898 -57 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G0 2 L85898 -58 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G0 3 L85898 -59 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G0 0 L85898 - 0 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G039 L85898 - 1 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			DS

BLC001-G032 L85898 - 2 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G027 L85898 - 3 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G028 L85898 - oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G033 L85898 - 5 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			DS

BLC001-G035 L85898 - oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			DS

BLC001-G03 L85898 - 7 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			DS

BLC001-G03 L85898 - 8 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			DS

BLC001-G022 L85898 - 9 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			T

BLC001-G023 L85898 -70 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod	G	G			
er ury by ethod		G			DS

BLC001-G025 L85898 -71 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				DS

BLC001-G02 L85898 -72 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				DS

BLC001-G029 L85898 -73 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				DS

BLC001-G030 L85898 -7 oli

olle ted by rian night | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
Total Solids by ethod G	G				
er ury by ethod	G				DS

All s le li o s e e ecei e e co ec e e e, in e o e con ine s, i e o i e ese i es, n i in e o s ecifie ol in i es. All M L L n R L L l es e o e fo en i on en l s les e een co ec e fo e il ion f c o se in e n lysis. All Me o n B c li y Con ol e i in es lis e c i e i e ce e e esse in is c se n i e, non-confo nce fo o o e ly lifie i in e s le es l s. By y i i l si n e elo , ffi o e es of y no le e, ll o le s/ no lies o se e y e l o o y s in e o en i l o ffec e li y of e e een i en ifie y e l o o y, n no info ion o e een no in ly i el o l ffec e li y of e .

ne G ill
ec nic l e ice Re esen i e

o ec N i e

Re o e ise o eflec s les fo s se of o i in l e o e clien e es - C G 09/28/1

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	3	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury			.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury			.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury			.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	_	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury			.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry	Qualifier	MDL ry	RDL ry	Dilution	Analysis date time	Batc
	mg kg		mg kg	mg kg			
er ury			.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury			.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury			.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	V	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.	3			G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.	V	.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

Me o Bl n MB

MB R31 3 1 -1 09/1 /1 1 :32

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Total Solids	.			

L85898 -03 i in l le lic e

L85898 -03 09/1 /1 1 :32 R31 3 1 -3 09/1 /1 1 :32

Analyte	ri inal Result	D P Result	Dilution	D P RPD	D P Qualifier	D P RPD Limits
Total Solids	.	.		.		

L o o y Con ol le LC

LC R31 3 1 -2 09/1 /1 1 :32

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Total Solids	.	.		.	

Me o Bl n MB

MB R31 3 17-1 09/1 /1 1 :52

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Total Solids	.			

L85898 -15 i in l le lic e

L85898 -15 09/1 /1 1 :52 R31 3 17-3 09/1 /1 1 :52

Analyte	ri inal Result	D P Result	Dilution	D P RPD	D P Qualifier	D P RPD Limits
Total Solids	.	.		.		

L o o y Con ol le LC

LC R31 3 17-2 09/1 /1 1 :52

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Total Solids	.	.		.	

Me o Bl n MB

MB R31 3 18-1 09/1 /1 15:02

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Total Solids	.			

L85898 -29 i in l le lic e

L85898 -29 09/1 /1 15:02 R31 3 18-3 09/1 /1 15:02

Analyte	ri inal Result	D P Result	Dilution	D P RPD	D P Qualifier	D P RPD Limits
Total Solids	.	.		.		

L o o y Con ol le LC

LC R31 3 18-2 09/1 /1 15:02

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Total Solids	.	.		.	

Me o Bl n MB

MB R31 39 7-1 09/15/1 12:27

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Total Solids	.			

L85898 - 0 i in l le lic e

L85898 - 0 09/15/1 12:27 R31 39 7-3 09/15/1 12:27

Analyte	ri inal Result	D P Result	Dilution	D P RPD	D P Qualifier	D P RPD Limits
Total Solids	.	.		.		

L o o y Con ol le LC

LC R31 39 7-2 09/15/1 12:27

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Total Solids	.	.		.	

Me o Bl n MB

MB R31 3 20-1 09/1 /1 15:1

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Total Solids	.			

L85898 - i in l le lic e

L85898 - 09/1 /1 15:1 R31 3 20-3 09/1 /1 15:1

Analyte	ri inal Result	D P Result	Dilution	D P RPD	D P Qualifier	D P RPD Limits
Total Solids	.	.		.		

L o o y Con ol le LC

LC R31 3 20-2 09/1 /1 15:1

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Total Solids	.	.		.	

Me o Bl n MB

MB R31 3 22-1 09/1 /1 15:37

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Total Solids	.			

L85898 -52 i in l le lic e

L85898 -52 09/1 /1 15:37 R31 3 22-3 09/1 /1 15:37

Analyte	ri inal Result	D P Result	Dilution	D P RPD	D P Qualifier	D P RPD Limits
Total Solids	.	.		.		

L o o y Con ol le LC

LC R31 3 22-2 09/1 /1 15:37

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Total Solids	.	.		.	

Me o Bl n MB

MB R31 3 21-1 09/1 /1 15:25

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Total Solids	.			

L85898 - 1 i in l le lic e

L85898 - 1 09/1 /1 15:25 R31 3 21-3 09/1 /1 15:25

Analyte	ri inal Result	D P Result	Dilution	D P RPD	D P Qualifier	D P RPD Limits
Total Solids	.	.	.		3	

L o o y Con ol le LC

LC R31 3 21-2 09/1 /1 15:25

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Total Solids	.	.	.		

Me o Bl n MB

MB R31 3 15-1 09/1 /1 1 :23

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Total Solids	.			

L858837-01 i in l le lic e

L858837-01 09/1 /1 1 :23 R31 3 15-3 09/1 /1 1 :23

Analyte	ri inal Result	D P Result	Dilution	D P RPD	D P Qualifier	D P RPD Limits
Total Solids	.	.		.		

L o o y Con ol le LC

LC R31 3 15-2 09/1 /1 1 :23

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Total Solids	.	.		.	

Me o Bl n MB

MB R31 39 1-1 09/15/1 17:21

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg kg		mg kg	mg kg
er ury			.	.

L o o y Con ol le LC L o o y Con ol le lic e LC

LC R31 39 1-2 09/15/1 17:29 LC R31 39 1-3 09/15/1 17:32

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg kg	mg kg	mg kg							
er ury	.	.	.					3		

L85898 -1 i in l le M i i e M M i i e lic e M

L85898 -1 09/15/1 17:3 M R31 39 1- 09/15/1 17:37 M R31 39 1-5 09/15/1 17:39

Analyte	Spike Amount ry	ri inal Result ry	MS Result	ry	MSD Result ry	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg kg	mg kg	mg kg		mg kg								
er ury	.	.	.		.								

Me o Bl n MB

MB R31 3939-1 09/15/1 1 :15

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg kg		mg kg	mg kg
er ury			.	.

L o o y Con ol le LC L o o y Con ol le lic e LC

LC R31 3939-2 09/15/1 1 :17 LC R31 3939-3 09/15/1 1 :20

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg kg	mg kg	mg kg							
er ury	.	.	.							

L85898 -21 i in l le M i i e M M i i e lic e M

L85898 -21 09/15/1 1 :22 M R31 3939- 09/15/1 1 :25 M R31 3939-5 09/15/1 1 :27

Analyte	Spike Amount ry	ri inal Result ry	MS Result ry	MSD Result ry	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg kg	mg kg	mg kg	mg kg								
er ury	.	.	.	.								

Me o Bl n MB

MB R31 39 0-1 09/15/1 1 :01

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg kg		mg kg	mg kg
er ury			.	.

L o o y Con ol le LC L o o y Con ol le lic e LC

LC R31 39 0-2 09/15/1 1 :09 LC R31 39 0-3 09/15/1 1 :11

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg kg	mg kg	mg kg							
er ury	.	.	.							

L85898 - 1 i in l le M i i e M M i i e lic e M

L85898 - 1 09/15/1 1 :1 M R31 39 0- 09/15/1 1 :1 M R31 39 0-5 09/15/1 1 :19

Analyte	Spike Amount ry	ri inal Result ry	MS Result	ry	MSD Result ry	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg kg	mg kg	mg kg		mg kg								
er ury	.	.	.		.					V	3 V		

Me o Bl n MB

MB R31 15 -1 09/1 /1 11:03

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg kg		mg kg	mg kg
er ury			.	.

L o o y Con ol le LC L o o y Con ol le lic e LC

LC R31 15 -2 09/1 /1 11:05 LC R31 15 -3 09/1 /1 11:08

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg kg	mg kg	mg kg							
er ury	.	.	.							

L85898 - 2 i in l le M i i e M M i i e lic e M

L85898 - 2 09/1 /1 11:1 M R31 15 - 09/1 /1 11:2 M R31 15 -5 09/1 /1 11:2

Analyte	Spike Amount ry	ri inal Result ry	MS Result ry	MSD Result ry	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	mg kg	mg kg	mg kg	mg kg								
er ury	.	.	.	.					V	V		

Me o Bl n MB

MB R31 2 2-1 09/17/1 05:07

Analyte	MB Result mg kg	MB Qualifier	MB MDL mg kg	MB RDL mg kg
er ury			.	.

L o o y Con ol le LC L o o y Con ol le lic e LC

LC R31 2 2-2 09/17/1 05:09 LC R31 2 2-3 09/17/1 05:12

Analyte	Spike Amount mg kg	LCS Result mg kg	LCSD Result mg kg	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
er ury	.	.	.							

L85982 -05 i in l le M i i e M M i i e lic e M

L85982 -05 09/17/1 05:1 M R31 2 2- 09/17/1 05:17 M R31 2 2-5 09/17/1 05:20

Analyte	Spike Amount mg kg	ri inal Result mg kg	MS Result mg kg	MSD Result mg kg	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
er ury	.	.	.	.								

A e i ions n efini ions

G	Sample Delivery Group.
M L	ethod Dete tion imit.
M L y	ethod Dete tion imit.
R L y	eported Dete tion imit.
R L	eported Dete tion imit.
	ot dete ted at the eporting imit or D here appli able .
R	elative er ent Differen e.
y	esults are reported based on the dry eight of the sample. this ill only be present on a dry report basis for soils .
i in l le	The non spiked sample in the prep bat h used to determine the elative er ent Differen e D from a quality ontrol sample. The riginal Sample may not be in luded ithin the reported SDG.
Rec.	e overy.

lifie esc i ion

	The analyte on entration e eeds the upper limit of the alibration range of the instrument established by the initial alibration .
	The identifi ation of the analyte is a eptable the reported value is an estimate.
3	The asso iated bat h as outside the established quality ontrol range for pre ision.
V	The sample on entration is too high to evaluate a urate spike re overies.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [14]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



McGinley & Assoc. - Reno, NV

815 Maestro Drive
Reno, NV 89511

Billing Information:
Tony Dimpel
815 Maestro Dr.
Reno, NV 89511

Report to: **Ben Peterson**

Email To: bpeterson@mcgin.com

Project Description: Bella Vista Ranch

City/State Collected: Reno, NV

Phone: 775-829-2245
Fax:

Client Project # BLC001

Lab Project # MCGINRNV-HG

Collected by (print): Brian Kuhns

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X_Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

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YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L850994

A127

Acctnum: MCGINRNV
Template: T115371
Prelogin: P566073
TSR: 728 - Shane Gambill
PB:
Shipped Via: FedEX Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	HG 7470 4ozClr-NoPres										Rem./Contaminant	Sample # (lab only)
BLC001-G001	Comp	SS		9/6/16	1200	1	X											-01
BLC001-G005		SS			1227	1	X											-02
BLC001-G004		SS			1255	1	X											-03
BLC001-G010		SS			1419	1	X											-04
BLC001-G015		SS			1445	1	X											-05
BLC001-G008		SS			1514	1	X											-06
BLC001-G006		SS			1528	1	X											-07
BLC001-G003		SS			1541	1	X											-08
BLC001-G002		SS			1555	1	X											-09
BLC001-G007		SS			1614	1	X											-10

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	9/9/16	1131	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.1 °C Bottles Received: 25 4oz

Date: 9-12-16 Time: 900

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF: X

McGinley & Assoc. - Reno, NV

815 Maestro Drive
Reno, NV 89511

Billing Information:
Tony Dimpel
815 Maestro Dr.
Reno, NV 89511

Report to: Ben Peterson

Email To: bpeterson@mcgin.com

Project Description: Bella Vista Ranch

City/State Collected: Reno, NV

Phone: 775-829-2245
Fax:

Client Project # BLC001

Lab Project # MCGINRNV-HG

Collected by (print): Brian Kuhns

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X_Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

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12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L958984

Table #

Acctnum: MCGINRNV
Template: T115371
Prelogin: P566073
TSR: 728 - Shane Gambill
PB:

Shipped Via: FedEX Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	HG 7470 4ozClr-NoPres									Rem./Contaminant	Sample # (lab only)
BLC001-G009	Comp	SS		9/6/16	1627	1	X									*	-11
BLC001-G012	"	SS		9/6/16	1642	1	X										-12
BLC001-G011	"	SS		9/6/16	1655	1	X										-13
BLC001-BPEast01	"	SS		9/7/16	0702	1	X										-14
BLC001-BPEast02	"	SS		"	0709	1	X										-15
BLC001-BPEast03	"	SS		"	0711	1	X										-16
BLC001-BPEast04	"	SS		"	0716	1	X										-17
BLC001-BPEast05	"	SS		"	0721	1	X										-18
BLC001-BPEast06	"	SS		"	0726	1	X										-19
BLC001-BPEast07	"	SS		"	0731	1	X										-20

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	9/9/16	1131	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.1 °C Bottles Received: 25hr

Date: 9-12-16 Time: 9w

Condition: (lab use only) OK

COC Seal Intact: ✓ Y ___N ___NA

pH Checked: NCF: ✓

McGinley & Assoc. - Reno, NV

815 Maestro Drive
Reno, NV 89511

Billing Information:
Tony Dimpel
815 Maestro Dr.
Reno, NV 89511

Report to: Ben Peterson

Email To: bpeterson@mcgin.com

Project Description: Bella Vista Ranch

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Client Project # BLC001

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Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X_Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

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Mount Juliet, TN 37122
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L# L858984

Table #

Acctnum: MCGINRNV
Template: T115371
Prelogin: P566073
TSR: 728 - Shane Gambill
PB:

Shipped Via: FedEX Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	HG 7470 4ozClr-NoPres										Rem./Contaminant	Sample # (lab only)
BLC001-BPEast08	comp	SS		9/7/16	0735	1	X											-21
BLC001-G016	|	SS		|	0814	1	X											-22
BLC001-G013	|	SS		|	0829	1	X											-23
BLC001-G014	|	SS		|	0842	1	X											-24
BLC001-G017	|	SS		|	0854	1	X											-25
BLC001-G019	|	SS		|	0906	1	X											-26
BLC001-G018	|	SS		|	0925	1	X											-27
BLC001-G020	|	SS		|	0950	1	X											-28
BLC001-G021	|	SS		|	1023	1	X											-29
BLC001-Pond West	|	SS		|	1039	1	X											-30

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	9/9/16	1131	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Day Wan

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.1 °C Bottles Received: 254a

Date: 9-12-16 Time: 9a

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF: Y

McGinley & Assoc. - Reno, NV

815 Maestro Drive
Reno, NV 89511

Billing Information:
Tony Dimpel
815 Maestro Dr.
Reno, NV 89511

Report to: Ben Peterson

Email To: bpeterson@mcgin.com

Project Description: Bella Vista Ranch

City/State Collected: Reno, NV

Phone: 775-829-2245
Fax:

Client Project # BLC001

Lab Project # MCGINRNV-HG

Collected by (print): Brian Kuhns

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X_Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	HG 7470 4ozClr-NoPres	Rem./Contaminant	Sample # (lab only)
BLC001-Pond South	comp	SS		9/7/16	1043	1	X		-31
BLC001- Pond North	"	SS		"	1055	1	X		-32
BLC001- BP West 01	"	SS		"	1114	1	X		-33
BLC001- BP West 02	"	SS		"	1120	1	X		-34
BLC001- BP West 03	"	SS		"	1123	1	X		-35
BLC001- BP West 04	"	SS		"	1129	1	X		-36
BLC001- BP West 05	"	SS		"	1140	1	X		-37
BLC001- BP West 06	"	SS		"	1144	1	X		-38
BLC001- BP West 07	"	SS		"	1148	1	X		-39
BLC001- BP West 08	"	SS		"	1153	1	X		-40

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Chain of Custody Page ___ of ___

ESC LAB SCIENCES
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Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L958984

Table #

Acctnum: MCGINRNV

Template: T115371

Prelogin: P566073

TSR: 728 - Shane Gambill

PB:

Shipped Via: FedEX Ground

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	9/9/16	1131	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Date: 9-12-16 Time: 9:00

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.1 °C Bottles Received: 254a

Hold #

Condition: (lab use only)

COC Seal Intact: Y ___N ___NA

pH Checked:

NCF: X

McGinley & Assoc. - Reno, NV

815 Maestro Drive
Reno, NV 89511

Billing Information:
Tony Dimpel
815 Maestro Dr.
Reno, NV 89511

Report to: Ben Peterson

Email To: bpeterson@mcgin.com

Project Description: Bella Vista Ranch

City/State Collected: Reno, NV

Phone: 775-829-2245
Fax:

Client Project # BLC001

Lab Project # MCGINRNV-HG

Collected by (print): Brian Kuhns

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X_Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LABS SCIENCES
YOUR LAB OF CHOICE
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Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L898494

Table #

Acctnum: MCGINRNV
Template: T115371
Prelogin: P566073
TSR: 728 - Shane Gambill
PB:

Shipped Via: FedEX Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	HG 7470 4ozClr-NoPres									Rem./Contaminant	Sample # (lab only)
BLC001-G046	Comp	SS		9/7/16	1334	1	X										-41
BLC001-G051	"	SS		"	1415	1	X										-42
BLC001-G054	"	SS		"	1430	1	X										-43
BLC001-G055	"	SS		"	1449	1	X										-44
BLC001-G053	"	SS		"	1506	1	X										-45
BLC001-G052	"	SS		"	1529	1	X										-46
BLC001-G041	"	SS		9/8/16	0659	1	X										-47
BLC001-G037	"	SS		"	0723	1	X										-48
BLC001-G031	"	SS		"	0753	1	X										-49
BLC001-G026	"	SS		"	0840	1	X										-50

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	9/9/16	1132	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Dry Ran

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.1 °C Bottles Received: 25hr

Date: 9-12-16 Time: 940

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF: X

McGinley & Assoc. - Reno, NV

815 Maestro Drive
Reno, NV 89511

Billing Information:
Tony Dimpel
815 Maestro Dr.
Reno, NV 89511

Report to: Ben Peterson

Email To: bpeterson@mcgin.com

Project Description: Bella Vista Ranch

City/State Collected: Reno, NV

Phone: 775-829-2245
Fax:

Client Project # BLC001

Lab Project # MCGINRNV-HG

Collected by (print): Brian Kuhns

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X_Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

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Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L859484

Table #

Acctnum: MCGINRNV
Template: T115371
Prelogin: P566073
TSR: 728 - Shane Gambill
PB:

Shipped Via: FedEx Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	HG 7470 4ozClr-NoPres										Rem./Contaminant	Sample # (lab only)
BLC001-G047	Comp	SS		9/8/16	0925	1	X											-51
BLC001-G049		SS			0939	1	X											-52
BLC001-G050		SS			0957	1	X											-53
BLC001-G048		SS			1014	1	X											-54
BLC001-G045		SS			1028	1	X											-55
BLC001-G044		SS			1044	1	X											-56
BLC001-G038		SS			1141	1	X											-57
BLC001-G042		SS			1203	1	X											-58
BLC001-G043		SS			1219	1	X											-59
BLC001-G040		SS			1240	1	X											-60

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	9/9/16	1132	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.1 °C Bottles Received: 75 4g

Date: 9-12-16 Time: 900

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF: Y

McGinley & Assoc. - Reno, NV

815 Maestro Drive
Reno, NV 89511

Billing Information:
Tony Dimpel
815 Maestro Dr.
Reno, NV 89511

Report to: **Ben Peterson**

Email To: bpeterson@mcgin.com

Project Description: Bella Vista Ranch

City/State Collected:

Phone: 775-829-2245
Fax:

Client Project # BLC001

Lab Project # MCGINRNV-HG

Collected by (print): Brian Kuhns

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X_Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
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Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L954994

Table #

Acctnum: MCGINRNV
Template: T115371
Prelogin: P566073
TSR: 728 - Shane Gambill
PB:

Shipped Via: FedEX Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	HG 7470 4ozClr-NoPres										Rem./Contaminant	Sample # (lab only)
BLC001-G039	comp	SS		9/8/16	1301	1	X											-61
BLC001-G032		SS			1328	1	X											-62
BLC001-G027		SS			1422	1	X											-63
BLC001-G028		SS			1445	1	X											-64
BLC001-G033		SS			1506	1	X											-65
BLC001-G035		SS			1519	1	X											-66
BLC001-G036		SS			1535	1	X											-67
BLC001-G034		SS			1548	1	X											-68
BLC001-G022		SS		9/9/16	0705	1	X											-69
BLC001-G023		SS		9/9/16	0720	1	X											-76

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	9/9/16	1133	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.1 °C Bottles Received: 754

Date: 9-12-16 Time: 910

Condition: (lab use only)

COC Seal Intact: ✓ Y ___ N ___ NA

pH Checked: NCF: X

Company Name/Address:
McGinley & Assoc. - Reno, NV
815 Maestro Drive
Reno, NV 89511

Billing Information:
Tony Dimpel
815 Maestro Drive
Reno, NV 89511

Report to: Ben Peterson

Email To: bpeterson@mcgin.com

Project Description: Bella Vista Ranch

City/State Collected: Reno, NV

Phone: 775-829-2245
Fax:

Client Project # BLC001

Lab Project # MCGINRNV-HG

Collected by (print): Brian Kuhns

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ___Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

HG 7470 4oz Cl-NoPres

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs		Rem./Contaminant	Sample # (lab only)
BLC001-G025	comp	SS		9/9/16	0736	1	X		-71
BLC001-G024	comp	SS		9/9/16	0754	1	X		-72
BLC001-G029	comp	SS		9/9/16	0809	1	X		-73
BLC001-G030	comp	SS		9/9/16	0821	1	X		-74

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	9/9/16	1134	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.1 °C Bottles Received: 25 4u

Date: 9-12-16 Time: 900

Hold #

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF: X

Chain of Custody Page ___ of ___

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L958984

Table #

Acctnum: MCGINRNV

Template: T115371

Prelogin: P566073

TSR: 728 - Shane Gumbill

PB:

Shipped Via: FedEx Ground

ESC
L·A·B S·C·I·E·N·C·E·S
YOUR LAB OF CHOICE

Cooler Receipt Form

Client: MCGINRNV	SDG#	L058981
Cooler Received/Opened On: 9/12/16	Temperature Upon Receipt:	3.1 °c
Received By: Greg Dearmon		
Signature: Greg Dearmon		

Receipt Check List	Yes	No	N/A
Were custody seals on outside of cooler and intact?	/		
Were custody papers properly filled out?	/		
Did all bottles arrive in good condition?	/		
Were correct bottles used for the analyses requested?	/		
Was sufficient amount of sample sent in each bottle?	/		
Were all applicable sample containers correctly preserved and checked for preservation? (Any not in accepted range noted on COC)			/
If applicable, was an observable VOA headspace present?			/
Non Conformance Generated. (If yes see attached NCF)	/		

Andy Vann

ESC Lab Sciences
Non-Conformance Form

Login # L858984	Client: MCGINRNV	Date:9/10	Evaluated by:Dakota (B043)

Non-Conformance (check applicable items)

	Sample Integrity		Chain of Custody Clarification		
	Parameter(s) past holding time	x	Login Clarification Needed		**If Broken Container:**
	Improper temperature		Chain of custody is incomplete		Insufficient packing material around container
	Improper container type		Please specify Metals requested.		Insufficient packing material inside cooler
	Improper preservation		Please specify TCLP requested.		Improper handling by carrier (FedEx / UPS / Couri
	Insufficient sample volume.		Received additional samples not listed on coc.		Sample was frozen
	Sample is biphasic.		Sample ids on containers do not match ids on coc		Container lid not intact
	Vials received with headspace.		Trip Blank not received.		**If no Chain of Custody:**
	Broken container		Client did not "X" analysis.		Received by: Dakota B
	Broken container:	x	Chain of Custody is missing		Date/Time: 9-10-16 / 0900
	Sufficient sample remains				Temp./Cont. Rec./pH: 2.1 / 48
					Carrier:Fed Ex
					Tracking#67770001094610957

Login Comments: Received 48 4oz containers for HG7470, Project BLC001 on 9/10 without a COC

Client informed by:		Call		Email		Voice Mail		Date: 9/19/16	Time: 1305
TSR Initials: JCR	Client Contact:								

Login Instructions:

Remaining samples were received on 9/12, along with the COC. Logged to SDG# L858984

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ANALYTICAL REPORT

e e e 30, 201

myESC
REAL-TIME DATA ACCESS

inley o Reno

le eli e y G o :	L8 13 8
les Recei e :	09/12/201
o ec N e :	BLC001
esc i ion:	Bell Vis R nc

Re o o:

Ben e e son
815 M es o i e
Reno, NV 89511

n i e Re o Re ie e By:

ne G ill
ec nic l e ice Re esen i e

esults relate only to the items tested or alibrated and are reported as rounded values. This test report shall not be reprodu ed, e ept in full, ithout ritten approval of the laboratory. here appli able, sampling ondu ted by S is performed per guidan e provided in laboratory standard operating pro edures , , and .



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BLC001-G055 L8 13 8-01 s e

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reparation by ethod	G				

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reparation by ethod	G				

All s le li os e e ecei e e co ec e e e, in e o e con ine s, i e o i e ese ies, n i in e o s ecifie ol in i es. All M L L n R L L l es e o e fo en i on en ls les e een co ec e fo e il ion f c o se in e n lysis. All Me o n B c li y Con ol e i in es lis e c i e i e ce e e esse in is c se n i e, non-confo nce fo o o e ly lifie i in e s le es l s. By y i i l si n e elo , ffi o e es of y no le e, ll o le s/ no lies o se e y e l o o y s in e o en i l o ffec e li y of e e een i en ifie y e l o o y, n no info ion o e een no in ly i el o l ffec e li y of e .

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e ion y Me o 1311

Analyte	Result	Qualifier	Prep date time	Batc
T tra tion				G
luid				G
nitial p	.			G
inal p	.			G

Me c y y Me o 7 70A

Analyte	Result mg l	Qualifier	RDL mg l	Limit mg l	Dilution	Analysis date time	Batc
er ury	D		.	.			G

e ion y Me o 1311

Analyte	Result	Qualifier	Prep date time	Batc
T tra tion				G
luid				G
nitial p	.			G
inal p	.			G

Me c y y Me o 7 70A

Analyte	Result mg l	Qualifier	RDL mg l	Limit mg l	Dilution	Analysis date time	Batc
er ury	D		.	.			G

e ion y Me o 1311

Analyte	Result	Qualifier	Prep date time	Batc
T tra tion				G
luid				G
nitial p	.			G
inal p	.			G

Me c y y Me o 7 70A

Analyte	Result mg l	Qualifier	RDL mg l	Limit mg l	Dilution	Analysis date time	Batc
er ury	D		.	.			G

Me o Bl n MB

MB R31 7239-1 09/30/1 07:52

Analyte	MB Result mg l	MB Qualifier	MB MDL mg l	MB RDL mg l
er ury			.	.

L o o y Con ol le LC L o o y Con ol le lic e LC

LC R31 7239-2 09/30/1 07:5 LC R31 7239-3 09/30/1 07:57

Analyte	Spike Amount mg l	LCS Result mg l	LCSD Result mg l	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
er ury	.	.	.							

L8 133 -02 i in l le M i i e M M i i e lic e M

L8 133 -02 09/30/1 07:59 M R31 7239- 09/30/1 08:02 M R31 7239-5 09/30/1 08:0

Analyte	Spike Amount mg l	ri inal Result mg l	MS Result mg l	MSD Result mg l	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
er ury	.	D	.	.								

L8 133 -08 i in l le M i i e M M i i e lic e M

L8 133 -08 09/30/1 08:07 M R31 7239- 09/30/1 08:09 M R31 7239-7 09/30/1 08:12

Analyte	Spike Amount mg l	ri inal Result mg l	MS Result mg l	MSD Result mg l	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
er ury	.	D	.	.								

A e i ions n efini ions

G	Sample Delivery Group.
M L	ethod Dete tion imit.
R L	eported Dete tion imit.
N	ot dete ted at the eporting imit or D here appli able .
	ot dete ted at the eporting imit or D here appli able .
R	elative er ent Differen e.
i in l le	The non spiked sample in the prep bat h used to determine the elative er ent Differen e D from a quality ontrol sample. The riginal Sample may not be in luded ithin the reported SDG.
Rec.	e overy.

lifie esc i ion

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [14]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



McGinley & Assoc. - Reno, NV

815 Maestro Drive
Reno, NV 89511

Billing Information:
Tony Dimpel
815 Maestro Dr.
Reno, NV 89511

Report to: Ben Peterson

Email To: bpeterson@mcgin.com

Project Description: Bella Vista Ranch

City/State Collected: Reno, NV

Phone: 775-829-2245
Fax:

Client Project #: BLC001

Lab Project #: MCGINRNV-HG

Collected by (print): Brian Kuhns

Site/Facility ID #:

P.O. #:

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X_Yes
FAX? ___No ___Yes

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	HG 7470 4oz Clr-NoPres									Rem./Contaminant	Sample # (lab only)
BLC001-G046	Comp	SS		9/7/16	1334	1	X										-41
BLC001-G051		SS			1415	1	X										-42
BLC001-G054		SS			1430	1	X										-43
BLC001-G055		SS			1449	1	X										-44
BLC001-G053		SS			1506	1	X										-45
BLC001-G052		SS			1529	1	X										-46
BLC001-G041		SS		9/8/16	0659	1	X										-47
BLC001-G037		SS			0723	1	X										-48
BLC001-G031		SS			0753	1	X										-49
BLC001-G026		SS			0840	1	X										-50

Analysis / Container / Preservative

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	9/9/16	1132	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.1 °C Bottles Received: 25

Date: 9-12-16 Time: 940

Hold #

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF: X

Chain of Custody Page ___ of ___

ESC LAB SCIENCES

YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L~~MS~~ 98494

Table # 86134

Acctnum: MCGINRNV

Template: T115371

Prelogin: P566073

TSR: 728 - Shane Gambill

PB:

Shipped Via: FedEX Ground

McGinley & Assoc. - Reno, NV

815 Maestro Drive
Reno, NV 89511

Billing Information:
Tony Dimpel
815 Maestro Dr.
Reno, NV 89511

Report to: Ben Peterson

Email To: bpeterson@mcgin.com

Project Description: Bella Vista Ranch

City/State Collected: Reno, NV

Phone: 775-829-2245
Fax:

Client Project #: BLC001

Lab Project #: MCGINRNV-HG

Collected by (print): Brian Kuhns

Site/Facility ID #:

P.O. #:

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X_Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L056490

Table # 861348

Acctnum: MCGINRNV
Template: T115371
Prelogin: P566073
TSR: 728 - Shane Gambill
PB:
Shipped Via: FedEX Ground

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	HG 7470 40zClr-NoPres	Rem./Contaminant	Sample # (lab only)
BLC001-G047	Comp	SS		9/8/16	0925	1	X		-51
BLC001-G049		SS			0939	1	X		-52
BLC001-G050		SS			0957	1	X		-53
BLC001-G048		SS			1014	1	X		-54
BLC001-G045		SS			1028	1	X		-55
BLC001-G044		SS			1044	1	X		-56
BLC001-G038		SS			1141	1	X		-57
BLC001-G042		SS			1203	1	X		-58
BLC001-G043		SS			1219	1	X		-59
BLC001-G040		SS			1240	1	X		-60

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	9/9/16	1132	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.1 °C Bottles Received: 75

Date: 9-12-16 Time: 900

Condition: (lab use only)

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF: Y

Matt Shacklock

From: Jason Romer
Sent: Thursday, September 22, 2016 1:53 PM
To: Login; Due Metals; Sample Storage; TCLP
Cc: Shane Gambill
Subject: L858984 - MCGINRNV - relog for TCLP

Please relog L858984-44, -45 and -55 for TCLP HG. **Please log as R5 due Thursday, 09/29**

Thanks,

Jason Romer
Technical Service Representative (TSR)
E-mail: jromer@esclabsciences.com
Phone: 800-767-5859 Ext. 9713
Direct: 615-773-9713
www.esclabsciences.com



ANALYTICAL REPORT

ece e 07, 201

myESC
REAL-TIME DATA ACCESS

inley o Reno

le eli e y G o :	L875923
les Recei e :	12/02/201
o ec N e :	BLC001
esc i ion:	Bell Vis R nc

Re o o:

Ben e e son
815 M es o i e
Reno, NV 89511

n i e Re o Re ie e By:

ne G ill
ec nic l e ice Re esen i e

esults relate only to the items tested or alibrated and are reported as rounded values. This test report shall not be reprodu ed, e ept in full, ithout ritten approval of the laboratory. here appli able, sampling ondu ted by S is performed per guidan e provided in laboratory standard operating pro edures , , and .



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ample mmary

n a e arrati e

r ample Re lt

BLC001-G050-0-0.5	L875923-01	11
BLC001-G050-0.5-1.0	L875923-02	12
BLC001-G050-1.0-1.5	L875923-03	13
BLC001-G050-1.5-2.0	L875923-0	1
BLC001-G0 9-0-0.5	L875923-05	15
BLC001-G0 9-0.5-1.0	L875923-0	1
BLC001-G0 9-1.0-1.5	L875923-07	17
BLC001-G0 9-1.5-2.0	L875923-08	18
BLC001-G055-0-0.5	L875923-09	19
BLC001-G055-0.5-1.0	L875923-10	20
BLC001-G055-1.0-1.5	L875923-11	21
BLC001-G055-1.5-2.0	L875923-12	22
BLC001-G053-0-0.5	L875923-13	23
BLC001-G053-0.5-1.0	L875923-1	2
BLC001-G053-1.0-1.5	L875923-15	25
BLC001-G053-1.5-2.0	L875923-1	2
BLC001-G0 8-0-0.5	L875923-17	27
BLC001-G0 8-0.5-1.0	L875923-18	28
BLC001-G0 8-1.0-1.5	L875923-19	29
BLC001-G0 8-1.5-2.0	L875923-20	30
BLC001-G0 5-0-0.5	L875923-21	31
BLC001-G0 5-0.5-1.0	L875923-22	32
BLC001-G0 5-1.0-1.5	L875923-23	33
BLC001-G0 5-1.5-2.0	L875923-2	3
BLC001-G039-0-0.5	L875923-25	35
BLC001-G039-0.5-1.0	L875923-2	3
BLC001-G039-1.0-1.5	L875923-27	37
BLC001-G039-1.5-2.0	L875923-28	38
BLC001-G013-0-0.5	L875923-29	39
BLC001-G013-0.5-1.0	L875923-30	0
BLC001-G013-1.0-1.5	L875923-31	1
BLC001-G013-1.5-2.0	L875923-32	2
BLC001-G01 -0-0.5	L875923-33	3
BLC001-G01 -0.5-1.0	L875923-3	

BLC001-G01 -1.0-1.5 L875923-35 5
BLC001-G01 -1.5-2.0 L875923-3
BLC001-G017-0-0.5 L875923-37 7
BLC001-G017-0.5-1.0 L875923-38 8
BLC001-G017-1.0-1.5 L875923-39 9
BLC001-G017-1.5-2.0 L875923- 0 50
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olle ted by rian uhns | olle ted date time | e eived date time

BLC001-G050-0-0.5 L875923-01 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

olle ted by rian uhns | olle ted date time | e eived date time

BLC001-G050-0.5-1.0 L875923-02 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

olle ted by rian uhns | olle ted date time | e eived date time

BLC001-G050-1.0-1.5 L875923-03 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

olle ted by rian uhns | olle ted date time | e eived date time

BLC001-G050-1.5-2.0 L875923-0 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

olle ted by rian uhns | olle ted date time | e eived date time

BLC001-G0 9-0-0.5 L875923-05 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

olle ted by rian uhns | olle ted date time | e eived date time

BLC001-G0 9-0.5-1.0 L875923-0 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

olle ted by rian uhns | olle ted date time | e eived date time

BLC001-G0 9-1.0-1.5 L875923-07 oli

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G0 9-1.5-2.0 L875923-08 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G055-0-0.5 L875923-09 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G055-0.5-1.0 L875923-10 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G055-1.0-1.5 L875923-11 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G055-1.5-2.0 L875923-12 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G053-0-0.5 L875923-13 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G053-0.5-1.0 L875923-1 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G053-1.0-1.5 L875923-15 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G053-1.5-2.0 L875923-1 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G0 8-0-0.5 L875923-17 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G0 8-0.5-1.0 L875923-18 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G0 8-1.0-1.5 L875923-19 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G0 8-1.5-2.0 L875923-20 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G0 5-0-0.5 L875923-21 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G0 5-0.5-1.0 L875923-22 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G0 5-1.0-1.5 L875923-23 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G0 5-1.5-2.0 L875923-2 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G039-0-0.5 L875923-25 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G039-0.5-1.0 L875923-2 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G039-1.0-1.5 L875923-27 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G039-1.5-2.0 L875923-28 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G013-0-0.5 L875923-29 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G013-0.5-1.0 L875923-30 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G013-1.0-1.5 L875923-31 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G013-1.5-2.0 L875923-32 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G01 -0-0.5 L875923-33 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G01 -0.5-1.0 L875923-3 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G01 -1.0-1.5 L875923-35 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G01 -1.5-2.0 L875923-3 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G017-0-0.5 L875923-37 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G017-0.5-1.0 L875923-38 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G017-1.0-1.5 L875923-39 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

BLC001-G017-1.5-2.0 L875923- 0 oli

olle ted by rian uhns | olle ted date time | e eived date time

ethod	at h	Dilution	reparation date time	nalysis date time	nalyst
er ury by ethod	G				
Total Solids by ethod G	G				

All s le li os e e ecei e e co ec e e e, in e o e con ine s, i e o i e ese ies, n i in e o s ecifie ol in i es. All M L L n R L L l es e o e fo en i on en ls les e een co ec e fo e il ion f c o se in e n lysis. All Me o n B c li y Con ol e i in es lis e c i e i e ce e e esse in is c se n i e, non-confo nce fo o o e ly lifie i in e s le es l s. By y i i l si n e elo , ffi o e es of y no le e, ll o le s/ no lies o se e y e l o o y s in e o en i l o ffec e li y of e e een i en ifie y e l o o y, n no info ion o e een no in ly i el o l ffec e li y of e .



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o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury			.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury			.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

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er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

o l oli s y Me o 25 0 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date time	Batc
Total Solids	.				G

Me c y y Me o 7 71A

Analyte	Result ry mg kg	Qualifier	MDL ry mg kg	RDL ry mg kg	Dilution	Analysis date time	Batc
er ury	.		.	.			G

Me o Bl n MB

MB R31828 0-1 12/0 /1 09: 8

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Total Solids	.			

L875923-10 i in l le lic e

L875923-10 12/0 /1 09: 8 R31828 0-3 12/0 /1 09: 8

Analyte	ri inal Result	D P Result	Dilution	D P RPD	D P Qualifier	D P RPD Limits
Total Solids	.	.		.		

L o o y Con ol le LC

LC R31828 0-2 12/0 /1 09: 8

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Total Solids	.	.	.	.	

Me o Bl n MB

MB R31828 2-1 12/0 /1 10:19

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Total Solids	.			

L875923-11 i in l le lic e

L875923-11 12/0 /1 10:19 R31828 2-3 12/0 /1 10:19

Analyte	ri inal Result	D P Result	Dilution	D P RPD	D P Qualifier	D P RPD Limits
Total Solids	.	.		.		

L o o y Con ol le LC

LC R31828 2-2 12/0 /1 10:19

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Total Solids	.	.		.	

Me o Bl n MB

MB R31828 -1 12/0 /1 11:20

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Total Solids	.			

L875923-21 i in l le lic e

L875923-21 12/0 /1 11:20 R31828 -3 12/0 /1 11:20

Analyte	ri inal Result	D P Result	Dilution	D P RPD	D P Qualifier	D P RPD Limits
Total Solids	.	.		.		

L o o y Con ol le LC

LC R31828 -2 12/0 /1 11:20

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Total Solids	.	.		.	

Me o Bl n MB

MB R31828 1-1 12/0 /1 10:03

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Total Solids	.			

L875923-33 i in l le lic e

L875923-33 12/0 /1 10:03 R31828 1-3 12/0 /1 10:03

Analyte	ri inal Result	D P Result	Dilution	D P RPD	D P Qualifier	D P RPD Limits
Total Solids	.	.		.		

L o o y Con ol le LC

LC R31828 1-2 12/0 /1 10:03

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Total Solids	.	.		.	

Me o Bl n MB

MB R3182500-1 12/05/1 10:31

Analyte	MB Result mg kg	MB Qualifier	MB MDL mg kg	MB RDL mg kg
er ury			.	.

L o o y Con ol le LC L o o y Con ol le lic e LC

LC R3182500-2 12/05/1 10:3 LC R3182500-3 12/05/1 10:3

Analyte	Spike Amount mg kg	LCS Result mg kg	LCSD Result mg kg	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
er ury	.	.	.							

Me o Bl n MB

MB R318279 -1 12/0 /1 1 :38

Analyte	MB Result mg kg	MB Qualifier	MB MDL mg kg	MB RDL mg kg
er ury			.	.

L o o y Con ol le LC L o o y Con ol le lic e LC

LC R318279 -2 12/0 /1 1 : 0 LC R318279 -3 12/0 /1 1 : 3

Analyte	Spike Amount mg kg	LCS Result mg kg	LCSD Result mg kg	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
er ury	.	.	.							

A e i ions n efini ions

G	Sample Delivery Group.
M L	ethod Dete tion imit.
R L	eported Dete tion imit.
	ot dete ted at the eporting imit or D here appli able .
R	elative er ent Differen e.
y	esults are reported based on the dry eight of the sample. this ill only be present on a dry report basis for soils .
i in l le	The non spiked sample in the prep bat h used to determine the elative er ent Differen e D from a quality ontrol sample. The riginal Sample may not be in luded ithin the reported SDG.
Rec.	e overy.

lifie esc i ion

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [14]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



McGinley & Assoc. - Reno, NV

815 Maestro Drive
Reno, NV 89511

Billing Information & Quote Number:

815 Maestro Dr.
Reno, NV 89511

Report to: **Ben Peterson**

Email To: **bpeterson@mcgin.com**

Project Description: Bella Vista Ranch

City/State Collected: Reno/NV

Phone: **775-829-2245**
Fax:

Client Project # BLC001

Lab Project # **MCGINRNV-PETERSON**

Collected by (print): Brian Kuhns

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X_Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	HG, TS 4ozClr-NoPres	Hold - Methyl Hg 4ozClr-NoPres								Rem./Contaminant	Sample # (lab only)
BLC001-G050-0-0.5FT	Comp	SS	0-0.5FT	161129	0850	2	X	X									01
-G050-0.5-1.0FT		SS	0.5-1.0FT		0945	2	X	X									02
-G050-1.0-1.5FT		SS	1.0-1.5FT		1005	2	X	X									03
-G050-1.5-2.0FT		SS	1.5-2.0FT		1020	2	X	X									04
-~~G050~~ G049-0-0.5FT		SS	0-0.5FT		1045	2	X	X									05
-~~G050~~ G049-0.5-1.0FT		SS	0.5-1.0FT		1055	2	X	X									06
-~~G050~~ G049-1.0-1.5FT		SS	1.0-1.5FT		1105	2	X	X									07
-G049-1.5-2.0FT		SS	1.5-2.0FT		1115	2	X	X									08
-G055-0-0.5FT		SS	0-0.5FT		1230	2	X	X									09
-G055-0.5-1.0FT	↓	SS	0.5-1.0FT	↓	1240	2	X	X									10

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks:Freeze and hold "methyl mercury" pending Total Hg results.

pH _____ Temp _____

Flow _____ Other _____

Chain of Custody Page ___ of ___

ESC LAB SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 875923

B068

Acctnum: **MCGINRNV**
Template:**T118034**
Prelogin: **P577168**
TSR: **728 - Shane Gambill**
PB:
Shipped Via: **FedEX Ground**

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	12/01/16	10:00am	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.3 °C Bottles Received: 8 4oz

Date: 12-2-16 Time: 1W

Hold #

Condition: (lab use only) GW

COC Seal Intact: Y ___N ___NA

pH Checked: NCF:

McGinley & Assoc. - Reno, NV

815 Maestro Drive
Reno, NV 89511

Billing Information & Quote Number:

815 Maestro Dr.
Reno, NV 89511

Report to: **Ben Peterson**

Email To: **bpeterson@mcgin.com**

Project Description: Bella Vista Ranch

City/State Collected: Reno/NV

Phone: **775-829-2245**
Fax:

Client Project # BLC001

Lab Project # **MCGINRNV-PETERSON**

Collected by (print): Brian Kuhns

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	HG, TS 4ozClr-NoPres	Hold - Methyl Hg 4ozClr-NoPres								Rem./Contaminant	Sample # (lab only)
BLC001-6055-1.0-1.5FT	Comp	SS	1.0-1.5FT	161129	1250	2	X	X									11
-6055-1.5-2.0FT		SS	1.5-2.0FT		1300	2	X	X									12
-6053-0-0.5FT		SS	0-0.5FT		1350	2	X	X									13
-6053-0.5-1.0FT		SS	0.5-1.0FT		1400	2	X	X									14
-6053-1.0-1.5FT		SS	1.0-1.5FT		1410	2	X	X									15
-6053-1.5-2.0FT		SS	1.5-2.0FT		1420	2	X	X									16
-6048-0-0.5FT		SS	0-0.5FT		1450	2	X	X									17
-6048-0.5-1.0FT		SS	0.5-1.0FT		1500	2	X	X									18
-6048-1.0-1.5FT		SS	1.0-1.5FT		1510	2	X	X									19
-6048-1.5-2.0FT	↓	SS	1.5-2.0FT	↓	1520	2	X	X									20

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks:Freeze and hold "methyl mercury" pending Total Hg results.

pH _____ Temp _____

Flow _____ Other _____

Chain of Custody Page ___ of ___

ESC LABS

YOUR LAB OF CHOICE

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 875927

Table #

Acctnum: **MCGINRNV**
Template:**T118034**
Prelogin: **P577168**
TSR: **728 - Shane Gambill**
PB:

Shipped Via: **FedEX Ground**

Hold #

Condition: (lab use only) ok ok

COC Seal Intact: ✓ Y ___N ___NA

pH Checked: NCF:

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	12/01/16	10:00am	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.3 °C Bottles Received: 80 4oz

Date: 12-2-16 Time: 900

McGinley & Assoc. - Reno, NV

815 Maestro Drive
Reno, NV 89511

Billing Information & Quote Number:

815 Maestro Dr.
Reno, NV 89511

Report to: **Ben Peterson**

Email To: **bpeterson@mcgin.com**

Project Description: Bella Vista Ranch

City/State Collected: Reno/NV

Phone: **775-829-2245**
Fax:

Client Project # BLC001

Lab Project # **MCGINRNV-PETERSON**

Collected by (print): Brian Kuhns

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X_Yes
FAX? ___No ___Yes

Chain of Custody Page ___ of ___

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 875923

Table #

Acctnum: **MCGINRNV**
Template: **T118034**
Prelogin: **P577168**
TSR: **728 - Shane Gambill**
PB:

Shipped Via: **FedEx Ground**

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	HG, TS 4ozClr-NoPres	Hold - Methyl Hg 4ozClr-NoPres								Rem./Contaminant	Sample # (lab only)
BLC001-6045-0-0.5 FT	Comp	SS	0-0.5FT	161129	1550	2	X	X									21
-6045-0.5-1.0 FT		SS	0.5-1.0FT		1600	2	X	X									22
-6045-1.0-1.5FT		SS	1.0-1.5FT		1610	2	X	X									23
-6045-1.5-2.0FT		SS	1.5-2.0FT		1620	2	X	X									24
-6039-0-0.5FT		SS	0-0.5FT	161130	0850	2	X	X									25
-6039-0.5-1.0FT		SS	0.5-1.0FT		0900	2	X	X									26
-6039-1.0-1.5FT		SS	1.0-1.5FT		0910	2	X	X									27
-6039-1.5-2.0FT		SS	1.5-2.0FT		0920	2	X	X									28
-6013-0-0.5FT		SS	0-0.5FT		1050	2	X	X									29
-6013-0.5-1.0FT		SS	0.5-1.0FT		1100	2	X	X									30

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other ___

Remarks:Freeze and hold "methyl mercury" pending Total Hg results.

pH ___ Temp ___
Flow ___ Other ___

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Brian Kuhns	12/01/16	10:00am	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)
			Dan

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ___

Temp: 3.3 °C Bottles Received: 80 4oz

Date: 12-2-16 Time: 900

Condition: (lab use only) OK

COC Seal Intact: ✓ Y ___ N ___ NA

pH Checked: NCF:

McGinley & Assoc. - Reno, NV

815 Maestro Drive
Reno, NV 89511

Billing Information & Quote Number:

815 Maestro Dr.
Reno, NV 89511

Report to: **Ben Peterson**

Email To: **bpeterson@mcgin.com**

Project Description: Bella Vista Ranch

City/State Collected: NV-Reno

Phone: **775-829-2245**
Fax:

Client Project # BLC001

Lab Project # **MCGINRNV-PETERSON**

Collected by (print): Brian Kuhns

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X__Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	HG, TS 4ozClr-NoPres	Hold - Methyl Hg 4ozClr-NoPres								Rem./Contaminant	Sample # (lab only)
BLC001-G013-1.0-1.5FT	Comp	SS	1.0-1.5FT	161130	1110	2	X	X									31
-G013-1.5-2.0FT		SS	1.5-2.0FT		1120	2	X	X									32
-G014-0-0.5FT		SS	0-0.5FT		1140	2	X	X									33
-G014-0.5-1.0FT		SS	0.5-1.0FT		1150	2	X	X									34
-G014-1.0-1.5FT		SS	1.0-1.5FT		1200	2	X	X									35
-G014-1.5-2.0FT		SS	1.5-2.0FT		1210	2	X	X									36
-G017-0-0.5FT		SS	0-0.5FT		1220	2	X	X									37
-G017-0.5-1.0FT		SS	0.5-1.0FT		1230	2	X	X									38
G017-1.0-1.5FT		SS	1.0-1.5FT		1240	2	X	X									39
G017-1.5-2.0FT		SS	1.5-2.0FT		1250	2	X	X									40

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks:Freeze and hold "methyl mercury" pending Total Hg results.

pH _____ Temp _____

Flow _____ Other _____

Chain of Custody Page ___ of ___

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 875423

Table #

Acctnum: **MCGINRNV**

Template:**T118034**

Prelogin: **P577168**

TSR: **728 - Shane Gambill**

PB:

Shipped Via: **FedEx Ground**

Hold #

Condition: (lab use only) good

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	12/01/16	10:00am	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.3 °C Bottles Received: 80 4oz

Date: 12-2-16 Time: 910

COC Seal Intact: ✓ Y ___N ___NA

pH Checked: NCF:

ESC
L·A·B S·C·I·E·N·C·E·S
YOUR LAB OF CHOICE

Cooler Receipt Form

Client: MCGINNIV	SDG#	875923
Cooler Received/Opened On: 12/ 2 /16	Temperature Upon Receipt:	3.3 °c
Received By: Dakota Busby		
Signature:		

Receipt Check List	Yes	No	N/A
Were custody seals on outside of cooler and intact?	✓		
Were custody papers properly filled out?	✓		
Did all bottles arrive in good condition?	✓		
Were correct bottles used for the analyses requested?	✓		
Was sufficient amount of sample sent in each bottle?	✓		
Were all applicable sample containers correctly preserved and checked for preservation? (Any not in accepted range noted on COC)			✓
If applicable, was an observable VOA headspace present?			✓
Non Conformance Generated. (If yes see attached NCF)			

ANALYTICAL REPORT

n y 13, 2017

myESC
REAL-TIME DATA ACCESS

inley o Reno

le eli e y G o :	L877197
les Recei e :	12/02/201
o ec N e :	BLC001
esc i ion:	Bell Vis R nc

Re o o:

Ben e e son
815 M es o i e
Reno, NV 89511

n i e Re o Re ie e By:

ne G ill
ec nic l e ice Re esen i e

esults relate only to the items tested or alibrated and are reported as rounded values. This test report shall not be reprodu ed, e ept in full, ithout ritten approval of the laboratory. here appli able, sampling ondu ted by S is performed per guidan e provided in laboratory standard operating pro edures , , and .



e anon R o nt liet e la ien e om

p o er Pa e
a le o ontent
n a e arrati e
l lo ary o erm
l re itation o ation
ain o to y

All s le li o s e e ecei e e co ec e e e, in e o e con ine s, i e o i e ese i es, n i in e o s ecifie ol in i es. All M L L n R L L l es e o e fo en i on en l s les e een co ec e fo e il ion f c o se in e n lysis. All Me o n B c li y Con ol e i in es lis e c i e i e ce e e esse in is c se n i e, non-confo nce fo o o e ly lifie i in e s le es l s. By y i i l si n e elo , ffi o e es of y no le e, ll o le s/ no lies o se e y e l o o y s in e o en i l o ffec e li y of e e een i en ifie y e l o o y, n no info ion o e een no in ly i el o l ffec e li y of e .



ne G ill
ec nic l e ice Re esen i e

o ec N i e

L877197 -01, -02, -03, -0 , -05 con ins s o is incl e f e ec in of c s o y.

A e i ions n efini ions

G	Sample Delivery Group.

lifie esc i ion

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE.**
***** Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Conneticut	PH-0197	North Carolina [1]	DW21704
Florida	E87487	North Carolina [2]	41
Georgia	NELAP	North Dakota	R-140
Georgia [1]	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky [1]	90010	South Dakota	n/a
Kentucky [2]	16	Tennessee [14]	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [n/a] Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



McGinley & Assoc. - Reno, NV

815 Maestro Drive
Reno, NV 89511

Billing information & Quote Number:

815 Maestro Dr.
Reno, NV 89511

Report to: **Ben Peterson**

Email To: **bpeterson@mcgin.com**

Project Description: Bella Vista Ranch

City/State Collected: Reno/NV

Phone: **775-829-2245**
Fax:

Client Project # BLC001

Lab Project # **MCGINRNV-PETERSON**

Collected by (print): Brian Kohns

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X_Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	HG, TS 4ozClr-NoPres	Hold - Methyl Hg 4ozClr-NoPres	Rem./Contaminant	Sample # (lab only)
BLC001-6055-1.0-1.5FT	Comp	SS	1.0-1.5FT	161129	1250	2	X	X		11
-6055-1.5-2.0FT		SS	1.5-2.0FT		1300	2	X	X		12
-6053-0-0.5FT		SS	0-0.5FT		1350	2	X	X	-01	13
-6053-0.5-1.0FT		SS	0.5-1.0FT		1400	2	X	X		14
-6053-1.0-1.5FT		SS	1.0-1.5FT		1410	2	X	X		15
-6053-1.5-2.0FT		SS	1.5-2.0FT		1420	2	X	X		16
-6048-0-0.5FT		SS	0-0.5FT		1450	2	X	X	-02	17
-6048-0.5-1.0FT		SS	0.5-1.0FT		1500	2	X	X		18
-6048-1.0-1.5FT		SS	1.0-1.5FT		1510	2	X	X		19
-6048-1.5-2.0FT	↓	SS	1.5-2.0FT	↓	1520	2	X	X		20

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other_____

Remarks:Freeze and hold "methyl mercury" pending Total Hg results.

pH _____ Temp _____
Flow _____ Other _____

Chain of Custody Page ___ of ___

ESC LAB SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

N 12/3/16

L# ~~575427~~

Table # L877197

Acctnum: **MCGINRNV**

Template:**T118034**

Prelogin: **P577168**

TSR: **728 - Shane Gambill**

PB:

Shipped Via: **FedEX Ground**

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	12/01/16	10:00am	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.3 °C Bottles Received: 30 4oz

Date: 12-2-16 Time: 9W

Condition: (lab use only) OK

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

McGinley & Assoc. - Reno, NV

815 Maestro Drive
Reno, NV 89511

Billing Information & Quote Number:

815 Maestro Dr.
Reno, NV 89511

Report to: Ben Peterson

Email To: bpeterson@mcgin.com

Project Description: Bella Vista Ranch

City/State Collected: Reno/NV

Phone: 775-829-2245
Fax:

Client Project #: BLC001

Lab Project #: MCGINRNV-PETERSON

Collected by (print): Brian Kohns

Site/Facility ID #:

P.O. #:

Collected by (signature):

Immediately Packed on Ice: N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X_Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	HG, TS 4ozClr-NoPres	Hold - Methyl Hg 4ozClr-NoPres								Rem./Contaminant	Sample # (lab only)
BLC001-6015-0-0.5FT	Comp	SS	0-0.5FT	161129	1550	2	X	X									~~21~~
-6015-0.5-1.0FT		SS	0.5-1.0FT		1600	2	X	X									~~22~~
-6015-1.0-1.5FT		SS	1.0-1.5FT		1610	2	X	X									~~23~~
-6015-1.5-2.0FT		SS	1.5-2.0FT		1620	2	X	X									~~24~~
-6039-0-0.5FT		SS	0-0.5FT	161130	0850	2	X	X									~~28~~
-6039-0.5-1.0FT		SS	0.5-1.0FT		0900	2	X	X								03	~~25~~
-6039-1.0-1.5FT		SS	1.0-1.5FT		0910	2	X	X								04	~~29~~
-6039-1.5-2.0FT		SS	1.5-2.0FT		0920	2	X	X									~~27~~
-6013-0-0.5FT		SS	0-0.5FT		1050	2	X	X									~~99~~
-6013-0.5-1.0FT		SS	0.5-1.0FT		1100	2	X	X									~~30~~

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other ___

Remarks:Freeze and hold "methyl mercury" pending Total Hg results.

pH ___ Temp ___
Flow ___ Other ___

Chain of Custody Page ___ of ___

ESC LABS SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# ~~895769~~

Table # L877197

Acctnum: MCGINRNV

Template: T118034

Prelogin: P577168

TSR: 728 - Shane Gambill

PB:

Shipped Via: FedEX Ground

N 12/8/16

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	12/1/16	10:00m	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ ___

Temp: 3.3 °C Bottles Received: 80402

Date: 12-2-16 Time: 900

Hold #

Condition: (lab use only) OK

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

McGinley & Assoc. - Reno, NV

815 Maestro Drive
Reno, NV 89511

Billing Information & Quote Number:

815 Maestro Dr.
Reno, NV 89511

Report to: **Ben Peterson**

Email To: **bpeterson@mcgin.com**

Project Description: Bella Vista Ranch

City/State Collected: NV-Reno

Phone: **775-829-2245**
Fax:

Client Project #: BLC001

Lab Project #: **MCGINRNV-PETERSON**

Collected by (print): Brian Kuhns

Site/Facility ID #:

P.O. #:

Collected by (signature):

Immediately Packed on ice N___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No X_Yes
FAX? ___No ___Yes

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No of Cntrs	HG, TS 4ozClr-NoPres	Hold - Methyl Hg 4ozClr-NoPres	Rem./Contaminant	Sample # (lab only)
BLC001-G013-1.0-1.5FT	Comp	SS	1.0-1.5FT	161130	1110	2	X	X		31
-G013-1.5-2.0FT		SS	1.5-2.0FT		1120	2	X	X		32
-G014-0-0.5FT		SS	0-0.5FT		1140	2	X	X		33
-G014-0.5-1.0FT		SS	0.5-1.0FT		1150	2	X	X	-05	34
-G014-1.0-1.5FT		SS	1.0-1.5FT		1200	2	X	X		35
-G014-1.5-2.0FT		SS	1.5-2.0FT		1210	2	X	X		36
-G017-0-0.5FT		SS	0-0.5FT		1220	2	X	X		37
-G017-0.5-1.0FT		SS	0.5-1.0FT		1230	2	X	X		38
-G017-1.0-1.5FT		SS	1.0-1.5FT		1240	2	X	X		39
-G017-1.5-2.0FT		SS	1.5-2.0FT		1250	2	X	X		40

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

Remarks:Freeze and hold "methyl mercury" pending Total Hg results.

pH _____ Temp _____
Flow _____ Other _____

Chain of Custody Page ___ of ___

ESC LAB SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 375497
Table # L877197
Acctnum: MCGINRNV
Template: T118034
Prelogin: P577168
TSR: 728 - Shane Gambill
PB:
Shipped Via: FedEX Ground

N 12/8/16

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	12/01/16	10:00am	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____

Temp: 3.3 °C Bottles Received: 80 4oz

Date: 12-2-16 Time: 940

Hold #

Condition: (lab use only) Bm 6

COC Seal Intact: ___Y ___N ___NA

pH Checked: NCF:

Andy Vann

From: Jason Romer
Sent: Thursday, December 08, 2016 9:28 AM
To: Login; Subouts
Cc: Shane Gambill; Sample Storage
Subject: L875923 - MCGINRNV - relog for Subout

Please relog L875923-13, -17, -26, -27 and -34 for MISC-SUB (Methyl-Mercury). Please log as R5 due Friday, 12/16.

Sample Storage – please locate a 4oz jar for each of these five samples to be labeled in Login.

Thanks,
Jason

From: Ben Peterson [mailto:bpeterson@mcgin.com]
Sent: Wednesday, December 07, 2016 5:47 PM
To: Jason Romer
Cc: Shane Gambill
Subject: Fwd: ESC Lab Sciences Report for BLC001 Bella Vista Ranch L875923

Hello Jason-

Please analyze the following five samples for Methyl-mercury:

BLC001-G014-0.5-1.0FT L875923-34
BLC001-G039-0.5-1.0FT L875923-26
BLC001-G039-1.0-1.5FT L875923-27
BLC001-G048-0-0.5FT L875923-17
BLC001-G053-0-0.5FT L875923-13

Please let me know if you have any questions or need any additional information.

Thanks,
Ben

Benjamin Peterson, PG, CEM
McGinley & Associates, Inc.
815 Maestro Drive
Reno, NV 89511
ph: 775-829-2245
cell: 775-386-5406
fax: 775-829-2213
email: bpeterson@mcgin.com
www.mcgin.com

BROOKS APPLIED LABS
18804 North Creek Parkway, Ste 100, Bothell, WA 98011 • USA • T: 206 632 6206 F: 206 632 6017 • info@brooksapplied.com

January 12, 2017

Environmental Science Corp
ATTN: Janice Cozby
2065 Lebanon Road
Mt. Juliet, TN 37122
jcozby@esclansciences.com

RE: Project ESC-MJ1603 Client Project: WG933457

Dear Ms. Cozby,

On December 10, 2016, Brooks Applied Labs (BAL) received five (5) soil/sediment samples. The samples were logged-in for the analyses of methylmercury (MeHg) according to the chain-of-custody form. All samples were received and stored according to BAL SOPs and EPA methodology.

All solid samples for MeHg analysis were extracted in accordance with BAL SOPs. The results were method blank corrected as described in the calculations section of the relevant BAL SOP(s) and were evaluated using reporting limits adjusted to account for sample aliquot size. Please refer to the *Sample Results* page for sample-specific MDLs, MRLs, and other details. All results were reported on a dry-weight basis.

In batch B163290, the analysis of the second method blank was determined to be a Grubb's outlier at 0.050 ng/g and omitted from the batch. The method blank was re-analyzed and confirmed the original result. Any sample concentration within 10x the level of the high blank was reprepared and re-analyzed. All samples reported from batch B163290 were method blank-corrected by the average of the three-remaining method blank results. All data was reported without qualification and all other associated quality control sample results met the acceptance criteria.

BAL, an accredited laboratory, certifies that the reported results of all analyses for which BAL is NELAP accredited meet all NELAP requirements. For more information please see the *Report Information* page in your report. Please feel free to contact me if you have any questions regarding this report.

Sincerely,

Tiffany Stilwater
Client Services Manager
tiffany@brooksapplied.com

Report Information

Laboratory Accreditation

BAL is accredited by the *National Environmental Laboratory Accreditation Program* (NELAP) through the State of Florida Department of Health, Bureau of Laboratories (E87982) and is certified to perform many environmental analyses. BAL is also certified by many other states to perform environmental analyses. For a current list of our accreditations/certifications, please visit our website at <http://www.brooksapplied.com/resources/certificates-permits/>. Results reported relate only to the samples listed in the report.

Field Quality Control Samples

Please be notified that certain EPA methods require the collection of field quality control samples of an appropriate type and frequency; failure to do so is considered a deviation from some methods and for compliance purposes should only be done with the approval of regulatory authorities. Please see the specific EPA methods for details regarding required field quality control samples.

Common Abbreviations

BAL	Brooks Applied Labs	**MS**	matrix spike
BLK	method blank	**MSD**	matrix spike duplicate
BS	laboratory fortified blank	**ND**	non-detect
CAL	calibration standard	**NR**	non-reportable
CCB	continuing calibration blank	**N/C**	not calculated
CCV	continuing calibration verification	**PS**	post preparation spike
COC	chain of custody record	**REC**	percent recovery
D	dissolved fraction	**RPD**	relative percent difference
DUP	duplicate	**SCV**	secondary calibration verification
IBL	instrument blank	**SOP**	standard operating procedure
ICV	initial calibration verification	**SRM**	standard reference material
MDL	method detection limit	**T**	total fraction
MRL	method reporting limit	**TR**	total recoverable fraction

Definition of Data Qualifiers

(Effective 9/23/09)

B Detected by the instrument, the result is > the MDL but ≤ the MRL. Result is reported and considered an estimate.
E An estimated value due to the presence of interferences. A full explanation is presented in the narrative.
H Holding time and/or preservation requirements not met. Result is estimated.
J Estimated value. A full explanation is presented in the narrative.
J-M Duplicate precision (RPD) for associated QC sample was not within acceptance criteria. Result is estimated.
J-N Spike recovery for associated QC sample was not within acceptance criteria. Result is estimated.
M Duplicate precision (RPD) was not within acceptance criteria. Result is estimated.
N Spike recovery was not within acceptance criteria. Result is estimated.
R Rejected, unusable value. A full explanation is presented in the narrative.
U Result is ≤ the MDL or client requested reporting limit (CRRL). Result reported as the MDL or CRRL.
X Result is not BLK-corrected and is within 10x the absolute value of the highest detectable BLK in the batch. Result is estimated.

These qualifiers are based on those previously utilized by Brooks Applied Labs, those found in the EPA SOW ILM03.0, Exhibit B, Section III, pg. B-18, and the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review; USEPA; January 2010. These supersede all previous qualifiers ever employed by BAL.

Project ID: ESC-MJ1603 (MeHg in soils)
PM: Tiffany Stilwater

Client PM: Janice Cozby
Client Project: WG933457

Sample Information

Sample	Lab ID	Report Matrix	Type	Sampled	Received
L877197-01	1650067-01	Soil/Sediment	Sample	11/29/2016	12/10/2016
L877197-02	1650067-02	Soil/Sediment	Sample	11/29/2016	12/10/2016
L877197-03	1650067-03	Soil/Sediment	Sample	11/30/2016	12/10/2016
L877197-04	1650067-04	Soil/Sediment	Sample	11/30/2016	12/10/2016
L877197-05	1650067-05	Soil/Sediment	Sample	11/30/2016	12/10/2016

Batch Summary

Analyte	Lab Matrix	Method	Prepared	Analyzed	Batch	Sequence
%TS	Soil/Sediment	SM 2540G	12/19/2016	12/22/2016	B163220	N/A
MeHg	Soil/Sediment	EPA 1630	12/22/2016	12/22/2016	B163290	1601481
MeHg	Soil/Sediment	EPA 1630	01/10/2017	01/11/2017	B170015	1700040

Sample Results

Sample	Analyte	Report Matrix	Basis	Result	Qualifier	MDL	MRL	Unit	Batch	Sequence
L877197-01										
1650067-01	%TS	Soil/Sediment	NA	67.22		0.02	0.06	%	B163220	N/A
1650067-01	MeHg	Soil/Sediment	dry	5.52		0.021	0.062	ng/g	B170015	1700040
L877197-02										
1650067-02	%TS	Soil/Sediment	NA	65.56		0.02	0.06	%	B163220	N/A
1650067-02	MeHg	Soil/Sediment	dry	2.51		0.019	0.057	ng/g	B163290	1601481
L877197-03										
1650067-03	%TS	Soil/Sediment	NA	76.53		0.02	0.06	%	B163220	N/A
1650067-03	MeHg	Soil/Sediment	dry	0.875		0.016	0.048	ng/g	B163290	1601481
L877197-04										
1650067-04	%TS	Soil/Sediment	NA	68.40		0.02	0.06	%	B163220	N/A
1650067-04	MeHg	Soil/Sediment	dry	0.930		0.019	0.058	ng/g	B170015	1700040
L877197-05										
1650067-05	%TS	Soil/Sediment	NA	89.24		0.02	0.06	%	B163220	N/A
1650067-05	MeHg	Soil/Sediment	dry	1.32		0.014	0.043	ng/g	B170015	1700040

Accuracy & Precision Summary

Batch: B163220
Lab Matrix: Soil/Sediment
Method: SM 2540G

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B163220-DUP1	**Duplicate, (1644067-13)**						
	%TS	97.92		97.88	%		0.04% 15
B163220-DUP2	**Duplicate, (1650057-10)**						
	%TS	79.80		80.29	%		0.6% 15

Accuracy & Precision Summary

Batch: B163290
Lab Matrix: Soil/Sediment
Method: EPA 1630

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B163290-SRM1	**Certified Reference Material, 19.369 (1414049, Methyl Mercury in Sediment)**						
	MeHg		10.00	12.56	ng/g	126% 65-135	
B163290-DUP1	**Duplicate, (1650057-10)**						
	MeHg	3.742		4.048	ng/g		8% 35
B163290-MS1	**Matrix Spike, (1650057-10)**						
	MeHg	3.742	100.1	107.8	ng/g	104% 65-135	
B163290-MSD1	**Matrix Spike Duplicate, (1650057-10)**						
	MeHg	3.742	98.69	95.20	ng/g	93% 65-135	11% 35

Accuracy & Precision Summary

Batch: B170015
Lab Matrix: Soil/Sediment
Method: EPA 1630

Sample	Analyte	Native	Spike	Result	Units	REC & Limits	RPD & Limits
B170015-SRM1	**Certified Reference Material, 19.962 (1414049, Methyl Mercury in Sediment)**						
	MeHg		10.00	10.08	ng/g	101% 65-135	
B170015-DUP1	**Duplicate, (1652050-03)**						
	MeHg	2.974		2.696	ng/g		10% 35
B170015-MS1	**Matrix Spike, (1652050-03)**						
	MeHg	2.974	7.964	10.68	ng/g	97% 65-135	
B170015-MSD1	**Matrix Spike Duplicate, (1652050-03)**						
	MeHg	2.974	7.985	10.55	ng/g	95% 65-135	2% 35
B170015-DUP2	**Duplicate, (1652051-01)**						
	MeHg	0.119		0.142	ng/g		18% 35
B170015-MS2	**Matrix Spike, (1652051-01)**						
	MeHg	0.119	8.021	7.494	ng/g	92% 65-135	
B170015-MSD2	**Matrix Spike Duplicate, (1652051-01)**						
	MeHg	0.119	7.918	7.670	ng/g	95% 65-135	4% 35

Method Blanks & Reporting Limits

Batch: B163220
Matrix: Soil/Sediment
Method: SM 2540G
Analyte: %TS

Sample	Result	Units
B163220-BLK1	-0.02	%
B163220-BLK2	0.00	%

Average: -0.01
Limit: 0.06

MDL: 0.02
MRL: 0.06

Method Blanks & Reporting Limits

Batch: B163290
Matrix: Soil/Sediment
Method: EPA 1630
Analyte: MeHg

Sample	Result	Units
B163290-BLK1	0.0007	ng/g wet
B163290-BLK3	0.001	ng/g wet
B163290-BLK4	0.004	ng/g wet

Average: 0.002 **Standard Deviation:** 0.002 **MDL:** 0.012
Limit: 0.024 **Limit:** 0.008 **MRL:** 0.035

Method Blanks & Reporting Limits

Batch: B170015
Matrix: Soil/Sediment
Method: EPA 1630
Analyte: MeHg

Sample	Result	Units
B170015-BLK1	0.006	ng/g wet
B170015-BLK2	0.002	ng/g wet
B170015-BLK3	0.001	ng/g wet
B170015-BLK4	0.0008	ng/g wet

Average: 0.002 **Standard Deviation:** 0.002 **MDL:** 0.013
Limit: 0.025 **Limit:** 0.008 **MRL:** 0.038

Project ID: ESC-MJ1603 (MeHg in soils)
PM: Tiffany Stilwater

Client PM: Janice Cozby
Client Project: WG933457

Sample Containers

Lab ID: 1650067-01
Sample: L877197-01
Report Matrix: Soil/Sediment
Sample Type: Sample
Collected: 11/29/2016
Received: 12/10/2016

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	4oz	not provided	none			Cooler

Lab ID: 1650067-02
Sample: L877197-02
Report Matrix: Soil/Sediment
Sample Type: Sample
Collected: 11/29/2016
Received: 12/10/2016

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	4oz	not provided	none			Cooler

Lab ID: 1650067-03
Sample: L877197-03
Report Matrix: Soil/Sediment
Sample Type: Sample
Collected: 11/30/2016
Received: 12/10/2016

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	4oz	not provided	none			Cooler

Lab ID: 1650067-04
Sample: L877197-04
Report Matrix: Soil/Sediment
Sample Type: Sample
Collected: 11/30/2016
Received: 12/10/2016

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	4oz	not provided	none			Cooler

Lab ID: 1650067-05
Sample: L877197-05
Report Matrix: Soil/Sediment
Sample Type: Sample
Collected: 11/30/2016
Received: 12/10/2016

Des	Container	Size	Lot	Preservation	P-Lot	pH	Ship. Cont.
A	Client-Provided	4oz	not provided	none			Cooler

Project ID: ESC-MJ1603 (MeHg in soils)
PM: Tiffany Stilwater

Client PM: Janice Cozby
Client Project: WG933457

Shipping Containers

Cooler

Received: December 10, 2016 10:40
Tracking No: 706681326565 via FedEx
Coolant Type: Ice
Temperature: 3.2 °C

Description: Cooler
Damaged in transit? No
Returned to client? No
Comments: ir#8

Custody seals present? No
Custody seals intact? No
COC present? Yes

Sub-Contract Chain of Custody

Environmental Science Corp
12065 Lebanon Road
Mt. Juliet, TN 37122
(615) 773-9756 (615) 758-5859 fax

Sub-Contract Lab : BRLSWA
City / State : Seattle, WA
Results Needed by : RUSH 13 bus day TAT - 12/30/16 RUSH
ESC Purchase Order # : S24837
Send Reports To : Janice Cozby jcozby@esclabsciences.com

WORKGROUP	WG933457
Date Created :	12/8/2016

SAMPLENO / Container #	MATRIX	Date / Time Collected	PARAMETER	Code	METHOD	Comments
L877197-01	SS	11/29/2016 13:5(	Miscellaneous Analyses	MISC-SUB	1630MOD	MeHg 100% Hg - 66.5 mg/kg
L877197-02	SS	11/29/2016 14:5(	Miscellaneous Analyses	MISC-SUB	1630MOD	MeHg 100% Hg - 73.3 mg/kg
L877197-03	SS	11/30/2016 9:00	Miscellaneous Analyses	MISC-SUB	1630MOD	MeHg 100% Hg 47.8 mg/kg
L877197-04	SS	11/30/2016 9:10	Miscellaneous Analyses	MISC-SUB	1630MOD	MeHg 100% Hg - 52.7 mg/kg
L877197-05	SS	11/30/2016 11:5(	Miscellaneous Analyses	MISC-SUB	1630MOD	MeHg 100% Hg - 81 mg/kg

Relinquished by _____ Date: 120816
Received by : _____ Date: _____
Relinquished by _____ Date: _____
Received by : _____ Date: _____

APPENDIX B

NDEP Spill Report #161103-05

NDEP # 161103-05

Report Date: 11/3/2016 **Report Time:** 1345

Incident Date: 11/3/2016 **Incident Time:** 1345

Do You Want to Remain Anonymous? ☐

Complaint/Spill Report Form

State of Nevada

Telephone: (888) 331-6337

Fax: (775) 687-8335

Reporting Person: Benjamin Peterson

Reporting Agency: McGinley & Associates

Address: 815 Maestro Drive **Phone:** (775) 829-2245 **Ext:**

City: Reno **State:** NV **Zip:** 89511 **Zip+4:** 2384

Discharger/Owner/Operator of Facility: Bella Vista Ranch Co., LLC

Address: PO Box 5266 **DOT#:**

City: Incline Village **State:** NV **Zip:** 89451 **Zip+4:**

Contact Person: Mr. Brett Butler **Phone:** (775) 831-0790 **Ext:**

APN#: Several **UST Facility ID / BWPC Permit #:**

Location of Complaint/Spill: Generally in irrigated areas of the property, soil affected.

Facility Address if different from discharger: Full township/range provided in comments

City: Reno **State:** NV **County:** Washoe

Township: **Range:** **Section:** **Q,Q2:** **Mile Marker:**

Type of Material Discovered: Mercury

Concentration/Analytical Data: Highest 84.7 mg/kg

Quantity Found: Discovery **Container:** Other

Media Affected: Soil **If UST, Confirmed Visually?**

Cause of Complaint/Spill:

McGin. Assoc. reporting results of preliminary soil sampling for land development. Sample results revealed mercury impacted soil at quantities and concentrations above Nevada reportable thresholds in areas proposed for development.

Remedial Action Taken:

None at time of this report.

Oversight/Enforcement:	**Email Address:**
NDEP BCA Remediation/Mobile Source North Scott Smal	ssmale@ndep.nv.gov; lpeterso@ndep.nv.gov; tcro
cc: County Washoe Health District Teresa Long, James Englis	TLong@washoecounty.us; JEnglish@washoecou
cc: NDEP BCA Mercury	dfriedman@ndep.nv.gov; rebecca.bodnar@ndep.n
cc:	

Comments:

Location: APN's 021-270-41, 021-270-38, 165-011-09 and 165-011-07; Townships/Ranges - SE 1/4 of Section 28, NE 1/4 of Section 33, E 1/2 of Section 34, Township 19N Range 20E and E 1/2 of Section 3, Township 18N, Range 20E, MDBM.

Report Taken By: Hal Dawson

APPENDIX C

NDEP Requested Information – “Attachment B”

INFORMATION REQUESTED BY NDEP

The information requested in Attachment B (Information Requirements for all other Releases) of the NDEP's December 20, 2016 correspondence is provided below.

1. Description of the Release of Hazardous or Regulated Substances

(a) Type of material released, including any available documentation (e.g. Material Safety Data Sheets or test results)

Mercury was released into fluvial channels during the historic Comstock mining era (see Section 4 of the report).

(b) Estimated quantity of material released and the estimation technique utilized

The quantity of mercury released is unknown.

(c) Date and time of Release or of the release discovery

The mercury-impacted soil was discovered upon receipt of the analytical data on September 19, 2016.

(d) Cause of Release

The majority of the mercury released to the environment is believed to be associated with historic mill tailings, which were separated from a slurry of mercury amalgam and discharged into fluvial drainages.

(e) A description of measures taken to correct and prevent recurrence of this incident

Mercury amalgamation is no longer a common practice in Nevada.

(f) Potential for a hazard related to fire, vapor or explosion

There is no potential for hazards related to fire, vapor or explosions.

(g) A description of any damage known to the operator to have been caused by the Release

No damages are known.

2. Description of Site Conditions and Surrounding Areas

(a) Township, Range and Section

The SE ¼ of Section 28, the NE ¼ of Section 33, and the E ½ of Section 34, Township 19 North, Range 20 East, and the E ½ of Section 3, Township 18 North, Range 20 East, of the Mount Diablo Baseline and Meridian.

(b) Spill Location information:

i. Latitude/Longitude in decimal degrees (NAD 83)

-119.723465, 39.450484 Decimal Degrees, NAD 83

Location where Steamboat Creek enters the property boundary.

ii. Estimated accuracy in feet

10 feet.

iii. Location determination method used

ESRI ArcMap GIS Software.

(c) Depth to groundwater and how estimated

Depth to groundwater is estimated to range from approximately five to ten feet below ground surface based on the elevation of Steamboat Creek relative to the elevation of the irrigated lands.

(d) Soil classification (e.g. ASTM D 2487-00 Standard Practice for Classification of Soil for Engineering Purposes) of impacted, underlying, and surrounding soils

The irrigated areas are primarily silty sands and silty sands with clay.

(e) Annual precipitation

The annual precipitation in Reno, Nevada is 7.22 inches. (Western Regional Climate Center)

(f) Description and identification and location of any threatened, endangered, or sensitive plant or animal species in the area which may have been or has the potential to be impacted by the Release, if warranted. The Nevada Natural Heritage Program can be contacted at 775-684-2900 to determine locations of recorded threatened, endangered, or sensitive species

None are expected to be affected.

(g) Names and correspondence address information for all property owners and facility owners and operators at the site of the Release

Bella Vista Ranch Company

C/O Mr. Brett Butler

PO Box 5266 Incline Village, NV 89451

Phone: (775) 831-0790

(h) Names and correspondence address information for all adjacent property owners and location of their property in relation to Release location

See Attachment 1, List of Adjacent Property Owners

(i) Scaled drawing(s) depicting:

i. Property, adjacent properties, and current land uses

See Attachment 1 for a list of adjacent property owners and their mailing addresses. Due to the size of the project area and number of adjoining parcels, it was agreed upon by the NDEP and MGA via telephone correspondence on August 31, 2017 that a map would not be necessary.

ii. Locations and description of underground utilities

Locations of underground utilities are unknown.

iii. Drainage features and structures

See Figure 7 of the report.

iv. Roadways and right-of-ways

See Figure 7 of the report.

v. Release surface area boundaries

Not applicable

vi. Locations of structures or other impediments to subsurface investigation or cleanup

Not applicable

vii. Municipal, domestic, and irrigation supply wells within 1 mile of Release location.

See Attachment 2, Water Wells Within One Mile

3. Sample Results

(a) All available testing results (such as laboratory or field soil and/or groundwater sample analysis) including chain of custody sheets, description of sample collection and preservation methods, analytical test methods used, laboratory result sheets with analytical detection limits, and "confirmation" sample results

See Sections 5 and 6 and Appendix A of the report.

(b) Scaled drawing depicting Release surface area boundaries, excavation boundaries, and location and depth of each soil/water sample.

Soil sample locations and depths, and proposed excavation boundaries are described in the report.

4. For non-residential properties, if the specific Release source (location and/or container) and timing of the Release cannot be identified, then you must evaluate past chemical use on the property by submitting a Phase 1 Environmental Site Assessment conducted by a Certified Environmental Manager, or by other method(s) approved by the Division, conducted in accordance with accepted industry standards.

Mercury was released into fluvial channels during the historic Comstock mining era (see Section 4 of the report).

5. Description of investigation or cleanup activities completed, underway, and/or proposed

(a) Names and contact information for contractors and consultants employed and scope of duties and responsibilities

Planning Consultant - PLACES Consulting Services Inc., Randy Walter, AICP, (775) 355-7721.

Environmental Consultant – McGinley and Associates, Inc, Benjamin Peterson, PG, CEM, (775) 829-2245

(b) A description of completed abatement, containment, and/or remediation activities conducted to date and disposition of any liquid wastes or contaminated soil (include bills of lading, disposal certificates or manifest documentation) including location of soil removal activities and quantity of soil removed and source of material used for backfill

None to date.

(c) Extent of Contamination (i.e. lateral and vertical dimensions and volume of impacted soil). If the full extent is not yet defined, then provide details and a schedule for future characterization activities.

See report for results of previous sampling and plan for proposed sampling.

(d) Description of sample collection and preservation procedures, analytical test methods, and sample location and depth for all samples collected to date and proposed

See Sections 5 and 6 and Appendix A of the report.

(e) Description of proposed additional characterization and/or remediation activities

See Sections 9 and 10 of the report.

(f) Scaled drawing depicting (can be included on Drawing(s) associated with 2.(i) above):

i. Surface area boundaries of Release incident

Not applicable.

ii. Locations of abatement and remediation activities

See Figure 5 of the report.

iii. Future/proposed sampling locations.

See Section 10 and Figure 6 of the report.

ATTACHMENT 1

List of Adjacent Property Owners

List of Adjacent Property Owners
Bella Vista and Butler Ranch

Count	APN	Last Name	First Name	Situs Number	Situs Direction	Street Name	Mailing Address	Mailing Address Continued	Mailing City	Mailing State	Mailing Zip
1	021-160-50	RENO CITY OF		0		MIRA LOMA DR	PO BOX 1900	C/O PROPERTY MANAGEMENT	RENO	NV	89505
2	051-440-01	ROSEWOOD LAKES HOMEOWNERS ASSN		5150		MIRA LOMA DR	5480 RENO CORPORATE DR STE 100	C/O EQUUS MGT GROUP	RENO	NV	89511
3	051-440-02	WEST	DEBRA C	5170		MIRA LOMA DR	PO BOX 3008		DILLON	CO	80435
4	051-400-05	CASEY	TIMOTHY P	0	W	HIDDEN VALLEY DR	3971 CUERVO AVE		SANTA BARBARA	CA	93110
5	051-400-28	JAMESE LLC		0	W	HIDDEN VALLEY DR	425 CAMINO DE GRATO		SPARKS	NV	89441
6	051-400-29	MASTERSON	SCOTT & MELAYNE R	0	W	HIDDEN VALLEY DR	718 PRATER WAY		SPARKS	NV	89431
7	021-270-34	UNITED STATES OF AMERICA		0		DESERT WAY	NONE		RENO	NV	0
8	021-270-22	369 DEGREE PERSPECTIVE TRUST		7300	E	HIDDEN VALLEY DR	685 SPRING ST 237		FRIDAY HARBOR	WA	98250
9	021-270-23	LAMBERTI	STEVEN T et al	0		DESERT WAY	8207 SANTA CLARA DR		DALLAS	TX	75218
10	016-350-54	BENNAFIT INVESTMENTS LLC et al		0		DESERT WAY	8390 PANORAMA DR	C/O CHRISTOPHER D BENNA	RENO	NV	89511
11	016-350-53	SIERRA PACIFIC POWER CO		0		DESERT WAY	PO BOX 10100	C/O LAND DEPARTMENT	RENO	NV	89520
12	165-011-08	TRUCKEE MEADOWS WATER AUTHORITY		0		MIRA LOMA DR	PO BOX 30013	ATTN LANDS DEPARTMENT	RENO	NV	89520
13	016-820-08	SUNNY HILLS RANCHOS		0		DESERT WAY	PO BOX 1440		LONG BEACH	CA	90801
14	165-011-03	CORONA CYAN LLC		0		MIRA LOMA DR	PO BOX 92129	ALTUS GROUP	SOUTHLAKE	TX	76092
15	163-010-02	SOUTH MEADOWS ASSOCIATION		0		SOUTH MEADOWS PKWY	5455 KIETZKE LN	C/O NEVADA COMMERCIAL SRV	RENO	NV	89511
16	163-010-01	SOUTH MEADOWS ASSOCIATION		0		SOUTH MEADOWS PKWY	5455 KIETZKE LN	C/O NEVADA COMMERCIAL SRV	RENO	NV	89511
17	163-010-03	ICON RENO PROPERTY OWNER POOL 3 NEVADA LLC		1195		TRADEMARK DR	2 N RIVERSIDE PLAZA ST 2350	C/O GLP	CHICAGO	IL	60606
18	163-020-14	GIOSSI FAMILY TRUST	JOHN D & CECELIA P	0		TRADEMARK DR	4307 DANT BLVD		RENO	NV	89509
19	163-010-04	ICON RENO PROPERTY OWNER POOL 3 NEVADA LLC		1175		TRADEMARK DR	2 N RIVERSIDE PLAZA ST 2350	C/O GLP	CHICAGO	IL	60606
20	163-010-07	SOUTH MEADOWS ASSOCIATION		0		DOUBLE DIAMOND PKWY	5455 KIETZKE LN	C/O NEVADA COMMERCIAL SRV	RENO	NV	89511
21	165-011-06	WASHOE COUNTY		8500		ALEXANDER LAKE RD	PO BOX 11130	ATTN COMMUNITY SERVICES DEPT	RENO	NV	89520
22	165-011-05	WASHOE COUNTY		8455		ALEXANDER LAKE RD	PO BOX 11130	ATTN WATER RESOURCES	RENO	NV	89520
23	165-012-01	WASHOE COUNTY		0		ALEXANDER LAKE RD	PO BOX 11130	ATTN COMMUNITY SERVICES DEPT	RENO	NV	89520
24	164-022-01	SOUTH MEADOWS PROPERTIES LP		0		ALEXANDER LAKE RD	PO BOX 838		POWAY	CA	92074
25	164-022-03	WASHOE COUNTY		0		ALEXANDER LAKE RD	PO BOX 11130	ATTN PARKS & UTILITIES	RENO	NV	89520
26	164-022-04	SOUTH MEADOWS PROPERTIES LP		0		ALEXANDER LAKE RD	PO BOX 838		POWAY	CA	92074
27	021-760-07	PAUL R HELMS & ASSOCIATES INC		0		RIO POCO RD	4465 BOCA WAY OFC		RENO	NV	89502
28	021-760-01	WASHOE COUNTY SCHOOL DISTRICT BOARD		5125		ESCUELA WAY	PO BOX 30425	ATTN TOM CIESYNSKI	RENO	NV	89520
29	021-760-08	BUTLER 1993 TRUST	PAUL B JR	0		RIO POCO RD	PO BOX 29	C/O PAUL B BUTLER III	RENO	NV	89504
30	165-032-02	TRS TRUST		2135		ANGEL RIDGE DR	1920 HORSE PRAIRIE RD		RENO	NV	89521
31	165-053-13	DIEP	BAC	2185		ANGEL RIDGE DR	2185 ANGEL RIDGE DR		RENO	NV	89521
32	165-031-03	JAMES	SUSAN B & RICHARD	1965		ANGEL RIDGE DR	1965 ANGEL RIDGE DR		RENO	NV	89521
33	165-032-14	GARNER	SHANNON & ALBERT R IV	2015		ANGEL RIDGE DR	2015 ANGEL RIDGE DR		RENO	NV	89521
34	165-032-13	MILLER	MARVIN H & ELSA N	2025		ANGEL RIDGE DR	14296 QUAIL SPRINGS CT		RENO	NV	89511
35	165-032-03	JEANNEY	MICHON N et al	2125		ANGEL RIDGE DR	2125 ANGEL RIDGE DR		RENO	NV	89521
36	165-032-06	ALEXANDRO	WADE M	2095		ANGEL RIDGE DR	2899 VIA CARMEN		SAN JOSE	CA	95124
37	165-012-02	BELLA VISTA RANCH CO LLC		0		ALEXANDER LAKE RD	PO BOX 29		RENO	NV	89504
38	165-031-01	LAMB	ERIKA C et al	1985		ANGEL RIDGE DR	4790 CAUGHLIN PKWY # 778		RENO	NV	89519
39	165-031-02	LESCH FAMILY LIVING TRUST		1975		ANGEL RIDGE DR	1975 ANGEL RIDGE DR		RENO	NV	89521
40	165-053-16	NOEL PROPERTIES LLC et al		2155		ANGEL RIDGE DR	4700 CONRAD PL	C/O CARL LLC	FALLON	NV	89406
41	165-032-15	BACA	DAVID E & BONNIE K	2005		ANGEL RIDGE DR	2005 ANGEL RIDGE DR		RENO	NV	89521
42	021-622-03	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
43	021-760-03	DONNER SPRINGS MHP LLC		0		HOMBRE WAY	4465 BOCA WAY		RENO	NV	89502
44	021-850-01	WASHOE COUNTY SCHOOL DISTRICT BOARD		4923		HOMBRE WAY	PO BOX 30425	ATTN TOM CIESYNSKI	RENO	NV	89520
45	021-850-15	WASHOE COUNTY SCHOOL DISTRICT BOARD		0		HOMBRE WAY	PO BOX 30425	ATTN TOM CIESYNSKI	RENO	NV	89520
46	021-270-37	BELLA VISTA RANCH CO LLC		3410		BELLA VISTA RANCH RD	PO BOX 29		RENO	NV	89504
47	021-621-03	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
48	021-622-04	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
49	021-621-04	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
50	021-821-21	POWELL FAMILY TRUST		3570		HERON'S CIR	4820 W HIDDEN VALLEY DR		RENO	NV	89502
51	021-622-07	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
52	021-821-12	WILDEMAN	MARTIN J	3552		HERON'S CIR	3552 HERON'S CIR		RENO	NV	89502
53	021-621-06	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
54	021-622-09	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
55	021-623-36	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
56	021-622-08	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
57	021-622-06	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
58	021-623-45	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
59	021-821-27	ALVAREZ-CASTRO	LUIS M	3582		HERON'S CIR	3582 HERON'S CIR		RENO	NV	89502
60	021-621-02	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
61	021-622-02	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
62	021-622-05	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502

List of Adjacent Property Owners
Bella Vista and Butler Ranch

Count	APN	Last Name	First Name	Situs Number	Situs Direction	Street Name	Mailing Address	Mailing Address Continued	Mailing City	Mailing State	Mailing Zip
63	021-842-17	VENNEMAN	BERNARD G	3713		HERON'S LANDING DR	12945 WELCOME WAY		RENO	NV	89511
64	021-623-46	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
65	021-842-04	PEEKS	BOBBY E	3625		HERON'S LANDING DR	3625 HERON'S LANDING DR		RENO	NV	89502
66	021-621-07	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
67	021-821-16	ATKINSON FAMILY TRUST		3556		HERON'S CIR	3556 HERON'S CIR		RENO	NV	89502
68	021-821-19	SMITH	CRAIG & DANIELLE L	3566		HERON'S CIR	3566 HERON'S CIR		RENO	NV	89502
69	021-821-11	WADLE	MICHAEL J & LINDA R	3550		HERON'S CIR	PO BOX 262		MURPHYS	CA	95247
70	021-821-13	ENTENMAN	RICHARD E & SUSAN M	3554		HERON'S CIR	3554 HERON'S CIR		RENO	NV	89502
71	021-842-26	LYON	ROBERT L & JEAN C	3769		HERON'S LANDING DR	PO BOX 20783		RENO	NV	89515
72	021-622-01	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
73	021-842-03	BEKOWICH	AMY	3617		HERON'S LANDING DR	550 BATTERY ST APT 1202		SAN FRANCISCO	CA	94111
74	021-821-18	LEMOND FAMILY TRUST		3564		HERON'S CIR	6502 S MCCARRAN BLVD STE C		RENO	NV	0
75	021-842-27	BEKOWICH FAMILY TRUST et al		3777		HERON'S LANDING DR	PO BOX 6408		INCLINE VILLAGE	NV	89450
76	021-842-11	BENJAMIN	DAVID M	3673		HERON'S LANDING DR	3673 HERON'S LANDING DR		RENO	NV	89502
77	021-621-05	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
78	021-821-25	SILVA	GARRETT	3578		HERON'S CIR	3578 HERON'S CIR		RENO	NV	89502
79	021-842-05	BOWMAN LIVING TRUST	EDWARD & MARILYN	3633		HERON'S LANDING DR	3632 DEVON WAY		EL DORADO HILLS	CA	95762
80	021-842-10	MERCIER	MICHAEL & TANIA	3665		HERON'S LANDING DR	165 OAK FIELDS DR		FLORESVILLE	TX	78114
81	021-842-22	WATTS	ROBERT D III & DECEMBER F	3745		HERON'S LANDING DR	3745 HERON'S LANDING DR		RENO	NV	89502
82	021-821-10	MISHRA	KIRTI	3548		HERON'S CIR	706 HOT SPRINGS RD APT 202		CARSON CITY	NV	89706
83	021-821-07	STITH	KRISTIN M	3544		HERON'S CIR	3544 HERON'S CIR		RENO	NV	89502
84	021-842-23	SMITH	PAUL C & MARJORIE D	3753		HERON'S LANDING DR	3753 HERON'S LANDING DR		RENO	NV	89502
85	021-821-20	TENG	WILBERT	3568		HERON'S CIR	3568 HERON'S CIR		RENO	NV	89502
86	021-821-15	NAUGLE TRUST	MARY LOU	3558		HERON'S CIR	3558 HERON'S CIR		RENO	NV	89502
87	021-821-26	YARBOROUGH	LARRY A et al	3580		HERON'S CIR	13435 SOUTH HILLS DR		RENO	NV	89511
88	021-821-17	IROZ	JOHN & LIANNE	3562		HERON'S CIR	PO BOX 1685		WINNEMUCCA	NV	89446
89	021-842-16	MARTIN MILLER TRUST		3705		HERON'S LANDING DR	17530 BAIN SPRINGS RD		RENO	NV	89511
90	021-842-09	ASTON FAMILY TRUST		3657		HERON'S LANDING DR	31291 PASEO CRUCERO		SAN JUAN CAPISTRANO	CA	92675
91	021-842-15	BARCLAY LIVING TRUST	IRVENE J	3697		HERON'S LANDING DR	3697 HERON'S LANDING DR		RENO	NV	89502
92	021-842-21	LAPAGE	ALISON	3737		HERON'S LANDING DR	3737 HERON'S LANDING DR		RENO	NV	89502
93	021-842-14	WALTON	PATRICIA A	3689		HERON'S LANDING DR	3689 HERON'S LANDING DR		RENO	NV	89502
94	021-842-18	HALL	ARON J et al	3721		HERON'S LANDING DR	3721 HERON'S LANDING DR		RENO	NV	89502
95	021-842-28	DENIGRIS	VICTOR R et al	3785		HERON'S LANDING DR	3785 HERON'S LANDING DR		RENO	NV	89502
96	165-032-12	BANTUM	BRIAN M & CORTNEE	2035		ANGEL RIDGE DR	2035 ANGEL RIDGE DR		RENO	NV	89521
97	165-053-14	WILLIAMS-BLAKELY FAMILY TRUST		2175		ANGEL RIDGE DR	2175 ANGEL RIDGE DR		RENO	NV	89521
98	165-031-07	BERNABE	CHRISTINE M J & EDGAR C	1925		ANGEL RIDGE DR	1925 ANGEL RIDGE DR		RENO	NV	89521
99	165-053-15	KANTSYREV	VICTOR et al	2165		ANGEL RIDGE DR	2165 ANGEL RIDGE DR		RENO	NV	89521
100	165-053-11	SAMRICK	KEVIN et al	2199		ANGEL RIDGE DR	4790 CAUGHLIN PKWY #778	C/O WELCOME HOME PMI INC	RENO	NV	89519
101	165-031-05	HUMBERT	JAMES L et al	1945		ANGEL RIDGE DR	1945 ANGEL RIDGE DR		RENO	NV	89521
102	165-031-06	OLSON	EDWIN M & SANDRA	1935		ANGEL RIDGE DR	1935 ANGEL RIDGE DR		RENO	NV	89521
103	165-032-07	COPELAND	ANDREW & GUZEL	2085		ANGEL RIDGE DR	2085 ANGEL RIDGE DR		RENO	NV	89521
104	165-032-04	OLIVAS LIVING TRUST	RICHARD & SHANNON	2115		ANGEL RIDGE DR	2115 ANGEL RIDGE DR		RENO	NV	89521
105	165-053-12	CRONN	AMBER D	2195		ANGEL RIDGE DR	2195 ANGEL RIDGE DR		RENO	NV	89521
106	165-032-16	CYAN HOMEOWNERS ASSOCIATION		0		ECHO VALLEY PKWY	6170 RIDGEVIEW CT STE C		RENO	NV	89519
107	165-032-08	MUELLER	MARGARET E	2075		ANGEL RIDGE DR	2075 ANGEL RIDGE DR		RENO	NV	89521
108	165-031-04	HORTON	TODD	1955		ANGEL RIDGE DR	2796 TRAIL RIDER DRIVE		RENO	NV	89521
109	165-032-09	CORDOVA	KELLY A & CRISTOBAL E	2065		ANGEL RIDGE DR	2065 ANGEL RIDGE DR		RENO	NV	89521
110	165-032-05	GRANZELLA	ANTONIO et al	2105		ANGEL RIDGE DR	2105 ANGEL RIDGE DR		RENO	NV	89521
111	165-031-09	CYAN HOMEOWNERS ASSOCIATION		0		ECHO VALLEY PKWY	6170 RIDGEVIEW CT STE C		RENO	NV	89519
112	165-031-10	CYAN HOMEOWNERS ASSOCIATION		0		ECHO VALLEY PKWY	6170 RIDGEVIEW CT STE C		RENO	NV	89519
113	021-441-01	PEARCE FAMILY TRUST et al		5040		REGGIE RD	16475 BORDEAUX DR	C/O DOUBLE R LLC	RENO	NV	89511
114	021-850-13	VAN SICKEL	CRAIG L	4995		HOMBRE WAY	4995 HOMBRE WAY		RENO	NV	89502
115	021-760-09	BUTLER 1993 TRUST	PAUL B JR	0		RIO POCO RD	PO BOX 29	C/O PAUL B BUTLER III	RENO	NV	89504
116	021-623-35	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
117	021-623-38	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
118	021-623-37	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
119	021-821-24	DREYBAND 1994 FAMILY TRUST	YAKOV & SOFYA	3576		HERON'S CIR	198 SURMONT CT		LOS GATOS	CA	95032
120	021-622-10	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
121	021-821-08	DAUGHERTY	NEDRA S & KEVIN D	3546		HERON'S CIR	3546 HERON'S CIR		RENO	NV	89502
122	021-621-01	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
123	021-621-09	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502
124	021-621-08	DONNER SPRINGS MHP LLC		4465		BOCA WAY	4465 BOCA WAY		RENO	NV	89502

List of Adjacent Property Owners
Bella Vista and Butler Ranch

Count	APN	Last Name	First Name	Situs Number	Situs Direction	Street Name	Mailing Address	Mailing Address Continued	Mailing City	Mailing State	Mailing Zip
125	021-270-44	WASHOE COUNTY		0		ALEXANDER LAKE RD	PO BOX 11130	ATTN COMMUNITY SERVICES DEPT	RENO	NV	89520
126	165-032-11	KILBORN	DANIEL L & JESSICA I	2045		ANGEL RIDGE DR	2045 ANGEL RIDGE DR		RENO	NV	89521
127	165-032-10	LOGVINENKA	TOMAS et al	2055		ANGEL RIDGE DR	2055 ANGEL RIDGE DR		RENO	NV	89521
128	165-053-17	CYAN HOMEOWNERS ASSOCIATION		0		VETERANS PKWY	6170 RIDGEVIEW CT STE C		RENO	NV	89519
129	165-032-01	YDIANDO LIVING TRUST		2145		ANGEL RIDGE DR	2145 ANGEL RIDGE DR		RENO	NV	89521
130	021-441-05	ROCHA	RUSSELL L	5000		REGGIE RD	5000 REGGIE RD		RENO	NV	89502
131	021-441-09	MUNOZ	JOHN L & LYDIA	4960		REGGIE RD	4960 REGGIE RD		RENO	NV	89502
132	021-441-06	EVANS	LEE ANN	4990		REGGIE RD	2180 MISSMAN RD		COUNCIL	ID	83612
133	021-441-12	SLORT	NATHAN J	4930		REGGIE RD	4930 REGGIE RD		RENO	NV	89502
134	021-441-08	CANEPA	LORI A	4970		REGGIE RD	11405 MOGUL RD		RENO	NV	89523
135	021-441-11	TROUNG	NAM C et al	4940		REGGIE RD	4940 REGGIE RD		RENO	NV	89502
136	021-441-07	MCKEE	MELISSA	4980		REGGIE RD	4980 REGGIE RD		RENO	NV	89502
137	021-441-10	BELL	LESLIE et al	4950		REGGIE RD	1450 MONTE VISTA DR		RENO	NV	89511
138	021-620-03	WASHOE COUNTY SCHOOL DISTRICT BOARD		0		HOMBRE WAY	PO BOX 30425	ATTN TOM CIESYNSKI	RENO	NV	89520
139	021-441-04	MCCOMB	AMANDA L	5010		REGGIE RD	5635 S SCARSDALE CIR		RENO	NV	89502
140	021-441-03	SIMON	SUSAN P	5020		REGGIE RD	5020 REGGIE RD		RENO	NV	89502
141	021-441-02	PEDROZA	RONALD & VALERIE	5030		REGGIE RD	5030 REGGIE RD		RENO	NV	89502
142	021-760-06	BUTLER 1993 TRUST	PAUL B JR	3305		BELLA VISTA RANCH RD	PO BOX 29	C/O PAUL B BUTLER III	RENO	NV	89504

ATTACHMENT 2

Water Wells Within One Mile

Water Wells Within One Mile of
Bella Vista and Butler Ranch

Count	Well Log Number	Date	Proposed Use	Current Owner	Owner Address
1	2011	8/18/1952	Domestic	BROWN, MR AND MRS	HOME GARDENS
2	2342	8/17/1953	Domestic	HAMIN, J	
3	2343	8/17/1953	Domestic	CORNWELL	
4	2515	4/1/1954	Domestic	BATES, DALE	GEIGER GRADE RD
5	2556	5/17/1954	Domestic	SEAVERS, ED & JULIA	
6	2628	6/30/1954	Domestic	BERG. DONALD	
7	2804	12/8/1954	Domestic	ANDERSON, M O	GLENDALE RD SPARKS
8	2959	5/18/1955	Domestic	BOYD, V D	
9	3039	7/7/1955	Domestic	BYRON, JR, WILLIAM	
10	3391	5/8/1956	Domestic	FLYNN, E. C.	OLD VIRGINIA CITY GRADE
11	3399	5/14/1956	Domestic	WILLIAMS, PAUL	OLD VIRGINIA CITY, GEIGER GRADE
12	5189	5/23/1960	Domestic	TOMASI (GOOD LUCK REST HOME)	
13	5401	9/12/1960	Domestic	HALLOWAY, RAY	SPARKS
14	5855	5/1/1961	Domestic	ECHEVERRIA, PETE	555 S CENTER ST RENO
15	6338	1/11/1962	Domestic	LAKNER, MIKE	
16	7837	5/28/1964	Domestic	DIETRICH, MONA	3364 NEIL ROAD
17	8176	11/13/1964	Domestic	SALES, ROBERT	
18	8777	12/15/1965	Domestic	THOMAS, ROBERT L	
19	10898	2/16/1970	Domestic	SALES, ROBERT	4890 SINELIO
20	11884		Domestic	BAKER CONSTRUCTION CO	
21	11991	12/20/1971	Domestic	ELDERKEN, G B	
22	14158	6/24/1974	Domestic	DOAN, SIDNEY A JR	
23	14159	6/24/1974	Domestic	BIDDY, GLENN	
24	14195	7/1/1974	Domestic	SCOTT, EDDIE B	2400 WALNUT RENO, NV
25	16176	2/16/1977	Domestic	TAYLOR, RICHARD D	
26	17088	11/4/1977	Domestic	CLARK	
27	17279	12/2/1977	Domestic	POWELL, RON	
28	18890	9/27/1978	Domestic	KINDREDGE, BOB AND K & K CONSTRUCTION	
29	19477	3/14/1979	Domestic	READ, DAVID A.	3841 KAREN
30	19478	3/14/1979	Domestic	READ, DAVID A.	3851 KAREN ST RNO
31	19479	3/14/1979	Domestic	READ, DAVID A.	383 KAREN ST RNO
32	20421	10/25/1979	Domestic	LEONARD CAMPBELL	SOUTH WALNUT AND CHARLOTTE
33	20433	11/1/1979	Domestic	BRUNO FERRERA	HIDDENVALLEY
34	21391		Domestic	EVERHART, MRS	DERBISH WAY
35	21468	8/18/1980	Domestic	WODKE, JIM	4775 PREMBROOK DR RENO
36	22155	11/24/1980	Domestic	DOTTA, CEASAR	
37	26157		Domestic	FILKINS, JAMES	
38	28369		Domestic	GILLOGLY, MAXINE	MARILOMA RD RENO NV
39	29586	2/11/1988	Domestic	ZAEHRINGER, FRANK	6655 HIDDEN VALLEY RENO NV
40	33403	6/1/1990	Domestic	WADSWORTH, BRENT	475 CROOK FALLON NV
41	33720	6/19/1990	Domestic	WOELFLE, DON	2330 DERBISH WAY
42	33832	7/30/1990	Domestic	DOMINQUEZ, DOUG	1205 WHEELER RENO NV
43	37213	7/26/1991	Domestic	EVANS, RICHARD	LOMA VISTA LANE RENO NV
44	37406	9/16/1991	Domestic	WARREN, GLENN C	3155 MT. ROSE HWY RENO NV
45	38658	2/14/1992	Domestic	WOELFE, DON	2325 DERBISH
46	41766	7/2/1993	Domestic	PETERSON, MIKE & VICKI	6635 LOMA VISTA RENO NV
47	47263	2/16/1995	Domestic	BULLARD, R & D	11500 MIRA LOMA RENO NV
48	67665	8/20/1997	Domestic	HARP, LARRY & REED & FRANK & VIV	11270 MIRA LOMA RD RENO NV
49	79971	3/27/2000	Domestic	YARHI, DANIEL & MARIA	SNOWY RIVER DR
50	82155	11/16/2000	Domestic	WALLACE, BOB	4930 CHARLOTTE WY
51	83142	12/18/2000	Domestic	CARRUTH, RON	2410 WALNUT ST
52	84330	9/19/2001	Domestic	BYRON WHOLEY CONSTRUCTION	HIDDEN VALLEY VIEW DR RNO
53	85437	1/28/2002	Domestic	JOHNSON, SCOTT AND LOIS	HIDDEN VLY DR AND LOMA VISTA RNO
54	88604	2/13/2003	Domestic	TILZEY, SCOTT	5438 HIDDEN HIGHLANDS DR
55	92208	2/19/2004	Domestic	MAYNARD, GREG	DESERT WAY
56	93373	4/27/1992	Domestic	MANKE, WILLIAM	2365 DERBISH WAY RENO
57	94154	9/13/2004	Domestic	MURPHY, DARREN C/O M.B. CONSTRUCTION	2341 DERBISH RENO
58	96194	4/6/2005	Domestic	MASSA, RICHARD AND FRANKIE	2360 WALNUT, RENO
59	103734	4/26/2007	Domestic	BOWERS, CHRISTIAN	5840 DESERT WAY 89521
60	108446	8/25/2009	Domestic	BARTLETT, SCOTT	2335 DERBISH WAY RENO, NV 89502
61	121735	2/9/2015	Domestic	KATHY JACKSON	4810 SINELIO DR
62	121736	2/9/2015	Domestic	KATHY JACKSON	4810 SINELIO DR
63	4938	11/17/1959	Irrigation	HIDDEN VALLEY GOLF COURSE	29 E FIRST
64	101179	3/29/2006	Irrigation	HIDDEN VALLEY COUNTRY CLUB	3575 E HIDDEN VALLEY DR, SPARKS
65	108312	6/17/2009	Irrigation	HIDDEN VALLEY COUNTRY CLUB	3575 E. HIDDEN VALLEY DR. RENO, NV 89502
66	32029	7/18/1989	Public	WASHOE COUNTY	MIRA LOMA HALL RD RENO NV

Water Wells Within One Mile of
Bella Vista and Butler Ranch

Count	Well Log Number	Date	Proposed Use	Current Owner	Owner Address
67	32030	7/18/1989	Public	SAGE HILL CLAY SPORTS	3.2 MI N ON MIRA LOMA RENO NV
68	40058	1/15/1993	Public	WASHOE COUNTY	EAST MOANA LN RENO NV
69	44092	3/15/1994	Public	GRANITE CONSTRUCTION CO	15500 MIRA LOMA RD RENO NV
70	83610	6/29/2001	Public	K G WALTERS	8500 MIRA LOMA RD RNO
71	83611	6/29/2001	Public	K G WALTERS	8500 MIRA LOMA DR RNO
72	83612	6/29/2001	Public	K G WALTERS	8500 MIRA LOMA RNO
73	83613	6/29/2001	Public	K G WALTERS	8500 MIRA LOMA RNO
74	83614	6/29/2001	Public	K G WALTERS	
75	83615	6/29/2001	Public	K G WALTERS	8500 MIRA LOMA RD RNO
76	83616	6/29/2001	Public	K G WALTERS	
77	83617	6/29/2001	Public	K G WALTERS	
78	83619	6/29/2001	Public	K G WALTERS	
79	83631	6/29/2001	Public	K G WALTERS	
80	83643	6/29/2001	Public	K G WALTERS	8500 MIRA LOMA RD RNO
81	83647	6/29/2001	Public	K G WALTERS	8500 MIRA LOMA RD RNO
82	83654	6/29/2001	Public	K G WALTERS	
83	84190	7/20/2001	Public	K G WALTERS	8500 M L RD RNO
84	84191	7/20/2001	Public	K G WALTERS	8500 MIRA LOMA RD RNO
85	84192	7/20/2001	Public	K G WALTERS	
86	84193	7/20/2001	Public	K G WALTERS	
87	84195	7/20/2001	Public	K G WALTERS	8500 MIRA LOMA RNO
88	84196	7/20/2001	Public	K G WALTERS	8500 MIRA LOMA RNO
89	84197	7/20/2001	Public	K G WALTERS	8500 MIRA LOMA RNO
90	84198	7/20/2001	Public	K G WALTERS	8500 MIRA LOMA RNO

APPENDIX D

US EPA “Soil Sampling” Standard Operating Procedure

U. S. EPA ENVIRONMENTAL RESPONSE TEAM

STANDARD OPERATING PROCEDURES

SOIL SAMPLING

CONTENTS

1.0 SCOPE AND APPLICATION

2.0 METHOD SUMMARY

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SUPERCEDES: SOP #2012; Revision 0.0; 11/16/94; U.S. EPA Contract 68-C4-0022.

1.0 SCOPE AND APPLICATION

The purpose of this standard operating procedure (SOP) is to describe the procedures for the collection of representative soil samples. Sampling depths are assumed to be those that can be reached without the use of a drill rig, direct-push, or other mechanized equipment (except for a back-hoe). Analysis of soil samples may determine whether concentrations of specific pollutants exceed established action levels, or if the concentrations of pollutants present a risk to public health, welfare, or the environment.

These are standard (i.e., typically applicable) operating procedures which may be varied or changed as required, dependent upon site conditions, equipment limitations or limitations imposed by the procedure. In all instances, the actual procedures used should be documented and described in an appropriate site report.

Mention of trade names or commercial products does not constitute U.S. Environmental Protection Agency (EPA) endorsement or recommendation for use.

2.0 METHOD SUMMARY

Soil samples may be collected using a variety of methods and equipment depending on the depth of the desired sample, the type of sample required (disturbed vs. undisturbed), and the soil type. Near-surface soils may be easily sampled using a spade, trowel, and scoop. Sampling at greater depths may be performed using a hand auger, continuous flight auger, a trier, a split-spoon, or, if required, a backhoe.

3.0 SAMPLE PRESERVATION, CONTAINERS, HANDLING, AND STORAGE

Chemical preservation of solids is not generally recommended. Samples should, however, be cooled and protected from sunlight to minimize any potential reaction. The amount of sample to be collected and proper sample container type are discussed in ERT/REAC SOP #2003 Rev. 0.0 08/11/94, *Sample Storage, Preservation and Handling*.

4.0 INTERFERENCES AND POTENTIAL PROBLEMS

There are two primary potential problems associated with soil sampling - cross contamination of samples and improper sample collection. Cross contamination problems can be eliminated or minimized through the use of dedicated sampling equipment. If this is not possible or practical, then decontamination of sampling equipment is necessary. Improper sample collection can involve using contaminated equipment, disturbance of the matrix resulting in compaction of the sample, or inadequate homogenization of the samples where required, resulting in variable, non-representative results.

5.0 EQUIPMENT

Soil sampling equipment includes the following:

- Maps/plot plan
- Safety equipment, as specified in the site-specific Health and Safety Plan
- Survey equipment or global positioning system (GPS) to locate sampling points
- Tape measure
- Survey stakes or flags
- Camera and film
- Stainless steel, plastic, or other appropriate homogenization bucket, bowl or pan
- Appropriate size sample containers
- Ziplock plastic bags
- Logbook
- Labels
- Chain of Custody records and custody seals
- Field data sheets and sample labels
- Cooler(s)
- Ice
- Vermiculite
- Decontamination supplies/equipment
- Canvas or plastic sheet
- Spade or shovel
- Spatula
- Scoop
- Plastic or stainless steel spoons
- Trowel(s)
- Continuous flight (screw) auger
- Bucket auger
- Post hole auger
- Extension rods
- T-handle
- Sampling trier
- Thin wall tube sampler
- Split spoons
- Vehimeyer soil sampler outfit
  - Tubes
  - Points
  - Drive head
  - Drop hammer
  - Puller jack and grip
- Backhoe

6.0 REAGENTS

Reagents are not used for the preservation of soil samples. Decontamination solutions are specified in ERT/REAC SOP #2006 Rev. 0.0 08/11/94, *Sampling Equipment Decontamination*, and the site specific work plan.

7.0 PROCEDURES

7.1 Preparation

1. Determine the extent of the sampling effort, the sampling methods to be employed, and the types and amounts of equipment and supplies required.

2. Obtain necessary sampling and monitoring equipment.

3. Decontaminate or pre-clean equipment, and ensure that it is in working order.

4. Prepare schedules and coordinate with staff, client, and regulatory agencies, if appropriate.

5. Perform a general site survey prior to site entry in accordance with the site specific Health and Safety Plan.

6. Use stakes, flagging, or buoys to identify and mark all sampling locations. Specific site factors, including extent and nature of contaminant, should be considered when selecting sample location. If required, the proposed locations may be adjusted based on site access, property boundaries, and surface obstructions. All staked locations should be utility-cleared by the property owner or the On-Scene-Coordinator (OSC) prior to soil sampling; and utility clearance should always be confirmed before beginning work.

7.2 Sample Collection

7.2.1 Surface Soil Samples

Collection of samples from near-surface soil can be accomplished with tools such as spades, shovels, trowels, and scoops. Surface material is removed to the required depth and a stainless steel or plastic scoop is then used to collect the sample.

This method can be used in most soil types but is limited to sampling at or near the ground surface. Accurate, representative samples can be collected with this procedure depending on the care and precision demonstrated by the sample team member. A flat, pointed mason trowel to cut a block of the desired soil is helpful when undisturbed profiles are required. Tools plated with chrome or other materials should not be used. Plating is particularly common with garden implements such as potting trowels.

The following procedure is used to collect surface soil samples:

1. Carefully remove the top layer of soil or debris to the desired sample depth with a pre-cleaned spade.

2. Using a pre-cleaned, stainless steel scoop, plastic spoon, or trowel, remove and discard a thin layer of soil from the area which came in contact with the spade.

3. If volatile organic analysis is to be performed, transfer the sample directly into an appropriate, labeled sample container with a stainless steel lab spoon, or equivalent and secure the cap tightly. Place the remainder of the sample into a stainless steel, plastic, or other appropriate homogenization container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval. Then, either place the sample into appropriate, labeled containers and secure the caps tightly; or, if composite samples are to be collected, place a sample from another sampling interval or location into the homogenization container and mix thoroughly. When compositing is complete, place the sample into appropriate, labeled containers and secure the caps tightly.

7.2.2 Sampling at Depth with Augers and Thin Wall Tube Samplers

This system consists of an auger, or a thin-wall tube sampler, a series of extensions, and a "T" handle (Figure 1, Appendix A). The auger is used to bore a hole to a desired sampling depth, and is then withdrawn. The sample may be collected directly from the auger. If a core sample is to be collected, the auger tip is then replaced with a thin wall tube sampler. The system is then lowered down the borehole, and driven into the soil to the completion depth. The system is withdrawn and the core is collected from the thin wall tube sampler.

Several types of augers are available; these include: bucket type, continuous flight (screw), and post-hole augers. Bucket type augers are better for direct sample recovery because they provide a large volume of sample in a short time. When continuous flight augers are used, the sample can be collected directly from the flights. The continuous flight augers are satisfactory when a composite of the complete soil column is desired. Post-hole augers have limited utility for sample collection as they are designed to cut through fibrous, rooted, swampy soil and cannot be used below a depth of approximately three feet.

The following procedure is used for collecting soil samples with the auger:

1. Attach the auger bit to a drill rod extension, and attach the "T" handle to the drill rod.

2. Clear the area to be sampled of any surface debris (e.g., twigs, rocks, litter). It may be advisable to remove the first three to six inches of surface soil for an area approximately six inches in radius around the drilling location.

3. Begin augering, periodically removing and depositing accumulated soils onto a plastic sheet spread near the hole. This prevents accidental brushing of loose material back down the borehole when removing the auger or adding drill rods. It also facilitates refilling the hole, and avoids possible contamination of the surrounding area.

4. After reaching the desired depth, slowly and carefully remove the auger from the hole. When sampling directly from the auger, collect the sample after the auger is removed from the hole and proceed to Step 10.

5. Remove auger tip from the extension rods and replace with a pre-cleaned thin wall tube sampler. Install the proper cutting tip.

6. Carefully lower the tube sampler down the borehole. Gradually force the tube sampler into the soil. Do not scrape the borehole sides. Avoid hammering the rods as the vibrations may cause the boring walls to collapse.

7. Remove the tube sampler, and unscrew the drill rods.

8. Remove the cutting tip and the core from the device.

9. Discard the top of the core (approximately 1 inch), as this possibly represents material collected before penetration of the layer of concern. Place the remaining core into the appropriate labeled sample container. Sample homogenization is not required.

10. If volatile organic analysis is to be performed, transfer the sample into an appropriate, labeled sample container with a stainless steel lab spoon, or equivalent and secure the cap tightly. Place the remainder of the sample into a stainless steel, plastic, or other appropriate homogenization container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval. Then, either place the sample into appropriate, labeled containers and secure the caps tightly; or, if composite samples are to be collected, place a sample from another sampling interval into the homogenization container and mix thoroughly.

    When compositing is complete, place the sample into appropriate, labeled containers and secure the caps tightly.

11. If another sample is to be collected in the same hole, but at a greater depth, reattach the auger bit to the drill and assembly, and follow steps 3 through 11, making sure to decontaminate the auger and tube sampler between samples.

12. Abandon the hole according to applicable state regulations. Generally, shallow holes can simply be backfilled with the removed soil material.

7.2.3 Sampling with a Trier

The system consists of a trier, and a "T" handle. The auger is driven into the soil to be sampled and used to extract a core sample from the appropriate depth.

The following procedure is used to collect soil samples with a sampling trier:

1. Insert the trier (Figure 2, Appendix A) into the material to be sampled at a 0^{o} to 45^{o} angle from horizontal. This orientation minimizes the spillage of sample.

2. Rotate the trier once or twice to cut a core of material.

3. Slowly withdraw the trier, making sure that the slot is facing upward.

4. If volatile organic analyses are required, transfer the sample into an appropriate, labeled sample container with a stainless steel lab spoon, or equivalent and secure the cap tightly. Place the remainder of the sample into a stainless steel, plastic, or other appropriate homogenization container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval. Then, either place the sample into appropriate, labeled containers and secure the caps tightly; or, if composite samples are to be collected, place a sample from another sampling interval into the homogenization container and mix thoroughly. When compositing is complete, place the sample into appropriate, labeled containers and secure the caps tightly.

7.2.4 Sampling at Depth with a Split Spoon (Barrel) Sampler

Split spoon sampling is generally used to collect undisturbed soil cores of 18 or 24 inches in length. A series of consecutive cores may be extracted with a split spoon sampler to give a complete soil column profile, or an auger may be used to drill down to the desired depth for sampling. The split spoon is then driven to its sampling depth through the bottom of the augured hole and the core extracted.

When split spoon sampling is performed to gain geologic information, all work should

be performed in accordance with ASTM D1586-98, "Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils".

The following procedures are used for collecting soil samples with a split spoon:

1. Assemble the sampler by aligning both sides of barrel and then screwing the drive shoe on the bottom and the head piece on top.

2. Place the sampler in a perpendicular position on the sample material.

3. Using a well ring, drive the tube. Do not drive past the bottom of the head piece or compression of the sample will result.

4. Record in the site logbook or on field data sheets the length of the tube used to penetrate the material being sampled, and the number of blows required to obtain this depth.

5. Withdraw the sampler, and open by unscrewing the bit and head and splitting the barrel. The amount of recovery and soil type should be recorded on the boring log. If a split sample is desired, a cleaned, stainless steel knife should be used to divide the tube contents in half, longitudinally. This sampler is typically available in 2 and 3 1/2 inch diameters. A larger barrel may be necessary to obtain the required sample volume.

6. Without disturbing the core, transfer it to appropriate labeled sample container(s) and seal tightly.

7.2.5 Test Pit/Trench Excavation

A backhoe can be used to remove sections of soil, when detailed examination of soil characteristics are required. This is probably the most expensive sampling method because of the relatively high cost of backhoe operation.

The following procedures are used for collecting soil samples from test pits or trenches:

1. Prior to any excavation with a backhoe, it is important to ensure that all sampling locations are clear of overhead and buried utilities.

2. Review the site specific Health & Safety plan and ensure that all safety precautions including appropriate monitoring equipment are installed as required.

3. Using the backhoe, excavate a trench approximately three feet wide and approximately one foot deep below the cleared sampling location. Place excavated soils on plastic sheets. Trenches greater than five feet deep must be sloped or protected by a shoring system, as required by OSHA regulations.

4. A shovel is used to remove a one to two inch layer of soil from the vertical face of the pit where sampling is to be done.

5. Samples are taken using a trowel, scoop, or coring device at the desired intervals. Be sure to scrape the vertical face at the point of sampling to remove any soil that may have fallen from above, and to expose fresh soil for sampling. In many instances, samples can be collected directly from the backhoe bucket.

6. If volatile organic analyses are required, transfer the sample into an appropriate, labeled sample container with a stainless steel lab spoon, or equivalent and secure the cap tightly. Place the remainder of the sample into a stainless steel, plastic, or other appropriate homogenization container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval. Then, either place the sample into appropriate, labeled containers and secure the caps tightly; or, if composite samples are to be collected, place a sample from another sampling interval into the homogenization container and mix thoroughly. When compositing is complete, place the sample into appropriate, labeled containers and secure the caps tightly.

7. Abandon the pit or excavation according to applicable state regulations. Generally, shallow excavations can simply be backfilled with the removed soil material.

8.0 CALCULATIONS

This section is not applicable to this SOP.

9.0 QUALITY ASSURANCE/QUALITY CONTROL

There are no specific quality assurance (QA) activities which apply to the implementation of these procedures. However, the following QA procedures apply:

1. All data must be documented on field data sheets or within site logbooks.

2. All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified in the work plan. Equipment checkout and calibration

activities must occur prior to sampling/operation, and they must be documented.

10.0 DATA VALIDATION

This section is not applicable to this SOP.

11.0 HEALTH AND SAFETY

When working with potentially hazardous materials, follow U.S. EPA, OHSA and corporate health and safety procedures, in addition to the procedures specified in the site specific Health & Safety Plan..

12.0 REFERENCES

Mason, B.J. 1983. Preparation of Soil Sampling Protocol: Technique and Strategies. EPA-600/4-83-020.

Barth, D.S. and B.J. Mason. 1984. Soil Sampling Quality Assurance User's Guide. EPA-600/4-84-043.

U.S. Environmental Protection Agency. 1984 Characterization of Hazardous Waste Sites - A Methods Manual: Volume II. Available Sampling Methods, Second Edition. EPA-600/4-84-076.

de Vera, E.R., B.P. Simmons, R.D. Stephen, and D.L. Storm. 1980. Samplers and Sampling Procedures for Hazardous Waste Streams. EPA-600/2-80-018.

ASTM D 1586-98, ASTM Committee on Standards, Philadelphia, PA.

APPENDIX A
Figures
SOP #2012
February 2000

FIGURE 1. Sampling Augers

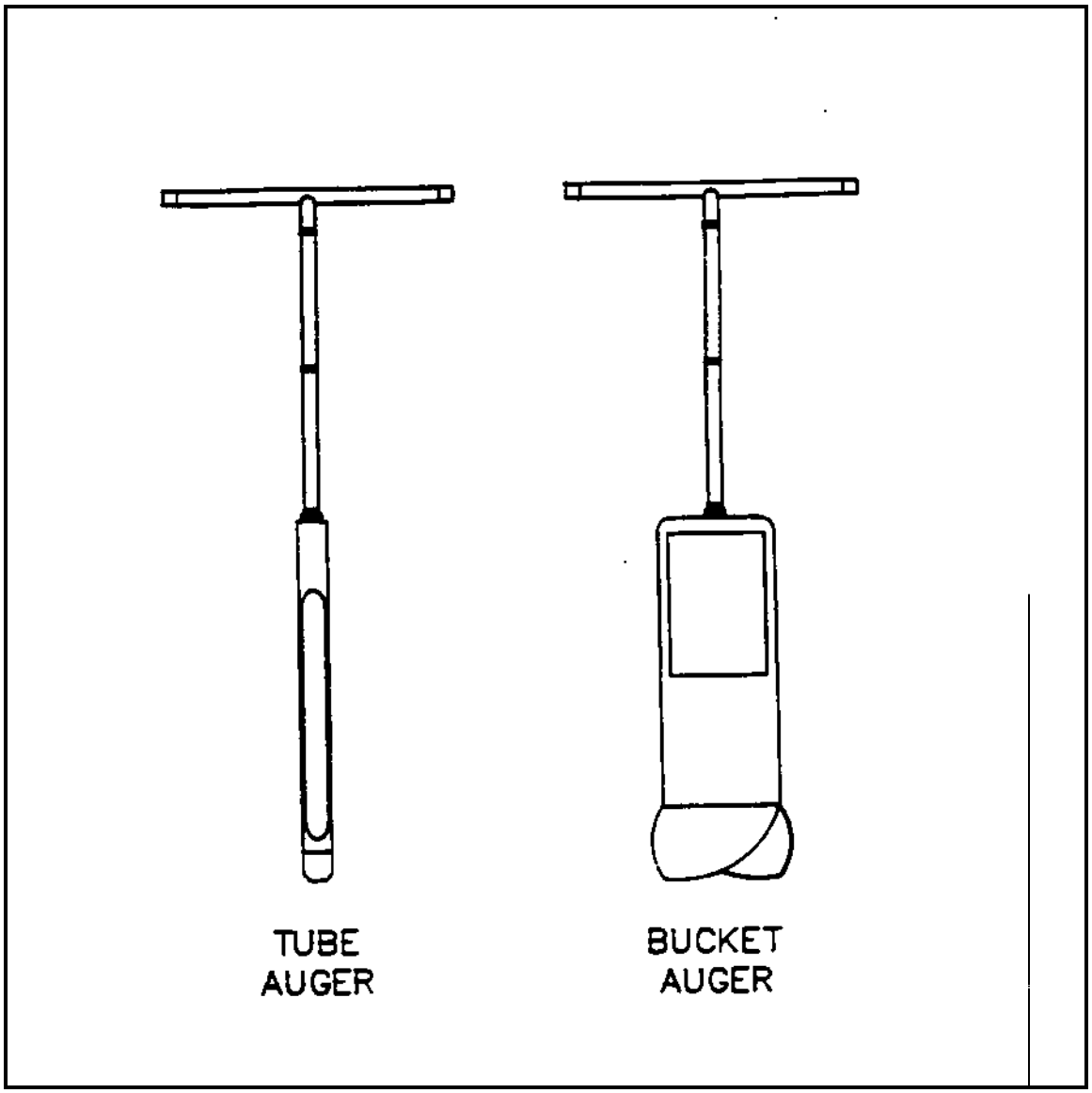
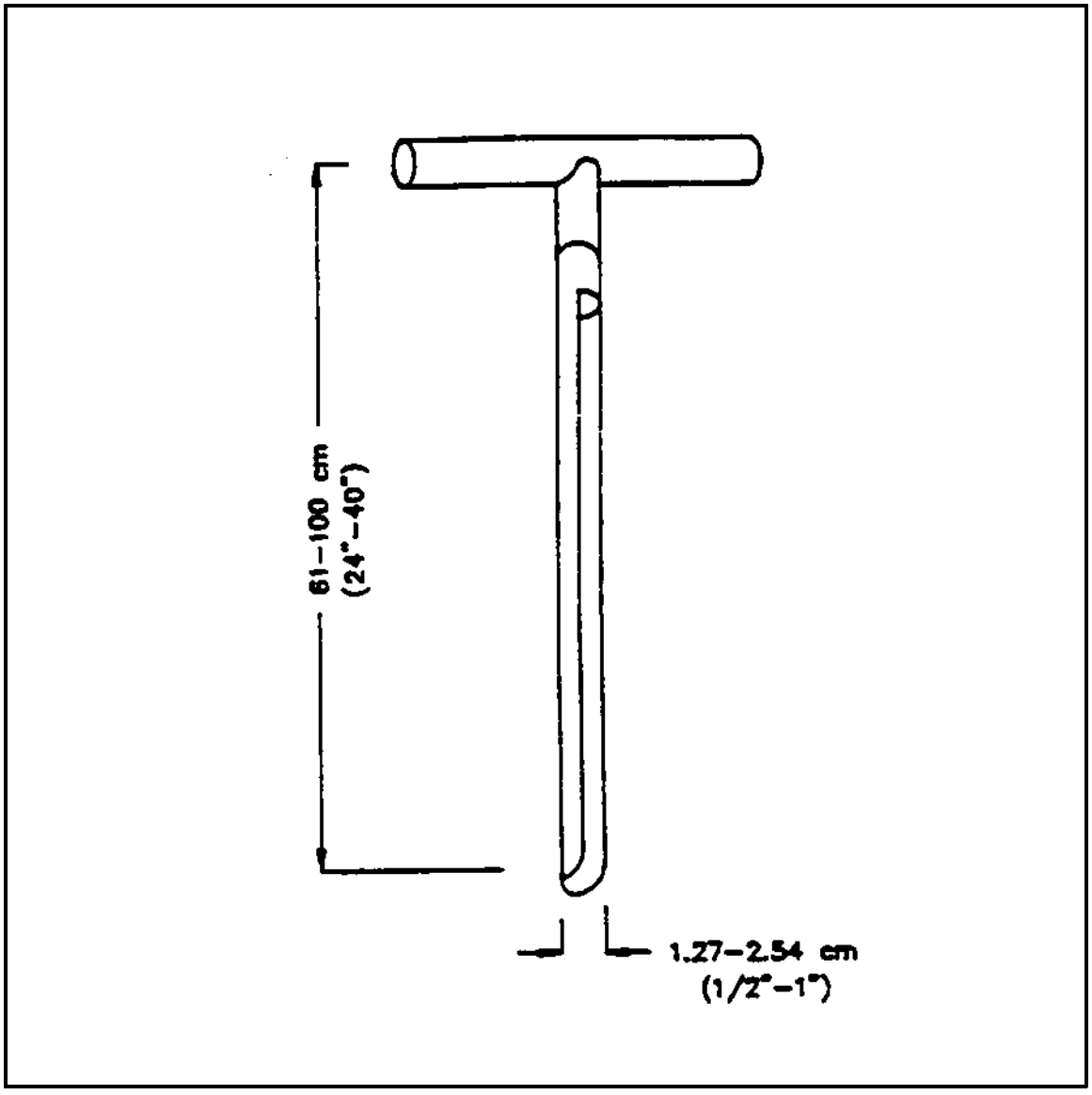


FIGURE 2. Sampling Trier



APPENDIX 7
Endangered Species Act Compliance Technical Memo
Prepared by Enviroscientists, Inc.

Enviroscientists, Inc.

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Reno, Nevada
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TECHNICAL MEMORANDUM

TO: Mr. Randy Walter, Places Consulting Services, Inc.

FROM: Ms. Kris Kuyper, Biology Program Manager

DATE: August 23, 2016

SUBJECT: Bella Vista Ranch Phase III; ESA Documentation

INTRODUCTION

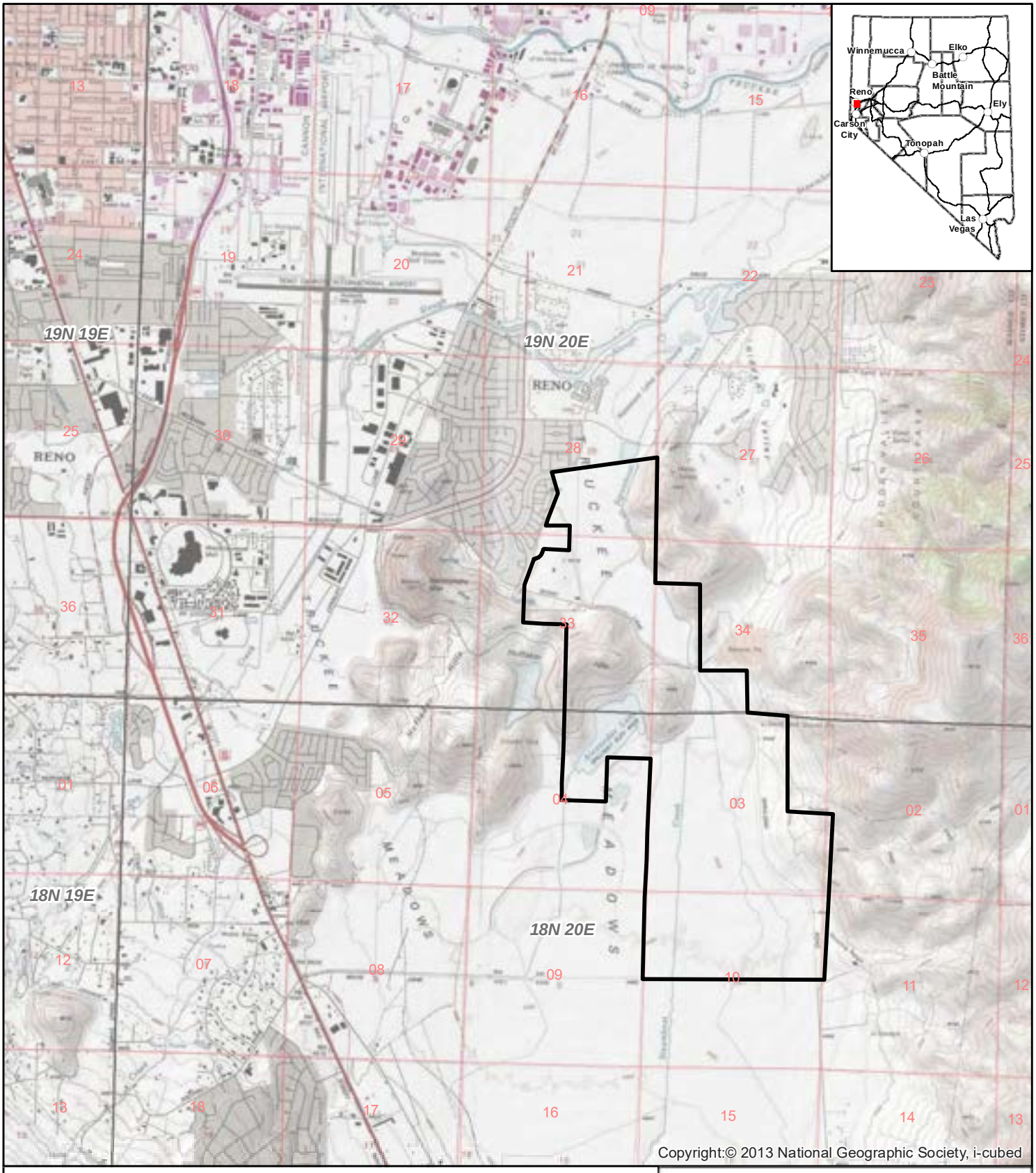
At the request of Places Consulting Services, Inc., Enviroscientists, Inc. is providing documentation of Endangered Species Act (ESA) compliance for a Conditional Letter of Map Revision (CLOMR), as required by the Federal Emergency Management Agency (FEMA) for the Bella Vista Ranch Phase III Project (Project) in Washoe County, Nevada. The Project is located on private lands and is a non-federal project. The Project Area is approximately 974 acres in size (Figure 1). The information presented in this memo supports a "No Effect" determination.

METHODOLOGY

Enviroscientists requested an official species list from the United States Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) database to see if any threatened or endangered species or designated critical habitat occur within the Project Area. An official species list is a letter from the local USFWS office with information that assists in the evaluation of potential impacts of a project. It includes a list of species that should be considered under Section 7 of the Endangered Species Act, a project tracking number, and other pertinent information from the local office.

The list generated identifies threatened, endangered, proposed, and candidate species and designated and proposed critical habitats, that *may* occur within one or more delineated United States Geological Survey 7.5-minute quadrangles with which the Project Area intersects. Each quadrangle covers, at a minimum, 49 square miles. Mr. Andy Starostka of the Reno Fish and Wildlife Office of the USFWS was consulted to review the results of the data request on August 22, 2016.

Data requests were also submitted to the Nevada Department of Wildlife (NDOW), and the Nevada Natural Heritage Program (NNHP). NDOW provides data for all wildlife resources within a four-mile buffer around the Project Area. NNHP provides data for endangered, threatened, candidate, and At Risk plant and animal taxa within a three-kilometer radius around each Public Land Survey System (PLSS) section included in the Project Area.



Explanation

Project Area

0 0.25 0.5 Miles

N

Places Consulting Services, Inc.

BELLA VISTA RANCH PHASE III

Location Map

Figure 1

Date	08/08/2016	Drawn By	JDB
Reviewed	08/17/2016	Project No.	3688
Base Map	USGS 7.5' quads: Mount Rose NE, Reno, Steamboat, Vista		
File Name	3688G_BellaVistaRanch_Location.mxd		

RESULTS

The official responses from the USFWS, NDOW, and NNHP are included as Attachments A, B, and C, respectively. The results from all three agencies are summarized in Table 1.

Table 1. ESA Protected Species Reported in the Vicinity of the Project Area

Agency	Species and Status	Critical Habitat
USFWS	Cui-ui (E) Lahontan cutthroat trout (T) North American wolverine (PT) Steamboat buckwheat (E)	None
NDOW	Lahontan cutthroat trout (T)	None
NNHP	None	None

The species listed in Table 1 are known to occur within the general geographic area, and not necessarily within the Project Area. The next step in the analysis is to compare the environmental characteristics of the Project Area with the habitat requirements of each species to determine if there is potential habitat for them within it.

Cui-ui and Lahontan Cutthroat Trout

Neither the cui-ui (*Chasmistes cujus*) nor the Lahontan cutthroat trout (*Oncorhynchus clarkii henshawi*) inhabit the aquatic resources within the Project Area, which are Steamboat Creek, Steamboat Channel, Thomas Creek, and Alexander Lake. However, physical connectivity exists between the aquatic resources in the Project Area and the Truckee River, which is spawning habitat for both species. The Truckee River nexus with Steamboat Creek is approximately five miles north of the Project Area. Mercury mobilization and sediment transport are concerns for the upstream tributaries to the Truckee River in the vicinity of the Project Area.

The Project will not impact the Truckee River for the following reasons:

1. The area adjacent to Steamboat Creek is owned by the Regional Transportation Commission (RTC) of Washoe County. Therefore, Project activities will not directly affect Steamboat Creek.

2. The Project will be subject to regulation under Section 404 of the Clean Water Act.

3. The Project will comply with the erosion and sediment control requirements in the *Truckee Meadows Construction Site Best Management Practices Handbook* (February 2015 Update).

4. The Project will comply with the Washoe County Stream Buffer Ordinance. This ordinance regulates development activity within and adjacent to perennial streams by establishing buffer zones to protect water quality.

North American Wolverine

The North American wolverine (*Gulo gulo luscus*) inhabits areas that receive enough winter precipitation to reliably maintain deep persistent snow late into the warm season (*i.e.*, April 15 to May 14). Deep, persistent, and reliable snow cover is the best overall predictor of wolverine

occurrence in the contiguous United States (USFWS 2016). The warm spring temperatures in the Project Area do not support adequate snow cover to meet the wolverine's habitat requirements.

Steamboat buckwheat

Steamboat buckwheat (*Eriogonum ovalifolium* var. *williamsiae*) is dependent on wetland margin areas and is restricted to substrates derived from hot spring deposits in the Steamboat Hills of southern Washoe County, Nevada. All of the known habitat and potential habitat for Steamboat buckwheat is restricted to an area of approximately 250 to 375 acres within the vicinity of the Steamboat Springs (USFWS 1995). Steamboat Springs is approximately 3.5 miles southwest of the Project Area.

CONCLUSION

The USFWS reported that there are four species that are protected under the ESA that are known to occur in the geographical vicinity (i.e. Washoe County) of the Project Area. NDOW reported one ESA-listed species in the vicinity of the Project Area, but outside of a four-mile buffer. NNHP reported no ESA-listed species within the Project Area and a three-kilometer buffer.

The environmental conditions of the site do not support the habitat requirements of any of the four ESA-listed species reported by USFWS as occurring within the vicinity of the Project, therefore they have no potential to occur within the Project Area and would not be impacted by Project activities. A "No Effect" determination is made. Mr. Andy Starostka of the Reno Fish and Wildlife Office of the USFWS verbally concurred with the determination in a phone call on August 22, 2016. This memorandum and the official agency responses (Attachments A, B, And C) document compliance with Section 9 of the ESA.

REFERENCES

United States Fish and Wildlife Service (USFWS). 1995. *Steamboat Buckwheat (Eriogonum ovalifolium var. williamsiae) Recovery Plan*. Portland, Oregon. 32 pages plus appendices.

United States Fish and Wildlife Service (USFWS). 2016. *Environmental Conservation Online System (ECOS)*. Available online at: https://ecos.fws.gov/ecp/. Accessed August 16, 2016.

ATTACHMENT A

USFWS DATA RESPONSE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Reno Fish and Wildlife Office
1340 FINANCIAL BOULEVARD, SUITE 234
RENO, NV 89502
PHONE: (775)861-6300 FAX: (775)861-6301
URL: www.fws.gov/nevada/

Consultation Code: 08ENVD00-2016-SLI-0435 August 08, 2016
Event Code: 08ENVD00-2016-E-00500
Project Name: Bella Vista Ranch

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The attached species list indicates threatened, endangered, proposed, and candidate species and designated or proposed critical habitat that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act of 1973, as amended (ESA, 16 U.S.C. 1531 *et seq*.), for projects that are authorized, funded, or carried out by a Federal agency. Candidate species have no protection under the ESA but are included for consideration because they could be listed prior to the completion of your project. Consideration of these species during project planning may assist species conservation efforts and may prevent the need for future listing actions. For additional information regarding species that may be found in the proposed project area, visit http://www.fws.gov/nevada/es/ipac.html.

The purpose of the ESA is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the ESA and its implementing regulations (50 CFR 402 *et seq*.), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2) (c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment

be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Guidelines for preparing a Biological Assessment can be found at: http://www.fws.gov/midwest/endangered/section7/ba_guide.html.

If a Federal action agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species, and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at: http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF.

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this species list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally listed, proposed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally, as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation, for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the attached list.

The Nevada Fish and Wildlife Office (NFWO) no longer provides species of concern lists. Most of these species for which we have concern are also on the Animal and Plant At-Risk Tracking List for Nevada (At-Risk list) maintained by the State of Nevada's Natural Heritage Program (Heritage). Instead of maintaining our own list, we adopted Heritage's At-Risk list and are partnering with them to provide distribution data and information on the conservation needs for at-risk species to agencies or project proponents. The mission of Heritage is to continually evaluate the conservation priorities of native plants, animals, and their habitats, particularly those most vulnerable to extinction or in serious decline. In addition, in order to avoid future conflicts, we ask that you consider these at-risk species early in your project planning and explore management alternatives that provide for their long-term conservation.

For a list of at-risk species by county, visit Heritage's website (http://heritage.nv.gov). For a specific list of at-risk species that may occur in the project area, you can obtain a data request form from the website (http://heritage.nv.gov/get_data) or by contacting the Administrator of Heritage at 901 South Stewart Street, Suite 5002, Carson City, Nevada 89701-5245, (775) 684-2900. Please indicate on the form that your request is being obtained as part of your coordination with the Service under the ESA. During your project analysis, if you obtain new information or data for any Nevada sensitive species, we request that you provide the information to Heritage at the above address.

Furthermore, certain species of fish and wildlife are classified as protected by the State of Nevada (http://www.leg.state.nv.us/NAC/NAC-503.html). You must first obtain the appropriate license, permit, or written authorization from the Nevada Department of Wildlife (NDOW) to

take, or possess any parts of protected fish and wildlife species. Please visit http://www.ndow.org or contact NDOW in northern Nevada (775) 688-1500, in southern Nevada (702) 486-5127, or in eastern Nevada (775) 777-2300.

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq*.), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the Service's wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

The Service's Pacific Southwest Region developed the *Interim Guidelines for the Development of a Project Specific Avian and Bat Protection Plan for Wind Energy Facilities* (Interim Guidelines). This document provides energy facility developers with a tool for assessing the risk of potential impacts to wildlife resources and delineates how best to design and operate a bird- and bat-friendly wind facility. These Interim Guidelines are available upon request from the NFWO. The intent of a Bird and Bat Conservation Strategy is to conserve wildlife resources while supporting project developers through: (1) establishing project development in an adaptive management framework; (2) identifying proper siting and project design strategies; (3) designing and implementing pre-construction surveys; (4) implementing appropriate conservation measures for each development phase; (5) designing and implementing appropriate post-construction monitoring strategies; (6) using post-construction studies to better understand the dynamics of mortality reduction (*e.g.*, changes in blade cut-in speed, assessments of blade “feathering” success, and studies on the effects of visual and acoustic deterrents) including efforts tied into Before-After/Control-Impact analysis; and (7) conducting a thorough risk assessment and validation leading to adjustments in management and mitigation actions.

The template and recommendations set forth in the Interim Guidelines were based upon the Avian Powerline Interaction Committee's Avian Protection Plan template (http://www.aplic.org/) developed for electric utilities and modified accordingly to address the unique concerns of wind energy facilities. These recommendations are also consistent with the Service's wind energy guidelines. We recommend contacting us as early as possible in the planning process to discuss the need and process for developing a site-specific Bird and Bat Conservation Strategy.

The Service has also developed guidance regarding wind power development in relation to prairie grouse leks (sage-grouse are included in this). This document can be found at: http://www.fws.gov/southwest/es/Oklahoma/documents/te_species/wind%20power/prairie%20gr
.

Migratory Birds are a Service Trust Resource. Based on the Service's conservation responsibilities and management authority for migratory birds under the Migratory Bird Treaty Act of 1918, as amended (MBTA; 16 U.S.C. 703 *et seq*.), we recommend that any land clearing or other surface disturbance associated with proposed actions within the project area be timed to avoid potential destruction of bird nests or young, or birds that breed in the area. Such destruction may be in violation of the MBTA. Under the MBTA, nests with eggs or young of migratory birds may not be harmed, nor may migratory birds be killed. Therefore, we recommend land clearing be conducted outside the avian breeding season. If this is not feasible, we recommend a qualified biologist survey the area prior to land clearing. If nests are located,

or if other evidence of nesting (*i.e.*, mated pairs, territorial defense, carrying nesting material, transporting food) is observed, a protective buffer (the size depending on the habitat requirements of the species) should be delineated and the entire area avoided to prevent destruction or disturbance to nests until they are no longer active.

Guidance for minimizing impacts to migratory birds for projects involving communications towers (*e.g.*, cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

If wetlands, springs, or streams are are known to occur in the project area or are present in the vicinity of the project area, we ask that you be aware of potential impacts project activities may have on these habitats. Discharge of fill material into wetlands or waters of the United States is regulated by the U.S. Army Corps of Engineers (ACOE) pursuant to section 404 of the Clean Water Act of 1972, as amended. We recommend you contact the ACOE's Regulatory Section regarding the possible need for a permit. For projects located in northern Nevada (Carson City, Churchill, Douglas, Elko, Esmeralda, Eureka, Humboldt, Lander, Lyon, Mineral, Pershing, Storey, and Washoe Counties) contact the Reno Regulatory Office at 300 Booth Street, Room 3060, Reno, Nevada 89509, (775) 784-5304; in southern Nevada (Clark, Lincoln, Nye, and White Pine Counties) contact the St. George Regulatory Office at 321 North Mall Drive, Suite L-101, St. George, Utah 84790-7314, (435) 986-3979; or in California along the eastern Sierra contact the Sacramento Regulatory Office at 650 Capitol Mall, Suite 5-200, Sacramento, California 95814, (916) 557-5250.

We appreciate your concern for threatened and endangered species. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

The table below outlines lead FWS field offices by county and land ownership/project type. Please refer to this table when you are ready to coordinate (including requests for section 7 consultation) with the field office corresponding to your project, and send any documentation regarding your project to that corresponding office. Therefore, the lead FWS field office may not be the office listed above in the letterhead.

Lead FWS offices by County and Ownership/Program

County	Ownership/Program	Species	Office Lead*
Alameda	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Alameda	All ownerships but tidal/estuarine	All	SFWO

Alpine	Humboldt Toiyabe National Forest	All	RFWO
Alpine	Lake Tahoe Basin Management Unit	All	RFWO
Alpine	Stanislaus National Forest	All	SFWO
Alpine	El Dorado National Forest	All	SFWO
Colusa	Mendocino National Forest	All	AFWO
Colusa	Other	All	By jurisdiction (see map)
Contra Costa	Legal Delta (Excluding ECCHCP)	All	BDFWO
Contra Costa	Antioch Dunes NWR	All	BDFWO
Contra Costa	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO
Contra Costa	All ownerships but tidal/estuarine	All	SFWO
Del Norte	All	All	AFWO
El Dorado	El Dorado National Forest	All	SFWO
El Dorado	LakeTahoe Basin Management Unit		RFWO
Glenn	Mendocino National Forest	All	AFWO

Glenn	Other	All	By jurisdiction (see map)
Humboldt	All except Shasta Trinity National Forest	All	AFWO
Humboldt	Shasta Trinity National Forest	All	YFWO
Lake	Mendocino National Forest	All	AFWO
Lake	Other	All	By jurisdiction (see map)
Lassen	Modoc National Forest	All	KFWO
Lassen	Lassen National Forest	All	SFWO
Lassen	Toiyabe National Forest	All	RFWO
Lassen	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Lassen	BLM Alturas Resource Area	All	KFWO
Lassen	Lassen Volcanic National Park	All (includes Eagle Lake trout on all ownerships)	SFWO
Lassen	All other ownerships	All	By jurisdiction (see map)
Marin	Tidal wetlands/marsh adjacent to Bays	Salt marsh species, delta smelt	BDFWO

Marin	All ownerships but tidal/estuarine	All	SFWO
Mendocino	Russian River watershed	All	SFWO
Mendocino	All except Russian River watershed	All	AFWO
Modoc	Modoc National Forest	All	KFWO
Modoc	BLM Alturas Resource Area	All	KFWO
Modoc	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Modoc	BLM Surprise and Eagle Lake Resource Areas	All	RFWO
Modoc	All other ownerships	All	By jurisdiction (See map)
Mono	Inyo National Forest	All	RFWO
Mono	Humboldt Toiyabe National Forest	All	RFWO
Napa	All ownerships but tidal/estuarine	All	SFWO
Napa	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Nevada	Humboldt Toiyabe National Forest	All	RFWO
			By jurisdiction (See

Nevada	All other ownerships	All	map)
Placer	Lake Tahoe Basin Management Unit	All	RFWO
Placer	All other ownerships	All	SFWO
Sacramento	Legal Delta	Delta Smelt	BDFWO
Sacramento	Other	All	By jurisdiction (see map)
San Francisco	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Francisco	All ownerships but tidal/estuarine	All	SFWO
San Mateo	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
San Mateo	All ownerships but tidal/estuarine	All	SFWO
San Joaquin	Legal Delta excluding San Joaquin HCP	All	BDFWO
San Joaquin	Other	All	SFWO
Santa Clara	Tidal wetlands/marsh adjacent to San Francisco Bay	Salt marsh species, delta smelt	BDFWO
Santa Clara	All ownerships but tidal/estuarine	All	SFWO

Shasta	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Shasta	Hat Creek Ranger District	All	SFWO
Shasta	Bureau of Reclamation (Central Valley Project)	All	BDFWO
Shasta	Whiskeytown National Recreation Area	All	YFWO
Shasta	BLM Alturas Resource Area	All	KFWO
Shasta	Caltrans	By jurisdiction	SFWO/AFWO
Shasta	Ahjumawi Lava Springs State Park	Shasta crayfish	SFWO
Shasta	All other ownerships	All	By jurisdiction (see map)
Shasta	Natural Resource Damage Assessment, all lands	All	SFWO/BDFWO
Sierra	Humboldt Toiyabe National Forest	All	RFWO
Sierra	All other ownerships	All	SFWO
Siskiyou	Klamath National Forest (except Ukonom District)	All	YFWO
Siskiyou	Six Rivers National Forest and Ukonom District	All	AFWO

Siskiyou	Shasta Trinity National Forest	All	YFWO
Siskiyou	Lassen National Forest	All	SFWO
Siskiyou	Modoc National Forest	All	KFWO
Siskiyou	Lava Beds National Volcanic Monument	All	KFWO
Siskiyou	BLM Alturas Resource Area	All	KFWO
Siskiyou	Klamath Basin National Wildlife Refuge Complex	All	KFWO
Siskiyou	All other ownerships	All	By jurisdiction (see map)
Solano	Suisun Marsh	All	BDFWO
Solano	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Solano	All ownerships but tidal/estuarine	All	SFWO
Solano	Other	All	By jurisdiction (see map)
Sonoma	Tidal wetlands/marsh adjacent to San Pablo Bay	Salt marsh species, delta smelt	BDFWO
Sonoma	All ownerships but tidal/estuarine	All	SFWO

Tehama	Mendocino National Forest	All	AFWO
Tehama	Shasta Trinity National Forest except Hat Creek Ranger District (administered by Lassen National Forest)	All	YFWO
Tehama	All other ownerships	All	By jurisdiction (see map)
Trinity	BLM	All	AFWO
Trinity	Six Rivers National Forest	All	AFWO
Trinity	Shasta Trinity National Forest	All	YFWO
Trinity	Mendocino National Forest	All	AFWO
Trinity	BIA (Tribal Trust Lands)	All	AFWO
Trinity	County Government	All	AFWO
Trinity	All other ownerships	All	By jurisdiction (See map)
Yolo	Yolo Bypass	All	BDFWO
Yolo	Other	All	By jurisdiction (see map)
All	FERC-ESA	All	By jurisdiction (see map)

All	FERC-ESA	Shasta crayfish	SFWO
All	FERC-Relicensing (non-ESA)	All	BDFWO
***Office Leads:**			
AFWO=Arcata Fish and Wildlife Office			
BDFWO=Bay Delta Fish and Wildlife Office			
KFWO=Klamath Falls Fish and Wildlife Office			
RFWO=Reno Fish and Wildlife Office			
YFWO=Yreka Fish and Wildlife Office			

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: Bella Vista Ranch

Official Species List

Provided by:

Reno Fish and Wildlife Office
1340 FINANCIAL BOULEVARD, SUITE 234
RENO, NV 89502
(775) 861-6300
http://www.fws.gov/nevada/

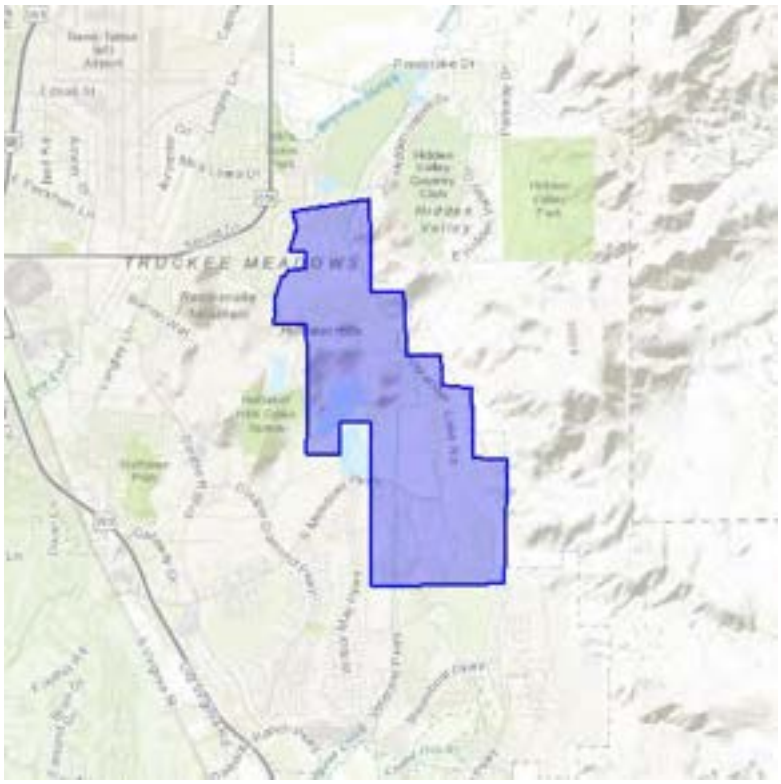
Consultation Code: 08ENVD00-2016-SLI-0435
Event Code: 08ENVD00-2016-E-00500

Project Type: DEVELOPMENT

Project Name: Bella Vista Ranch

Please Note: The FWS office may have modified the Project Name and/or Project Description, so it may be different from what was submitted in your previous request. If the Consultation Code matches, the FWS considers this to be the same project. Contact the office in the 'Provided by' section of your previous Official Species list if you have any questions or concerns.

Project Location Map:



Project Coordinates: The coordinates are too numerous to display here.

Project Counties: Washoe, NV

Endangered Species Act Species List

There are a total of 4 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Fishes	**Status**	**Has Critical Habitat**	**Condition(s)**
cui-ui *(Chasmistes cujus)* Population: Entire	Endangered		
Lahontan cutthroat trout *(Oncorhynchus clarkii henshawi)* Population: Entire	Threatened		
Flowering Plants			
Steamboat buckwheat *(Eriogonum ovalifolium var. williamsiae)*	Endangered		
Mammals			
North American wolverine *(Gulo gulo luscus)*	Proposed Threatened		

Critical habitats that lie within your project area

There are no critical habitats within your project area.

Appendix A: FWS National Wildlife Refuges and Fish Hatcheries

There are no refuges or fish hatcheries within your project area.

United States Department of Interior
Fish and Wildlife Service

Project name: Bella Vista Ranch

Appendix B: FWS Migratory Birds

The protection of birds is regulated by the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA). Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). The MBTA has no otherwise lawful activities. For more information regarding these Acts see:
http://www.fws.gov/birds/policies-and-regulations/laws-legislations/migratory-bird-treaty-act.php
http://www.fws.gov/birds/policies-and-regulations/laws-legislations/bald-and-golden-eagle-protection-act.php

All project proponents are responsible for complying with the appropriate regulations protecting birds when planning and developing a project. To meet these conservation obligations, proponents should identify potential or existing project-related impacts to migratory birds and their habitat and develop and implement conservation measures that avoid, minimize, or compensate for these impacts. The Service's Birds of Conservation Concern (2008) report identifies species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become listed under the Endangered Species Act as amended (16 U.S.C 1531 et seq.).

For information about Birds of Conservation Concern, go to:
http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php

For information about conservation measures that help avoid or minimize impacts to birds, please visit:
http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php

To search and view summaries of year-round bird occurrence data within your project area, go to the Avian Knowledge Network Histogram Tools at:
http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/akn-histogram-tools.php

United States Department of Interior
Fish and Wildlife Service

Project name: Bella Vista Ranch

Migratory birds that may be affected by your project:

There are 23 birds on your migratory bird list. The list may include birds occurring outside this FWS office jurisdiction.

Species Name	Bird of Conservation Concern (BCC)	Seasonal Occurrence in Project Area
Bald eagle *(Haliaeetus leucocephalus)*	Yes	Year-round
Black Rosy-Finch *(Leucosticte atrata)*	Yes	Year-round
Brewer's Sparrow *(Spizella breweri)*	Yes	Breeding
Burrowing Owl *(Athene cunicularia)*	Yes	Breeding
Calliope Hummingbird *(Stellula calliope)*	Yes	Breeding
Eared Grebe *(Podiceps nigricollis)*	Yes	Breeding
Flammulated owl *(Otus flammeolus)*	Yes	Breeding
Fox Sparrow *(Passerella liaca)*	Yes	Year-round
Greater sage-grouse *(Centrocercus urophasianus)*	Yes	Year-round
Green-tailed Towhee *(Pipilo chlorurus)*	Yes	Breeding
Loggerhead Shrike *(Lanius ludovicianus)*	Yes	Year-round
Long-Billed curlew *(Numenius americanus)*	Yes	Breeding
Olive-Sided flycatcher *(Contopus cooperi)*	Yes	Breeding
Peregrine Falcon *(Falco peregrinus)*	Yes	Year-round
Pinyon Jay *(Gymnorhinus cyanocephalus)*	Yes	Year-round

Sage Thrasher *(Oreoscoptes montanus)*	Yes	Breeding
Short-eared Owl *(Asio flammeus)*	Yes	Year-round
Snowy Plover *(Charadrius alexandrinus)*	Yes	Breeding
Swainson's hawk *(Buteo swainsoni)*	Yes	Breeding
tricolored blackbird *(Agelaius tricolor)*	Yes	Breeding
Western grebe *(aechmophorus occidentalis)*	Yes	Breeding
White-headed Woodpecker *(Picoides albolarvatus)*	Yes	Year-round
Williamson's Sapsucker *(Sphyrapicus thyroideus)*	Yes	Year-round

Appendix C: NWI Wetlands

The U.S. Fish and Wildlife Service is the principal Federal agency that provides information on the extent and status of wetlands in the U.S., via the National Wetlands Inventory Program (NWI). In addition to impacts to wetlands within your immediate project area, wetlands outside of your project area may need to be considered in any evaluation of project impacts, due to the hydrologic nature of wetlands (for example, project activities may affect local hydrology within, and outside of, your immediate project area). It may be helpful to refer to the USFWS National Wetland Inventory website. The designated FWS office can also assist you. Impacts to wetlands and other aquatic habitats from your project may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes. Project Proponents should discuss the relationship of these requirements to their project with the Regulatory Program of the appropriate U.S. Army Corps of Engineers District.

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery and/or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Exclusions - Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Precautions - Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of

this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

The following NWI Wetland types intersect your project area in one or more locations. To understand the NWI Classification Code, see https://ecos.fws.gov/ipac/wetlands/decoder. To view the National Wetlands Inventory on a map go to http://www.fws.gov/wetlands/Data/Mapper.html.

Wetland Types	NWI Classification Code
Freshwater Emergent Wetland	PEM1A
Freshwater Emergent Wetland	PEM1C
Freshwater Emergent Wetland	PEM1Ch
Freshwater Emergent Wetland	PEM1Cx
Freshwater Emergent Wetland	PEM1F
Freshwater Forested/Shrub Wetland	PSSA
Freshwater Pond	PUBHx
Freshwater Pond	PUSA
Lake	L1UBHh
Riverine	R3UBH
Riverine	R3UBHx
Riverine	R4SBC
Riverine	R4SBCx
Riverine	R4SBJ
Riverine	R5UBH

ATTACHMENT B

NDOW DATA RESPONSE

STATE OF NEVADA

DEPARTMENT OF WILDLIFE

6980 Sierra Center Parkway, Suite 120
Reno, Nevada 89511
(775) 688-1500 • Fax (775) 688-1495

BRIAN SANDOVAL
Governor

TONY WASLEY
Director

ELIZABETH O'BRIEN
Deputy Director

JACK ROBB
Deputy Director

Heidi Guenther
Botanist/Ecologist
Enviroscientists
1650 Meadow Wood Lane
Reno, Nevada 89502

August 8, 2016

Re: Bella Vista Ranch

Dear Heidi Guenther:

I am responding to your request for information from the Nevada Department of Wildlife (NDOW) on the known or potential occurrence of wildlife resources in the vicinity of the Bella Vista Ranch located in Washoe County, Nevada. In order to fulfill your request an analysis was performed using the best available data from the NDOW's wildlife occurrences, raptor nest sites and ranges, greater sage-grouse leks and habitat, and big game distributions databases. No warranty is made by the NDOW as to the accuracy, reliability, or completeness of the data for individual use or aggregate use with other data. These data should be considered **sensitive** and may contain information regarding the location of sensitive wildlife species or resources. All appropriate measures should be taken to ensure that the use of this data is strictly limited to serve the needs of the project described on your GIS Data Request Form. Abuse of this information has the potential to adversely affect the existing ecological status of Nevada's wildlife resources and could be cause for the denial of future data requests.

To adequately provide wildlife resource information in the vicinity of the proposed project the NDOW delineated an area of interest that included a four-mile buffer around the project area provided by you on Monday, August 08, 2016. Wildlife resource data was queried from the NDOW databases based on this area of interest. The results of this analysis are summarized below.

Big Game – Occupied mule deer distribution exists within portions of the project area and four-mile buffer area. Occupied pronghorn antelope distribution exists outside of the project area within portions of the four-mile buffer area. No known occupied bighorn sheep or elk distributions exist in the vicinity of the project area. Please refer to the attached maps for details regarding big game distributions relative to the proposed project area.

Greater Sage-Grouse – Greater sage-grouse habitat in the vicinity of the project area has primarily been classified as General habitat by the Nevada Sagebrush Ecosystem Program (http://sagebrusheco.nv.gov). Priority habitat also exists in the vicinity of the project area. Please refer to the attached maps for details regarding greater sage-grouse habitat relative to the proposed project area. There are no known radio-marked greater sage-grouse tracking locations in the vicinity of the project area. There are no known greater sage-grouse lek sites in the vicinity of the project area.

Raptors – Various species of raptors, which use diverse habitat types, may reside in the vicinity of the project area. American kestrel, bald eagle, barn owl, burrowing owl, Cooper's hawk, ferruginous hawk, flammulated owl, golden eagle, great horned owl, long-eared owl, merlin, northern goshawk, northern harrier, northern saw-whet owl, osprey, peregrine falcon, red-tailed hawk, rough-legged hawk, sharp-shinned hawk, short-eared owl, Swainson's hawk, turkey vulture, and western screech owl have distribution ranges that include the project area and four-mile buffer area. Furthermore, the following raptor species have been directly observed in the vicinity of the project area:

American kestrel	golden eagle	red-shouldered hawk
bald eagle	great horned owl	red-tailed hawk
barn owl	merlin	sharp-shinned hawk
burrowing owl	osprey	short-eared owl
Cooper's hawk	peregrine falcon	

Raptor species are protected by State and Federal laws. In addition, bald eagle, burrowing owl, California spotted owl, ferruginous hawk, flammulated owl, golden eagle, northern goshawk, peregrine falcon, prairie falcon, and short-eared owl are NDOW species of special concern and are target species for conservation as outlined by the Nevada Wildlife Action Plan. Per the *Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and Other Recommendations in Support of Golden Eagle Management and Permit Issuance* (United States Fish and Wildlife Service 2010) we have queried our raptor nest database to include raptor nest sites within ten miles of the proposed project area. There are six known raptor nest sites within ten miles of the project area:

Probable Use	Last Check	Last Active	Township/Range/Section
Burrowing Owl	7/29/1977	7/29/1977	21 0190N 0200E 020
Buteo	3/2/1978	3/2/1978	21 0200N 0200E 029
Eagle	5/26/1979	5/26/1979	21 0190N 0200E 013
Eagle	5/6/2011	5/6/2011	21 0170N 0210E 030
Falcon - Confirmed	6/5/1981	6/5/1981	21 0190N 0210E 027
Falcon - Probable	4/18/1975	4/18/1975	21 0190N 0210E 035

Other Wildlife Resources

Additional species have also been observed in the vicinity of the project area. Please refer to the appendix for details regarding these species.

The proposed project area may also be in the vicinity of abandoned mine workings, which often provide habitat for state and federally protected wildlife, especially bat species, many of which are protected under NAC 503.030. To request data regarding known abandoned mine workings in the vicinity of the project area please contact the Nevada Division of Minerals (http://minerals.state.nv.us/).

The above information is based on data stored at our Reno Headquarters Office, and does not necessarily incorporate the most up to date wildlife resource information collected in the field. Please contact the Habitat Division Supervising Biologist at our Western Region Reno Office (775.688.1500) to discuss the current environmental conditions for your project area and the interpretation of our analysis. Furthermore, it should be noted that the information detailed above is preliminary in nature and not necessarily an identification of every wildlife resource concern associated with the proposed project. Consultation with the Supervising Habitat biologist will facilitate the development of appropriate survey protocols and avoidance or mitigation measures that may be required to address potential impacts to wildlife resources.

Mark Freese - Western Region Supervising Habitat Biologist (775.688.1145)

Federally listed Threatened and Endangered species are also under the jurisdiction of the United States Fish and Wildlife Service. Please contact them for more information regarding these species.

If you have any questions regarding the results or methodology of this analysis please do not hesitate to contact our GIS office at (775) 688-1439.

Sincerely,

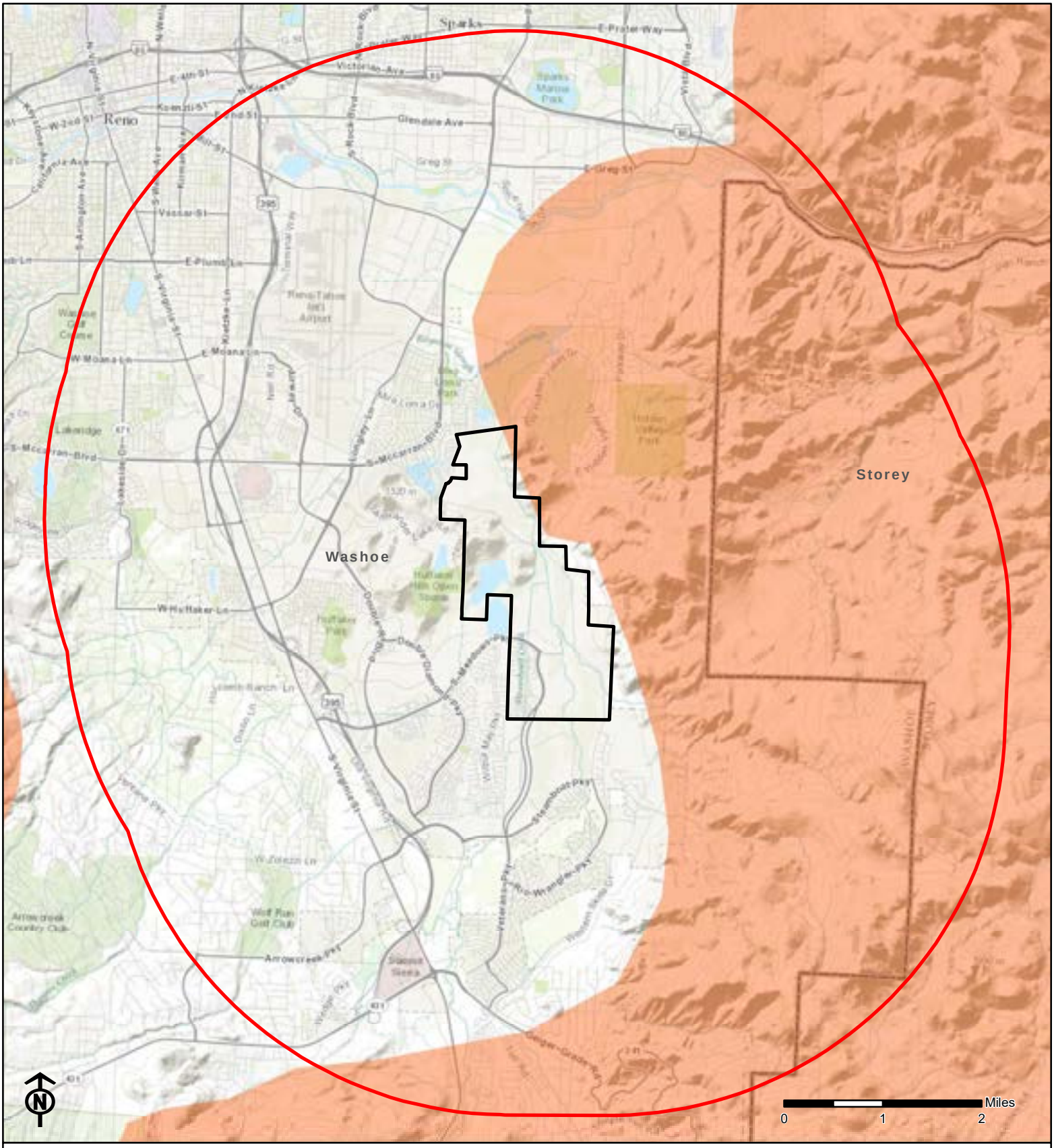
GIS Specialist/Biologist III
Nevada Department of Wildlife
GIS Section
(775) 688-1439
bweller@ndow.org

Appendix: Other Wildlife Species Table

Common Name	ESA	State	SWAP SoCP
American avocet		Protected	Yes
American beaver		Furbearer	
American black bear			
American coot			
American goldfinch		Protected	
American mink		Furbearer	
American robin		Protected	
American white pelican		Protected	Yes
Bewick's wren		Protected	
big brown bat			
black-billed magpie		Protected	
bluegill			
Brazilian (Mexican) free-tailed bat		Protected	Yes
brown (Norway)rat			
brown trout			
bullfrog			
California ground squirrel			
Cassin's finch		Protected	Yes
common carp			
common merganser			
common poorwill		Protected	
coyote		Unprotected	
cutbow trout			
cyprinid (unknown)			
dark-eyed junco		Protected	
desert horned lizard			Yes
desert woodrat			
Eurasian wigeon			
European starling		Unprotected	
fathead minnow			
glaucous-winged gull		Protected	
glaucous gull		Protected	
great blue heron		Protected	
greater sandhill crane			Yes
greater scaup			
greater white-fronted goose			
green-tailed towhee		Protected	
green sunfish			
gull (unknown)			
hawk (unknown)			
house finch		Protected	
house sparrow		Unprotected	
killdeer		Protected	
Lahontan cutthroat trout	Threatened		Yes
Lahontan redside			

Lahontan speckled dace		
largemouth bass		
lesser goldfinch	Protected	
Lincoln's sparrow	Protected	
loggerhead shrike	Sensitive	Yes
long-nosed leopard lizard		Yes
long-tailed vole		
long-tailed weasel	Unprotected	
mallard		
mew gull	Protected	
mountain bluebird	Protected	
mountain lion		
mountain sucker		
mountain whitefish		Yes
mourning dove		
North American deermouse		
northern flicker	Protected	
Paiute sculpin		
pumpkinseed		
purple finch	Protected	
raccoon		
rainbow trout		
redside shiner		
rock dove		
ruddy duck		
speckled dace		
spotted bass		
spotted bat	Threatened	Yes
sucker (unknown)		
sunfish (unknown)		
Tahoe sucker		
Thayer's gull	Protected	
trout (unknown)		
western meadowlark	Protected	
western mosquitofish		
western scrub-jay		
white-crowned sparrow	Protected	
Wilson's warbler	Protected	
yellow-bellied marmot		
yellow bullhead		

ESA: Endangered Species Act Status
State: State of Nevada Special Status
SWAP SoCP: Nevada State Wildlife Action Plan (2012) Species of Conservation Priority



Project Area

Four Mile Buffer Area Boundary

Mule Deer Distribution

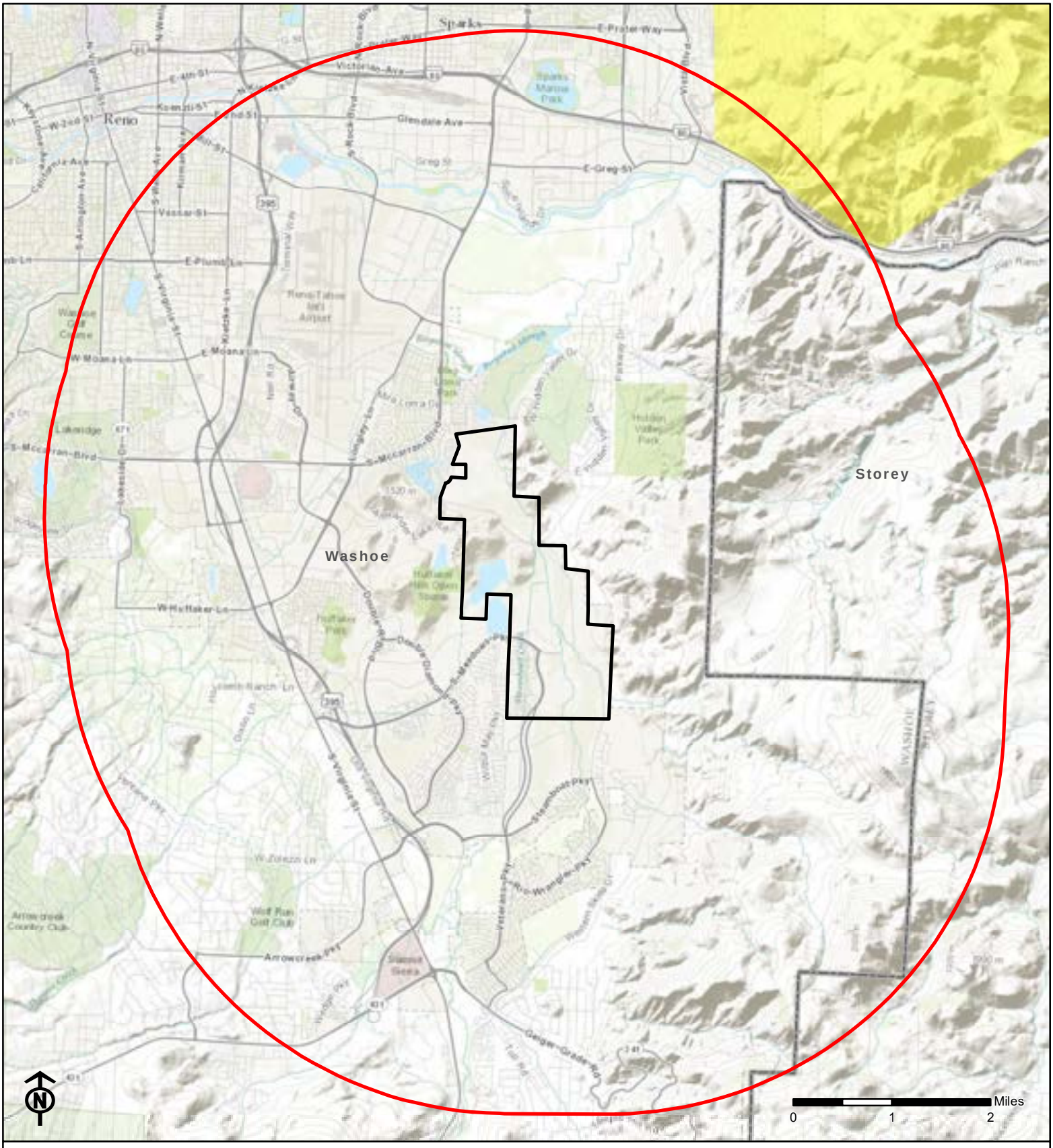
Bella Vista Ranch
Mule Deer Distribution

August 08, 2016

Projection: UTM Zone 11 North, NAD83

No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of the data for individual use or aggregate use with other data.

V:\ActiveProjects\DataRequests\Template\Data Request - Response Template.mxd



Project Area

Four Mile Buffer Area Boundary

Pronghorn Antelope Distribution

Bella Vista Ranch
Pronghorn Antelope Distribution

August 08, 2016

Projection: UTM Zone 11 North, NAD83

No warranty is made by the Nevada Department of Wildlife as to the accuracy, reliability, or completeness of the data for individual use or aggregate use with other data.

V:\ActiveProjects\DataRequests\Template\Data Request - Response Template.mxd

ATTACHMENT C

NNHP DATA RESPONSE

Brian Sandoval
Governor

Leo Drozdoff
Director

Kristin Szabo
Administrator

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
Nevada Natural Heritage Program

09 August 2016

Heidi Guenther
Enviroscientists, Inc.
1650 Meadow Wood Lane
Reno, NV 89502

RE: Data request received 08 August 2016

Dear Ms. Guenther:

We are pleased to provide the information you requested on endangered, threatened, candidate, and/or At Risk plant and animal taxa recorded within or near the Bella Vista Ranch Project area in Washoe County. We searched our database and maps for the following, a 3 kilometer radius around shapefile provided including:

Township 18N	Range 20E	Sections 03, 04, and 10
Township 19N	Range 20E	Sections 28, 33, and 34

The enclosed printout lists the taxa recorded within the given area. Please be aware that habitat may also be available for, the Townsend's big-eared bat, *Corynorhinus townsendii*, a Nevada Bureau of Land Management (BLM) Sensitive Species, and the western small-footed myotis, *Myotis ciliolabrum*, a Nevada BLM Sensitive Species. The Nevada Department of Wildlife (NDOW) manages, protects, and restores Nevada's wildlife resources and associated habitat. Please contact Bonnie Weller, NDOW GIS biologist (775) 688-1439 to obtain further information regarding wildlife resources within and near your area of interest. Removal or destruction of state protected flora species requires a special permit from Nevada Division of Forestry (NRS 527.270).

Please note that our data are dependent on the research and observations of many individuals and organizations and in most cases are not the result of comprehensive or site-specific field surveys. Natural Heritage reports should never be regarded as final statements on the taxa or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

Thank you for checking with our program. Please contact us for additional information or further assistance.

Sincerely,

Eric S. Miskow
Biologist/Data Manager

At Risk Taxa Recorded Near the Bella Vista Ranch Project Area in Washoe Co.

Compiled by the Nevada Natural Heritage Program for Enviroscientists, Inc.

09 August 2016

Scientific name	Common name	Usfws	Blm	Usfs	State	Srank	Grank	UTM E	UTM N	Loc Uncert	Uncert Dist	Last Obs
Plants												
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	267846.48	4372809.69	Estimated	30	1995-06-27
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	267400.99	4372949.31	Estimated	30	1995-06-27
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	267118.78	4372982.83	Estimated	30	1995-06-27
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	267252.53	4372904.85	Estimated	30	1995-06-27
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	268032.83	4373942.18	Estimated	30	1994-05-26
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	268356.43	4373608.09	Estimated	30	1994-05-26
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	268025.40	4373569.34	Estimated	30	1994-05-26
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	268301.67	4374187.50	Estimated	30	1994-05-26
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	267180.66	4373345.62	Estimated	30	1995-06-27
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	267010.10	4373495.31	Estimated	30	1995-06-27
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	267286.65	4373387.78	Estimated	30	1995-06-27
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	267231.10	4373400.66	Estimated	30	1995-06-27
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	267091.42	4373423.66	Estimated	30	1995-06-27
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	267134.91	4373202.54	Estimated	30	1995-06-27
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	266932.27	4372784.12	Estimated	30	1995-06-27
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	267735.28	4373249.95	Estimated	30	1995-06-27
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	268470.11	4372965.08	Estimated	30	1995-06-27
Eriogonum robustum	altered andesite buckwheat		S	R4S		S2	G2	267995.01	4373067.92	Estimated	30	1995-06-27
Plagiobothrys glomeratus	altered andesite popcornflower		S	R4S		S2	G2G3	267487.00	4373277.47	Estimated	1609	1998-06-29
Invertebrates												
Euphydryas editha monoensis	Mono checkerspot			R5S		S1	G5T2T3	260761.83	4379344.82	Estimated	9656	1909-04-18
Reptiles												
Actinemys marmorata	western pond turtle			R5S		S2	G3G4	260761.83	4379344.82	Estimated	9656	1940-07-12
Actinemys marmorata	western pond turtle			R5S		S2	G3G4	262153.82	4377974.55	Estimated	9656	1941
Actinemys marmorata	western pond turtle			R5S		S2	G3G4	265481.61	4377349.71	Estimated	9656	1940

Bureau of Land Management (Blm) Species Classification:

S Sensitive Species- Species designated Sensitive by State Director of Nevada BLM

United States Forest Service (Usfs) Species Classification:

R4S Region 4 (Humboldt-Toiyabe National Forest) Sensitive
R5S Region 5 (Inyo National Forest or Lake Tahoe Basin Management Unit) Sensitive or Watch Status

Locational Uncertainty:

Based on the uncertainty associated with the underlying information on the location of the observation.

Estimated uncertainty varies in more than one dimension; true location of the observation can be visualized as floating within an area for which boundaries cannot be specifically delimited

Negligible uncertainty based on a comprehensive field survey with high quality mapping, if the uncertainty associated with the underlying observation is less than or equal to 4.5 meters in any direction

Nevada Natural Heritage Program Global (**Grank**) and State (**Srank**) Ranks for Threats and/or Vulnerability:

G Global rank indicator, based on worldwide distribution at the species level
T Global trinomial rank indicator, based on worldwide distribution at the infraspecific level
S State rank indicator, based on distribution within Nevada at the lowest taxonomic level
- l Critically imperiled and especially vulnerable to extinction or extirpation due to extreme rarity, imminent threats, or other factors
- 2 Imperiled due to rarity or other demonstrable factors
- 3 Vulnerable to decline because rare and local throughout its range, or with very restricted range
- 4 Long-term concern, though now apparently secure; usually rare in parts of its range, especially at its periphery
- 5 Demonstrably secure, widespread, and abundant
  - A Accidental within Nevada
  - B Breeding status within Nevada (excludes resident taxa)
  - H Historical; could be rediscovered
  - N Non-breeding status within Nevada (excludes resident taxa)
  - Q Taxonomic status uncertain
  - U Unrankable
  - Z Enduring occurrences cannot be defined (usually given to migrant or accidental birds)
  - ? Assigned rank uncertain

APPENDIX 8
Council Letters of Approval

Ashley D. Turney
City Clerk
(775) 334-2030
TurneyA@reno.gov

Mikki Huntsman
Chief Deputy City Clerk
(775) 334-2030
HuntsmanM@reno.gov

Office of the City Clerk
Central Cashiering (775) 334-2030
Parking Tickets (775) 334-2293

FILED THIS DATE
7 / 24 / 2020
BY: mcd
CITY CLERK

July 24, 2020

NPLC BV Investment Company, LLC
100 Bayview Circle, Suite 2000
Newport Beach, CA 92660

RE: Case No. LDC18-00025 (Daybreak Master Plan Amendment) and LDC18-00037 (Daybreak Planned Unit Development)
APN: 021-270-48, 021-270-49, 021-270-50, 165-011-34, 165-011-35, 165-011-31 165-011-32, 021-70-37, 165-012-02, 021-760-06, 021-441-15

Dear Applicant:

At a regular meeting of the Reno City Council on July 22, 2020, and in accordance with NRS 278.210 and NRS 278 A530, the Reno City Council certified your request for: 1) a) the Daybreak Master Plan Amendment; b) the Daybreak Planned Unit Development (PUD) handbook; and 2) approved agreements between Newport Lands LLC and the City of Reno for: a) Affordable Housing Donation; b) Park Construction (for the use of Residential Construction Tax [RCT] payments or credits); c) Public Safety Donation; d) Stormwater Mitigation; and e) Youth Sports Donation.

On January 23, 2020 the Master Plan amendment and Project of Regional Significance were reviewed and approved by the Regional Planning Commission as to its conformance with the Regional Plan and on June 11, 2020 the decision was upheld on appeal at the Regional Planning Governing Board.

Sincerely,

FOR
Ashley D. Turney
City Clerk

xc: Community Development
Brooklyn Oswald, Community Development
Jeff Mann, Parks, Recreation & Community Services
Wood Rodgers, 1361 Corporate Blvd, Reno, NV 89502
NPLC BV Investment Company LLC
100 Bayview Circle, Suite 240, Newport Beach, CA 92660

Enclosed: Truckee Meadows Regional Planning Agency conformance review decision letter dated January 23, 2020 and June 11, 2020

Received WRT-Reno
JUL 28 2020

TMRPA
TRUCKEE MEADOWS REGIONAL PLANNING AGENCY

REGIONAL PLANNING COMMISSION

Sarah Chvilicek, Chair • Dian VanderWell, Vice-Chair • David Blaco • James Barnes • Larry Chesney • Peter Gower • Mark Johnson • Shelley Read • Kathleen Taylor • Jeremy M. Smith, Interim Director

January 27, 2020

Received by Clerk: 1-27-20

Emailed: CT 1.27.20

Jeremy M. Smith
Interim Director of Regional Planning, and
Clerk of the Regional Planning Commission
1105 Terminal Way, Suite 316
Reno, Nevada 89502

Dear Mr. Smith:

On January 23, 2020 the Regional Planning Commission (RPC) held a public hearing and determined that the following matter conforms with the comprehensive Regional Plan:

> Regional Plan Conformance Review under 2012 Regional Plan – City of Reno Master Plan amendment (CR19-012) and project of regional significance (CR19-013), Daybreak – A Master Plan amendment to change the existing land use designation on 11 parcels totaling ±979.4 acres from ±89.4 acres of Mixed Neighborhood, ±70.2 acres of Single Family Neighborhood, ±25.3 acres of Large Lot Neighborhood, ±734 acres of Unincorporated Transition, and ±60.5 acres of Parks, Greenways and Open Space to ±307.3 acres of Single Family Neighborhood, ±175.5 acres of Suburban Mixed Use, ±20.7 acres of Multifamily Neighborhood, ±219.9 acres of Mixed Neighborhood, and ±256 acres of Parks, Greenways and Open Space. The project site is generally located north of South Meadows Parkway, south of Mira Loma Drive, west of the eastern Reno City boundary, and east of Washoe County Huffaker Hills Open Space, Reggie Road, and Hombre Way. The proposed Planned Unit Development includes 3,995 residential units, associated public facilities, open space and commercial development, and is considered a project of regional significance for housing (not less than 625 units), sewage (not less than 187,500 gallons per day), water usage (not less than 625 acre feet per year), traffic (not less than an average of 6,250 trips daily), K-12 student population (by not less than 325 students), and for being located within the 100-year flood zone and: i) will alter the stream channel or banks of a portion of the Truckee River or any of its tributaries identified in the Regional Water Management Plan, and ii) will alter wetlands delineated through the Section 404 permit process

This letter has been filed with the Clerk of the RPC on this date. Generally, appeals to the Regional Planning Governing Board ("RPGB") must be filed by a person or entity seeking review of the RPC action or determination pursuant to Sections I.2, I.3, III.7 or IV.11 of the RPGB *Regulations on Procedure*. The applicable filing timeframe for a review of this matter is highlighted in the table on the following page.

Please do not hesitate to contact me at 775-321-8392 if you have any questions on this matter.

Sincerely,

Chris Tolley
Regional Planner

CC: File CR19-012 and 013
City of Reno
City of Sparks
Washoe County
Regional Transportation Commission

**A paper copy of this letter is available upon request*

Regional Planning Governing Board Regulations on Procedure, appeals to the RPGB pursuant to statues and/or regulation:	**Timeframe:**
Appeal of Regional Planning Commission's finding of non-conformance with respect to a Project of Regional Significance ("PRS"). *See* RPGB Regulations on Procedure I.2 and III.7	45 days (calendar days)
Appeal of a finding of non-conformance of a master plan, facilities plan or other similar plan. *See* RPGB Regulations on Procedure I.2; IV.10 and IV.11	45 days (calendar days) to file objection with RPC; 30 days (calendar days) to file appeal to RPGB after RPC's determination of objection
Review of actions of the RPC that are not subject to a specific appeal process, which includes actions of the RPC finding that a PRS or master plan, facilities plan or other similar plan conforms with the Regional Plan. *See* RPGB Regulations on Procedure I.3	10 days (business days)

TMRPA
TRUCKEE MEADOWS REGIONAL PLANNING AGENCY

REGIONAL PLANNING GOVERNING BOARD

Donald Abbott, Chair • Naomi Duerr, Vice Chair • Marsha Berkbigler • Jenny Brekhus • Charlene Bybee • Vaughn Hartung • Jeanne Herman • Ed Lawson • Devon Reese • Bonnie Weber • Jeremy M. Smith, Interim Director • LIAISON - Katy Simon Holland, WCSD Board of Trustees

June 16, 2020

Jeremy Smith
Interim Director of Regional Planning, and
Clerk of the Regional Planning Commission
1105 Terminal Way, Suite 316
Reno, Nevada 89502

Received by Clerk: JMS 6/16/202

Emailed: CST 6·16·20

Dear Mr. Smith:

On June 11, 2020, the RPGB held a public hearing on the following matter:

> City of Reno Master Plan amendment (CR19-012) and project of regional significance (CR19-013), Daybreak – Consideration of appeals pursuant to Section I.3 of the RPGB Regulations on Procedure of the Regional Planning Commission's (RPC) determination of conformance for a proposed Master Plan amendment and project of regional significance. The ±979.4 project site is generally located north of South Meadows Parkway, south of Mira Loma Drive, west of the eastern Reno City boundary, and east of Washoe County Huffaker Hills Open Space, Reggie Road, and Hombre Way

The RPGB affirmed the RPC's determination and found that the proposed amendment to the City of Reno Master Plan conforms with the 2012 Regional Plan, and

The RPGB affirmed the RPC's determination and found that the proposed project of regional significance conforms with the 2012 Regional Plan.

The following is the description of the proposed City of Reno Master Plan amendment and project of regional significance, as submitted to the Truckee Meadows Regional Planning Agency and considered by the RPGB and RPC:

> Regional Plan Conformance Review under 2012 Regional Plan – City of Reno Master Plan amendment (CR19-012) and project of regional significance (CR19-013), Daybreak – A Master Plan amendment to change the existing land use designation on 11 parcels totaling ±979.4 acres from ±89.4 acres of Mixed Neighborhood, ±70.2 acres of Single Family Neighborhood, ±25.3 acres of Large Lot Neighborhood, ±734 acres of Unincorporated Transition, and ±60.5 acres of Parks, Greenways and Open Space to ±307.3 acres of Single Family Neighborhood, ±175.5 acres of Suburban Mixed Use, ±20.7 acres of Multifamily Neighborhood, ±219.9 acres of Mixed Neighborhood, and ±256 acres of Parks, Greenways and Open Space. The project site is generally located north of South Meadows Parkway, south of Mira Loma Drive, west of the eastern Reno City boundary, and east of Washoe County Huffaker Hills Open Space, Reggie Road, and Hombre Way. The proposed Planned Unit Development includes 3,995

residential units, associated public facilities, open space and commercial development, and is considered a project of regional significance for housing (not less than 625 units), sewage (not less than 187,500 gallons per day), water usage (not less than 625 acre feet per year), traffic (not less than an average of 6,250 trips daily), K-12 student population (by not less than 325 students), and for being located within the 100-year flood zone and: i) will alter the stream channel or banks of a portion of the Truckee River or any of its tributaries identified in the Regional Water Management Plan, and ii) will alter wetlands delineated through the Section 404 permit process

This letter has been filed with the Clerk of the Regional Planning Governing Board on this date and constitutes notice of final action under NRS 278.0235, "Actions against Agency: Commencement."

Please do not hesitate to contact me at 775-321-8392 if you have any questions on this matter.

Sincerely,

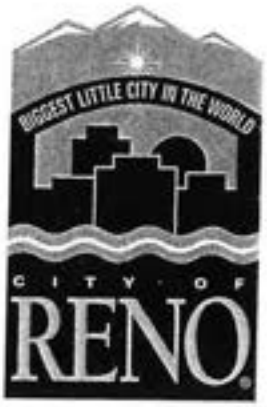
Chris Tolley
Regional Planner

CC: File CR19-012 & CR19-013
City of Reno
City of Sparks
Washoe County
Regional Transportation Commission
Kimberly Rhodemyre, Appellant
James P. Lewis, Appellant
Steve Wolgast, Appellant
Franco Crivelli, Appellant

**A paper copy of this letter is available upon request*

Ashley D. Turney
City Clerk
(775) 334-2030
TurneyA@reno.gov

Mikki Huntsman
Chief Deputy City Clerk
(775) 334-2030
HuntsmanM@reno.gov



Office of the City Clerk
Central Cashiering (775) 334-2030
Parking Tickets (775) 334-2293

FILED THIS DATE
11 / 1 / 2019
BY: mh
CITY CLERK

November 1, 2019

NPLC BV Investment Company, LLC
100 Bayview Circle, Suite 2000
Newport Beach, CA 92660

RE: Case No. LDC18-00037 (Daybreak PUD ZM Amendments) – ***NOTICE OF FINAL ACTION, DECISION OR ORDER***

Dear Applicant:

At a regular meeting held October 23, 2019, the Reno City Council and following a public hearing thereon, the Reno City Council passed and adopted Ordinance No. 6526, approving the zoning map amendment for the above referenced case.

Sincerely,

Mikki Huntsman For
Ashley D. Turney
City Clerk

ADT:mh

Enc.

xc: Community Development
Jeff Mann, Parks, Recreation & Community Services
Brook Oswald, Community Development
Wood Rodgers, c/o Andy Durling, 1361 Corporate Boulevard, Reno NV 89502

Ashley D. Turney
City Clerk
(775) 334-2030
TurneyA@reno.gov

Mikki Huntsman
Chief Deputy City Clerk
(775) 334-2030
HuntsmanM@reno.gov

Office of the City Clerk
Central Cashiering (775) 334-2030
Parking Tickets (775) 334-2293

FILED THIS DATE
10 / 16 / 19
BY: [illegible]
CITY CLERK

October 1, 2019

NPLC BV Investment Company, LLC
100 Bayview Circle, Suite 2000
Newport Beach, CA 92660

RE: Case No. LDC18-00025 and LDC18-00037 (Daybreak MP and PUD ZM Amendments)

Dear Applicant:

At a regular meeting held September 23, 2019, and following a public hearing thereon, the Reno City Council 1) approved the request to establish a Planned Unit Development (PUD) on a ±979.4 acre site to include up to 3,995 residential units, associated public facilities, open space and commercial development. The request includes: 1) a Master Plan amendment to change the existing land use designation on 11 parcels totaling ±979.4 acres from ±89.4 acres of Mixed Neighborhood, ±70.2 acres of Single Family Neighborhood, ±25.3 acres of Large Lot Neighborhood, ±734 acres of Unincorporated Transition, and ±60.5 acres of Parks, Greenways and Open Space to ±307.3 acres of Single Family Neighborhood, ±175.5 acres of Suburban Mixed Use, ±20.7 acres of Multifamily Neighborhood, ±219.9 acres of Mixed Neighborhood, and ±256 acres of Parks Greenways and Open Space; 2) a zoning map amendment to amend the existing zoning designations from ±217.5 acres of Planned Unit Development-Butler Ranch, ±13.7 acres of Specific Planned District-Alexander Specific Plan (SPD), ±23.6 acres of Large Lot Residential-1 acre (LLR1), ±147.3 acres of Large Lot Residential-2.5 acres (LLR2.5), and ±577.3 acres of Unincorporated Transition-40 acres (UT40) to ±979.31 acres of Planned Unit Development-Daybreak and ±0.09 acres to Single Family-6,000 square feet (SF6); and 3) tentative approval of the associated Planned Unit Development Handbook. The project site is generally located north of South Meadows Parkway, south of Mira Loma Drive, west of the eastern Reno City boundary, and east of Washoe County Huffaker Hills Open Space, Reggie Road, and Hombre Way. This project is of Regional Significance for: Housing not less than 625 units, Sewage not less than 187,500 gal/day, Water usage not less than 625 acre feet per year, Traffic not less than 6,250 trips daily, Student population (K-12) not less than 325 students and a transmission line that carries more than 60 kilovolts.

The City Council adopted Resolution No. 8718, approving the requested Master Plan amendment. The approved zoning map amendment will become effective upon passage and adoption of the appropriate ordinance and the adopted Master Plan resolution will become effective upon a finding of conformance by the Regional Planning Commission. A copy of the September 23, 2019, Reno City Council Minutes will be mailed to you upon acceptance by the Reno City Council.

Sincerely,

Ashley D. Turney
City Clerk

ADT:mb

Enc.

xc: Community Development
Jeff Mann, Parks, Recreation & Community Services
Brook Oswald, Community Development
Wood Rodgers, c/o Andy Durling, 1361 Corporate Boulevard, Reno NV 89502

Chris Pingree
Director of Development Services
Development Services Department
P. O. Box 1900
Reno, NV 89505

March 8, 2022

Andy Durling, AICP
Wood Rodgers, Inc.
1361 Corporate Boulevard
Reno, NV 89502

Re: ADM22-00006 (Daybreak PUD Handbook Minor Modification)

Dear Mr. Durling:

Per Reno Municipal Code (RMC) 18.08.505 (h)(2) "Minor Amendments to PUD Plans," the Administrator may approve minor amendments to an adopted PUD. The proposed minor amendment is requesting to: 1) change the name from "Daybreak" to "Talus Valley," 2) update the Rio Wrangler Parkway road cross-section south of South Meadows Parkway, and 3) update proposed school locations of the approved Daybreak PUD Handbook. Public notice regarding the request was issued and no comments were received.

It has been determined that the requested minor amendments to the adopted Daybreak PUD Handbook, as noted in the attached red-lined copy, are consistent with the findings outlined in RMC 18.08.505 (h)(2). The request is **approved, subject to recordation of the amended PUD Handbook with approved minor modifications incorporated**.

Any person aggrieved by the decision of the Administrator who alleges that there is an error in the decision, may appeal the decision to the Hearing Examiner within 10 calendar days from the date of this decision. The written notice of appeal must briefly specify the grounds of the appeal on the appropriate form and be accompanied by the necessary fees. If the Hearing Examiner denies or modifies the appeal, the applicant may appeal to the City Council within 10 calendar days of the Hearing Examiner decision by filing a notice of appeal with the City Clerk.

Sincerely,

Chris Pingree, Director of Development Services
Development Services Department

xc: Mikki Huntsman, City Clerk
Nathan Gilbert, AICP, Senior Planner
NPLC BV Investment Company, LLC, 100 Bayview Circle, Suite 240, Newport Beach, CA 92660

Chris Pingree
Director of Development Services
Development Services Department
P. O. Box 1900
Reno, NV 89505

February 3, 2023

Andy Durling, AICP
Wood Rodgers, Inc.
1361 Corporate Boulevard
Reno, NV 89502

Re: ADM23-00005 (Talus Valley PUD Handbook Minor Modification)

Dear Mr. Durling:

Per Reno Municipal Code (RMC) 18.08.505 (h)(2) "Minor Amendments to PUD Plans," the Administrator may approve minor amendments to an adopted PUD. The proposed minor amendment is requesting to: modify the location of the 11 acre Community Park and reserve the right for the City of Reno to purchase the initial site. Public notice regarding the request was issued and no comments were received.

It has been determined that the requested minor amendments to the adopted Talus Valley PUD Handbook, as noted in the attached red-lined copy, are consistent with the findings outlined in RMC 18.08.505 (h)(2). The request is **approved, subject to recordation of the amended PUD Handbook with approved minor modifications incorporated**.

Any person aggrieved by the decision of the Administrator who alleges that there is an error in the decision, may appeal the decision to the Hearing Examiner within 10 calendar days from the date of this decision. The written notice of appeal must briefly specify the grounds of the appeal on the appropriate form and be accompanied by the necessary fees. If the Hearing Examiner denies or modifies the appeal, the applicant may appeal to the City Council within 10 calendar days of the Hearing Examiner decision by filing a notice of appeal with the City Clerk.

Sincerely,

Chris Pingree, Director of Development Services
Development Services Department

xc: Mikki Huntsman, City Clerk
Brooklyn Oswald, PLA, Associate Planner
NPLC BV Investment Company, LLC, 100 Bayview Circle, Suite 240, Newport Beach, CA 92660