

MEMORANDUM

DATE: February 8, 2016

TO: David MacDuff, Project Manager
IS Property Investments LLC

FROM: Michael Read, PE, Principal, TENW

SUBJECT: Kelkari Phase 2/3 – Limited Scope Traffic Impact Analysis
TENW Project No. 3435

This memorandum summarizes the results of a limited scope traffic impact analysis requested by the City of Issaquah in support of a minor modification to the remaining entitled buildout of the Kelkari Residential development along Sunrise Place SW in Issaquah, WA. Given the entitled nature of the property and the underlying Issaquah/Kelkari EIS that included a transportation impact analysis, the following elements are included in this limited scope review:

- Identification of the change in vehicle trip generation for SEPA addendum purposes to document why the Minor Modification would not result in any significant adverse traffic impacts from a reduction in up to 51 residential units within Phase 2/3 of Kelkari.
- Evaluation of multimodal operations at the proposed site access intersection for Phases 2/3 and along the proposed internal roadways, including entering and stopping sight distance at key intersections and along proposed internal roadways to ensure adequate safety levels are designed and implemented.
- Review and evaluation of internal pedestrian crossing treatments internal to Phase 2/3 and between the Phase 2/3 site and the remaining Kelkari development and public roadway system.
- Perform weekday PM peak hour traffic counts on Sunrise Place SW to review left turn lane warrants at existing and proposed site access roadway and others immediately north and south. Review turn lane warrants based on volume criteria and sight distance constraints.

Subsequent to this scoping direction additional discussion related to truck deliveries has also been included in this review.

Project Description

Kelkari is a residential community located in the Sunrise neighborhood of south Issaquah, near the intersection of Sunrise Place Southwest and Cabin Creek Lane SW. The Master Site Plan, Site Development Permit, and Binding Site Plan for Kelkari were approved in 1998. The development was approved to be comprised of 189 dwelling units in 9 buildings. Phase 1, with 63 dwelling units and the clubhouse, was completed in 1999. This report concerns the Phase 2 and Phase 3 project areas and will include a total of 75 townhouse style buildings.

As part of a Minor Amendment, no change in land use is proposed, as the development will continue to be a multifamily residential development. The modified project however, will include a variety of townhouse style buildings, with a total of 75 separate owner occupied units. A conceptual site plan is provided as **Attachment A**. Overall, a net decrease in the overall housing unit count would be constructed, totaling 138 housing units rather than 189 units (a reduction of 51 total homes).

As originally approved, site access would be provided via an existing (Cabin Creek Lane SW) and new private roadway onto Sunrise Place SW (currently built as a roadway stub with curb returns approximately 235 northwest of Cabin Creek Lane SW).

Project Trip Generation Analysis

Published trip rate equations compiled by the Institute of Transportation Engineers (ITE) *Trip Generation, 9th Edition, 2012*, were used to estimate daily, a.m. and p.m. peak hour traffic that would be generated by the proposed completion of Kelkari Phases 2/3 using Residential Townhome/Condominium style residential units (ITE Land Use Code 230). As provided in **Attachment B**, fitted curve equations were applied based upon the latest edition of the *Trip Generation Manual*, and a calculated effective rate of trips per unit was determined for comparison against trip generation rates used in the *Issaquah/Kelkari EIS, Appendix A, April 1996, page 2, Michael Birdsall & Associates*.

As shown in **Table 1**, the proposed minor amendment for Kelkari Phase 2/3 would generate approximately 500 daily, 27 a.m. (4 entering and 23 exiting), and 34 p.m. peak hour vehicular trips (22 entering and 12 exiting) with buildout of 75 housing units. This however, represents a net decrease of approximately 444 fewer daily, 40 fewer a.m. peak hour, and 49 fewer p.m. peak hour vehicular than those trip generation levels evaluated and mitigated as part of the Issaquah/Kelkari EIS and Binding Site Plan. Given the net decrease in site trip generation, no new traffic operational analysis of off-site impacts are required.

Table 1
Kelkari Phase 2/3 – Net Trip Generation Summary

Time Period	In	Out	Total
<i>Kelkari Phase 2/3 Trips Using Standard ITE Rates</i>			
Weekday AM Peak Hour	4	23	27
Weekday PM Peak Hour	22	12	34
Weekday Daily	250	250	500
<i>Net Change in Phase 2/3 Trips from Issaquah/Kelkari EIS</i>			
Weekday AM Peak Hour	-9	-31	-40
Weekday PM Peak Hour	-32	-17	-49
Weekday Daily	-222	-222	-444

Source: Trip Generation Manual, 9th Edition, ITE, 2012.

Sight Distance Evaluation

Field review of entering and stopping sight distance at existing and proposed private driveways onto Sunrise Place SW was conducted by TENW in January 2016. Given both the vertical and horizontal profile of Sunrise Place SW, stopping and entering sight distances between the existing Cabin Creek Lane SW (private) and the proposed private that would be approximately 235 northwest of Cabin Creek Lane SW was field estimated. Entering sight distance at Cabin Creek Lane SW onto Sunrise Place SW exceeds 500 feet to the south, but is constrained to approximately 205 feet to the north. Entering sight distance at the proposed new driveway (opposing Cabin Creek Lane SW on the west side of Sunrise Place SW) exceeds 500 feet to the north but is limited to approximately 225 feet to the south. Per City of Issaquah Street Standards, October 2010, Design, C. Intersection and Driveway Sight Distance Triangles, 4. Sight-Line Setback: Major Obstacles, Residential Driveways, the available entering sight distance triangle at either location exceeds the minimum 155 feet for a 25 mph design speed.

Internal intersections would be created along Cabin Creek Lane SW (private) at two different locations. Southbound sight distance at the southern driveway would be provided to Sunrise Place SW with approximately 110 feet, and to the north in excess of 200 feet. Southbound entering sight distance from the proposed northern interior driveway would also be limited to approximately 110 feet and in excess of 200 feet to the north. Although not specified within City code, these sight lines would meet minimum standards of residential driveways onto City streets of 100 feet¹.

Pedestrian Facilities and Safety

Attachment C provides an overview of existing and proposed sidewalks and interior crossing treatments within Kelkari Phase 2/3. Currently, there are no separated nonmotorized facilities within the Kelkari project, except sidewalks fronting parking areas to building entrances. There are however, raised 6-foot sidewalks built along Sunrise Place SW. As part of the project, raised sidewalks would be constructed between existing sidewalks along Sunrise Place SW to each development area, as well as internal sidewalks along interior drive aisles to serve individual housing units. Given traffic volumes along Sunrise Place SW and interior to the project are low no separated or marked crosswalk treatments are warranted.

Provision for raised sidewalks between the public sidewalk facilities and the project site development areas and building frontages provide adequate separation between on-site vehicle and nonmotorized circulation. Additional direct connections to existing trails are also accommodated by the proposed pedestrian circulation system.

To facilitate traffic flow in a safe manner, in addition to proposed stop sign control within the development noted in **Attachment C** a "centerline" strip along the interior northern driveway is recommended to properly align traffic exiting this portion of Phase 2 and direct vehicle maneuvering into this development zone simultaneously (i.e., concurrent turning movements).

¹ Per City of Issaquah Street Standards, October 2010, Design, C. Intersection and Driveway Sight Distance Triangles, 4. Sight-Line Setback: Major Obstacles, Residential Driveways, these minimum requirements shall apply to residential driveways except for a residential street with a sharp curve adjacent to the driveway the distance to the view point on the city street is one hundred feet (100').

Turn Lane Warrants

Left- and right-turn movements represent critical turning movements at unsignalized intersections, increasing the potential for intersection delay and safety issues. Turn lane guidelines were reviewed based upon the WSDOT Design Manual, Chapter 1310 – Intersections considering low posted speeds of 25 mph. Based upon figures Exhibit 1310-7a, Left-Turn Storage Guidelines: Two-Lane, Unsignalized, and Exhibit 1310-11 Right-Turn Lane Guidelines within the Design Manual, turn lane warrant criteria at full buildout of the *Kelkari Phase 2/3* was considered.

Attachment D provides a summary of the turn lane warrant review with traffic volumes taken at Sunrise Place SW. Based on existing traffic demands during the weekday p.m. peak hour, advancing conflicting volumes of only 55 vehicles were observed on Sunrise Place SW. As shown, separate left turning lanes would not be warranted at full buildout of the *Kelkari Phase 2/3* buildout given existing low volumes on Sunrise Place SW as well as low left turning volumes into either site driveway. Advancing and conflicting volumes on Sunrise Place SW would need to exceed approximately 400 vehicles per hour before turn lane warrants are considered further.

Delivery Vehicle Circulation

Typical truck deliveries (USPS, UPS, FedEx, etc.) all stop in designated areas or along interior drive aisles along public and private streets. Open parking stalls, or fire/emergency vehicle turn around areas will allow for a standard 3-point maneuver to exit the site once deliveries are completed. The Autoturn analysis conducted by TENW for on-site fire truck maneuvering (included in overall site development permit submittal), confirms that typical U-haul type moving trucks (WB-40 or less) can maneuver throughout the site and use proposed hammerhead turnaround facilities located within each development area that requires one. It is recommended, however, that the home owner's association (HOA) rules and regulations spell out scheduling, notification, hours of moving, etc. and areas where moving trucks are allowed to maneuver and dwell during move-in, move-out periods.

Conclusions

The proposed *Kelkari Phase 2/3* minor amendment was evaluated for changes in traffic demand from original entitlement and site design elements. Based upon the net reduction of approximately 51 housing units from entitle buildout, the trip generation comparison estimates a net decrease of approximately 444 fewer daily, 40 fewer a.m. peak hour, and 49 fewer p.m. peak hour vehicular than those trip generation levels evaluated and mitigated as part of the Issaquah/Kelkari EIS and Binding Site Plan. Given the net decrease in site trip generation, no new traffic operational analysis of off-site impacts are required.

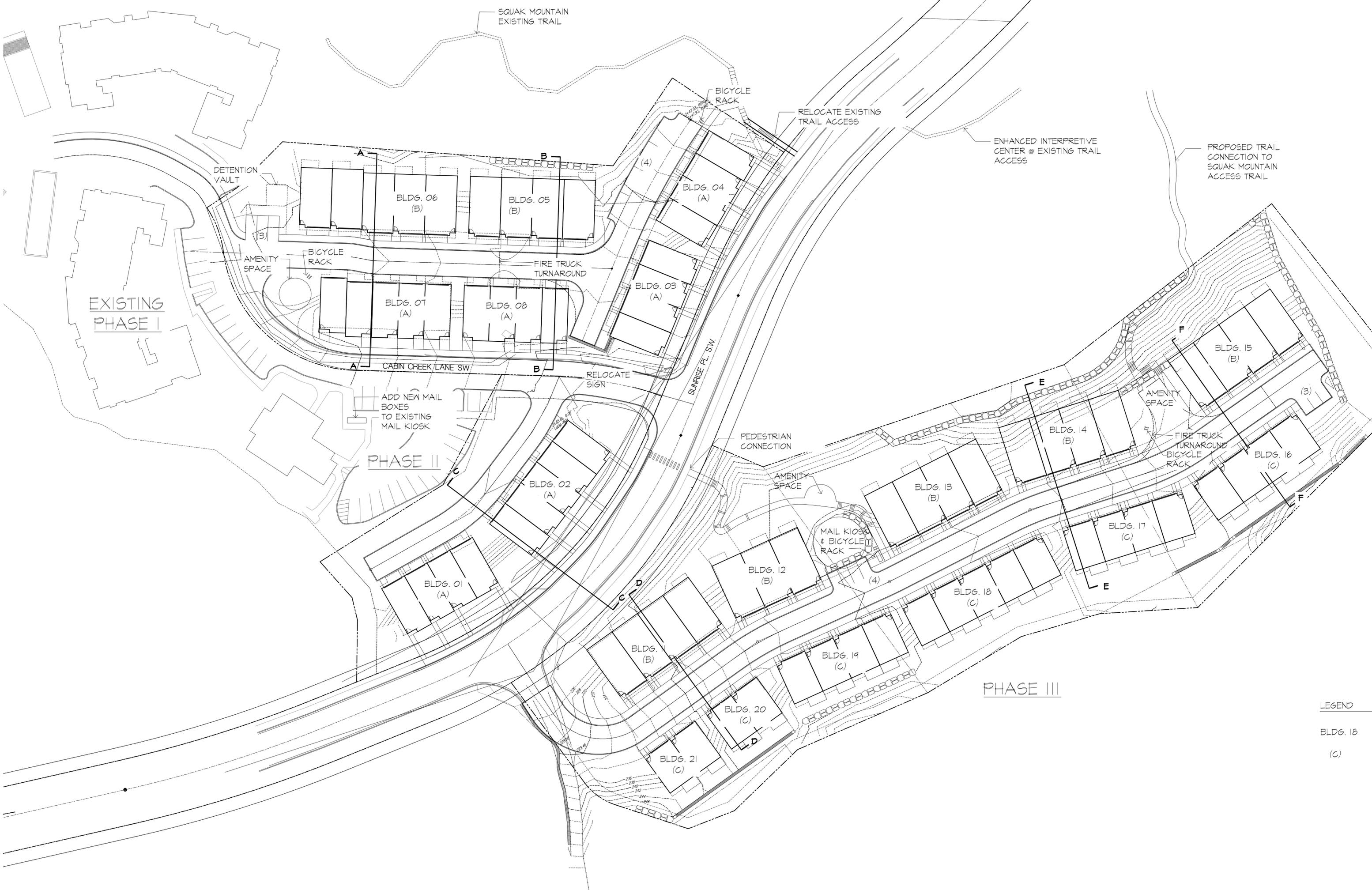
Adequate entering/stopping sight distance would be provided at the existing/proposed driveways onto Sunrise Place SW and within the internal site drive aisles. As part of the project, raised sidewalks would be constructed between existing sidewalks along Sunrise Place SW to each development area, as well as internal sidewalks along a majority of interior drive aisles to serve individual housing units. Given traffic volumes along Sunrise Place SW and interior to the project are low, no separated or marked crosswalk treatments are warranted. Provision for raised sidewalks between the public sidewalk facilities and the project site development areas and

building frontages provide adequate separation between on-site vehicle and nonmotorized circulation.

A review of separate left turning lanes concluded they would not be warranted at full buildout of the *Kelkari Phase 2/3* buildout given existing low volumes on Sunrise Place SW as well as low left turning volumes into either site driveway. Advancing and conflicting volumes on Sunrise Place SW would need to exceed approximately 400 vehicles per hour before turn lane warrants are considered further.

If you have any questions regarding the information presented in this memo, please call me at (206) 361-7333 x 101 or mikeread@tenw.com.

Attachment A
Conceptual Site Plan



LEGEND

BLDG. 18
(C)

Attachment B
Project Trip Generation Estimates

Kelkari Phase 2/3 - Comparative Trip Generation Analysis

AM Peak Hour

<u>Proposed Land Use</u> ¹		Effective AM Peak Rate	Unit		% Entering	% Exiting	Entering	Exiting	Total Trips
Residential Condominium/Townhouse	231	0.35	75	units	16%	84%	4	23	27
<i>Entitled Land Use (EIS Approved Trip Rates)</i>									
Low-Rise Apartments	221	0.534	-126	units	20%	80%	-13	-54	-67
Net Change							-9	-31	-40

PM Peak Hour

<u>Proposed Land Use</u> ¹		Effective PM Peak Rate	Unit		% Entering	% Exiting	Entering	Exiting	Total Trips
Residential Condominium/Townhouse	231	0.45	75	units	66%	34%	22	12	34
<i>Entitled Land Use (EIS Approved Trip Rates)</i>									
Low-Rise Apartments	221	0.659	-126	units	65%	35%	-54	-29	-83
Net Change							-32	-17	-49

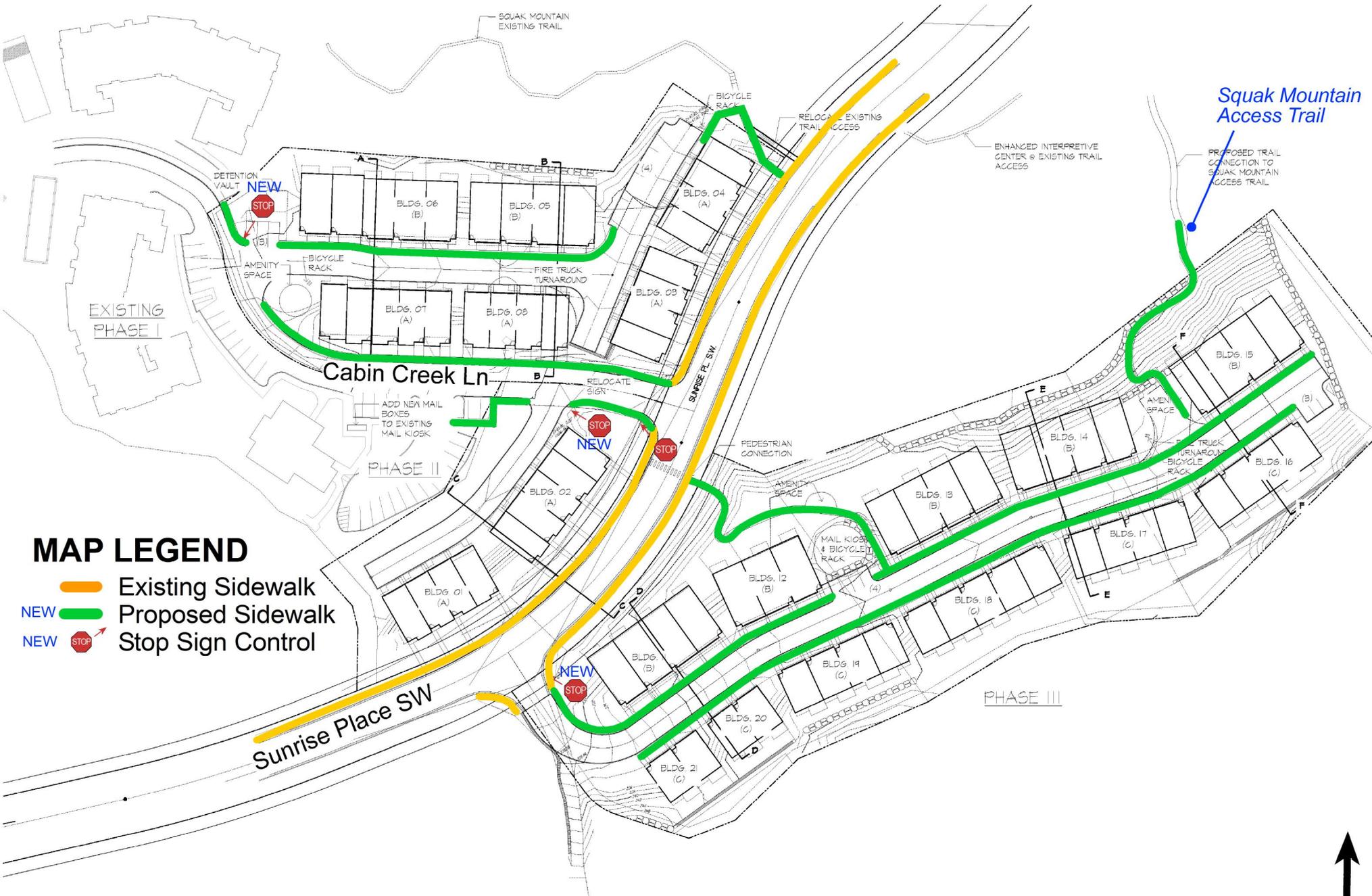
Weekday Daily

<u>Proposed Land Use</u> ¹		Effective PM Peak Rate	Unit		% Entering	% Exiting	Entering	Exiting	Total Trips
Residential Condominium/Townhouse	231	6.66	75	units	50%	50%	250	250	500
<i>Entitled Land Use (EIS Approved Trip Rates)</i>									
Low-Rise Apartments	221	7.500	-126	units	50%	50%	-472	-472	-944
Net Change							-222	-222	-444

Source: ITE Trip Generation Manual, 9th Edition, 2012 and Kelkari DEIS, April 1996.

Attachment C
Existing and Proposed Pedestrian Facilities

Attachment C - Kelkari Phase 2/3 Pedestrian Facilities



- MAP LEGEND**
-  Existing Sidewalk
 -  Proposed Sidewalk
 -  Stop Sign Control

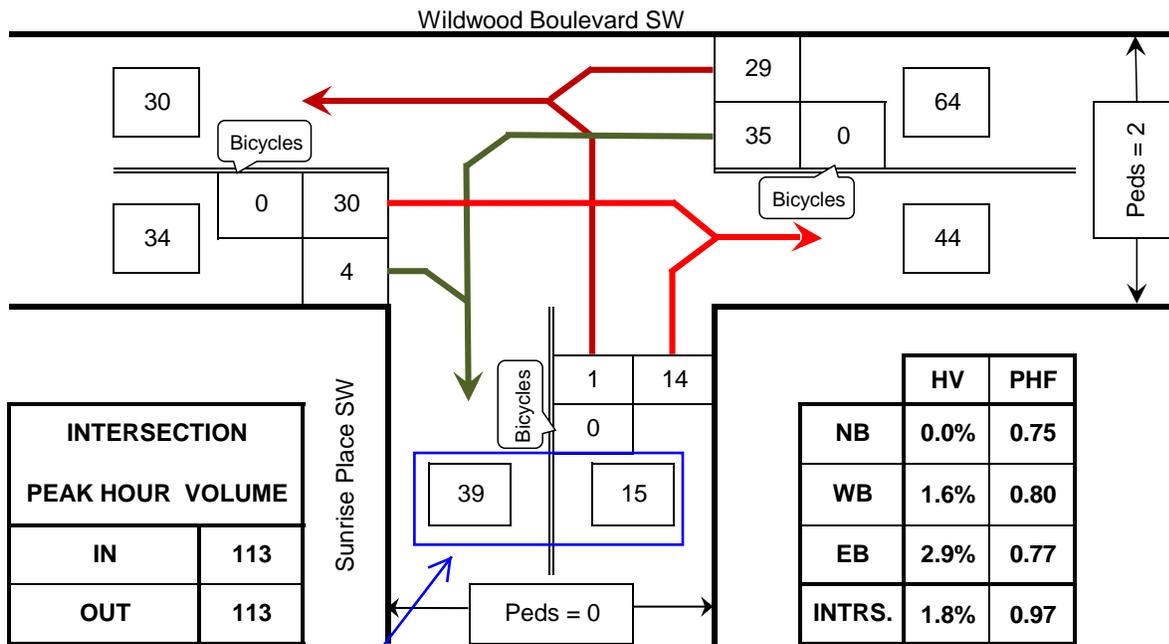
Squak Mountain Access Trail



Attachment D
Turn Lane Warrant Review

TURNING MOVEMENTS DIAGRAM

4:00 PM - 6:00 PM PEAK HOUR: 4:30 PM TO 5:30 PM



HV = Heavy Vehicles
PHF = Peak Hour Factor

Sunrise Place SW @ Wildwood Boulevard SW

Issaquah, WA

Existing PM Peak Hour Volumes on Sunrise Place

COUNTED BY: CN

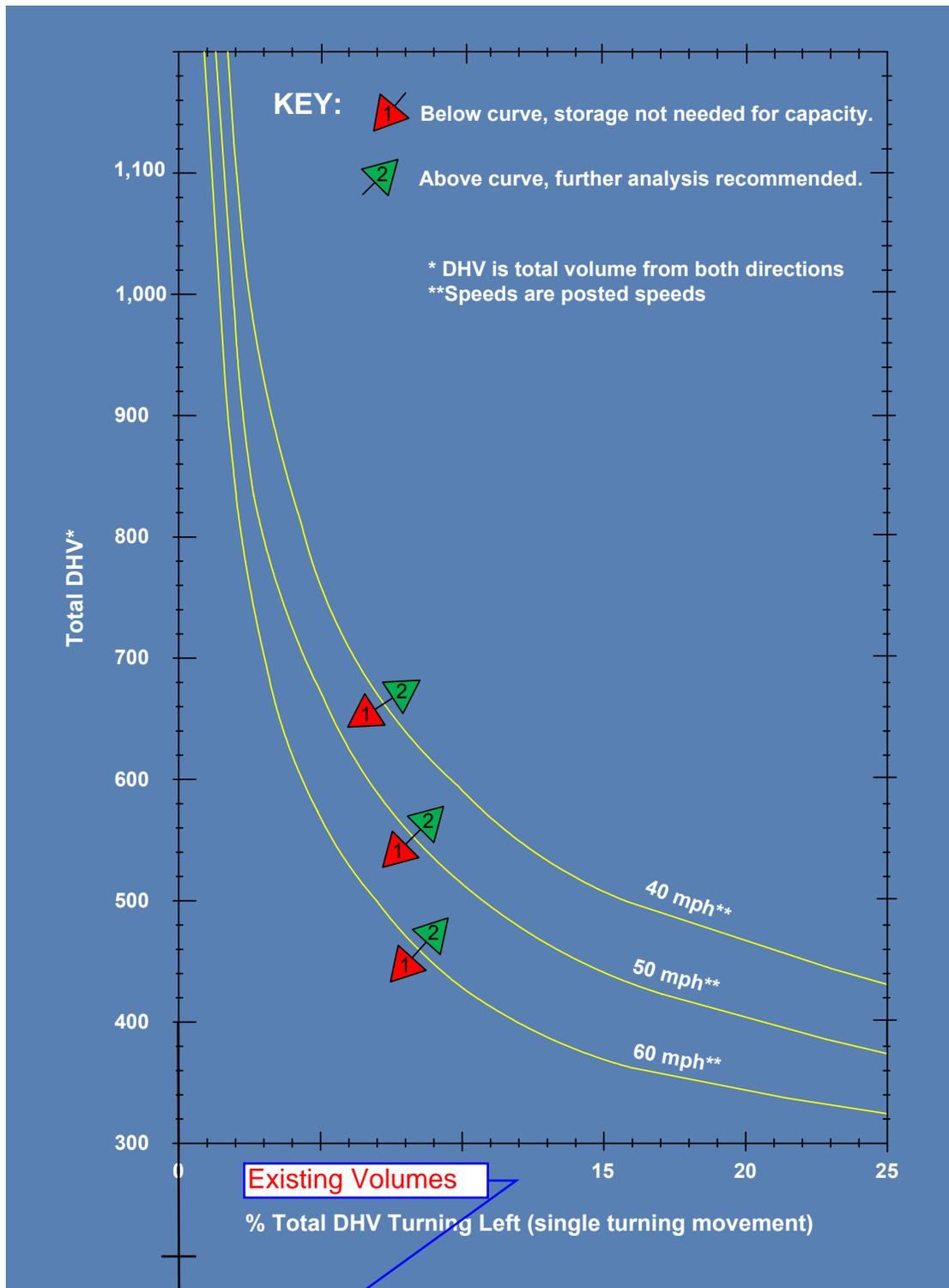
DATE OF COUNT: Thu. 1/14/16

REDUCED BY: CN

TIME OF COUNT: 4:00 PM - 6:00 PM

REDUCTION DATE: Thu. 1/14/16

WEATHER: Sunny



Left-Turn Storage Guidelines: Two-Lane, Unsignalized

Exhibit 1310-7a