

Grand Targhee Resort 2020-2021 Interim* Traffic Monitoring Report

* Prepared in advance of the first Development Plan in order to ensure data collection procedures and analysis are refined when reporting is required.

March 29, 2022

PREPARED FOR:



PREPARED BY:



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I. INTRODUCTION

In 2017 Grand Targhee applied to Teton County, Wyoming to amend its 2009 Master Plan. As a result, the *Grand Targhee Resort First Amended Master Plan - Planned Unit Development for Planned Resort* (Master Plan) was approved and published February 12, 2019. A Transportation Demand Management (TDM) Program is included within the Master Plan under Section 3.5 Transportation. The purpose of the TDM “is to establish a program whereby the rate of traffic growth generated by the implementation of the Resort Master Plan is reduced by an amount that ensures an adequate parking supply is available at the Resort, and the environmental impacts of vehicular traffic are reduced and minimized.”

The requirement in Section 3.5 states the following:

4. TDM Monitoring Reporting. TDM Monitoring Reporting: The Transportation Monitoring Program Director will prepare an annual report based upon the data. The report will include a discrete summary of the metrics achieved compared with the requirement, which shall include:

- a. Private Guest Transit Ridership*
- b. Employee Transit Ridership*
- c. Day Skier Transit Ridership*
- d. Annual Average Daily Traffic Counts at Teton Canyon Road and level of service equivalent.*
- e. The report shall also include an assessment of the success of the strategies, trends influencing the metrics, and strategy revisions as necessary.*

Refer to **Appendix A** for the full excerpt from the Master Plan Amendment regarding the Transportation element. This annual report addresses these requirements for the study period of **August 1, 2020 through July 31, 2021**. Grand Targhee Resort voluntarily elected to begin monitoring in 2019 and prepare this second annual report to ensure procedures are in place for the annual monitoring and to organize data collection and documentation. Annual Monitoring reports are not required by the Master Plan until the first development plan has been approved as per **Section 3.10. B Annual Monitoring Timing**. As of the reporting period covered in this report, no development plans have been submitted or approved.

II. ANNUAL TRAFFIC MONITORING PROGRAM

In accordance with the conditions of the Master Plan TDM, the following items are included within this report:

- a. Annual Average Daily Traffic Counts at Teton Canyon Road and level of service equivalent
- b. Private Guest Transit Ridership
- c. Employee Transit Ridership
- d. Day Skier Transit Ridership

The report also includes an assessment of the success of the strategies, trends influencing the metrics, and strategy revisions as necessary.

Traffic monitoring in accordance with the Master Plan requirements for Grand Targhee Resort began voluntarily in 2019/2020. This report documents the second year (2020/2021) of the formalized traffic

monitoring. As required by the TDM, the results of the reporting will be considered over a two-year period prior to making any adjustments to the strategies identified in the TDM to account for any anomalies that may occur from one year to another (i.e. snow conditions, economic conditions, etc.). However, this report, like 2019/2020, should be viewed as somewhat anecdotal due to the Coronavirus pandemic and the anomalies in visitation that have been experienced over the past two years.

III. METHODOLOGY

A. Previous Studies Referenced

Grand Targhee Resort Master Plan
Section Eight. Traffic Impact Study and Transportation Demand Management Program
January 2009, Jorgensen

The Traffic Impact Study and Transportation Demand Management Program section of the 2009 *Grand Targhee Resort Master Plan* identifies the potential transportation impacts that will result from the proposed resort expansion and explores measures to mitigate these impacts as required in the Teton County, Wyoming Land Development Regulations.

The Traffic Impact Study estimates the growth in traffic of the proposed resort expansion as the number of guests who could stay at the resort increases with additional onsite lodging facilities included in the Master Plan. Located at the terminus of Ski Hill Road, the traffic generated by the resort can be readily quantified, applied to Ski Hill Road, and measured for impacts. The traffic volumes were compared to the traffic estimations that served as the base criteria for the 2009 Ski Hill Road reconstruction to confirm that the traffic generated by the Grand Targhee Resort Master Plan is within the traffic volume ranges estimated by the FHWA for the design life of Ski Hill Road.

This study provides the methodology to analyze the Level of Service for the northern segment on East Alta Ski Hill Road, which is utilized in this report.

B. Data Collection

Grand Targhee Resort installed a permanent traffic counter on Ski Hill Road in the fall of 2019 near the resort entrance. The counter captures daily and hourly traffic counts during peak operations on Ski Hill Road east of the intersection of Teton Canyon Road and is operational year-round. This traffic mostly reflects vehicles entering and exiting the resort; this study area is referred to as East Alta Ski Hill Road in this report and Segment 4 in the 2009 Master Plan. Refer to Figure 1 for a map of the study area.

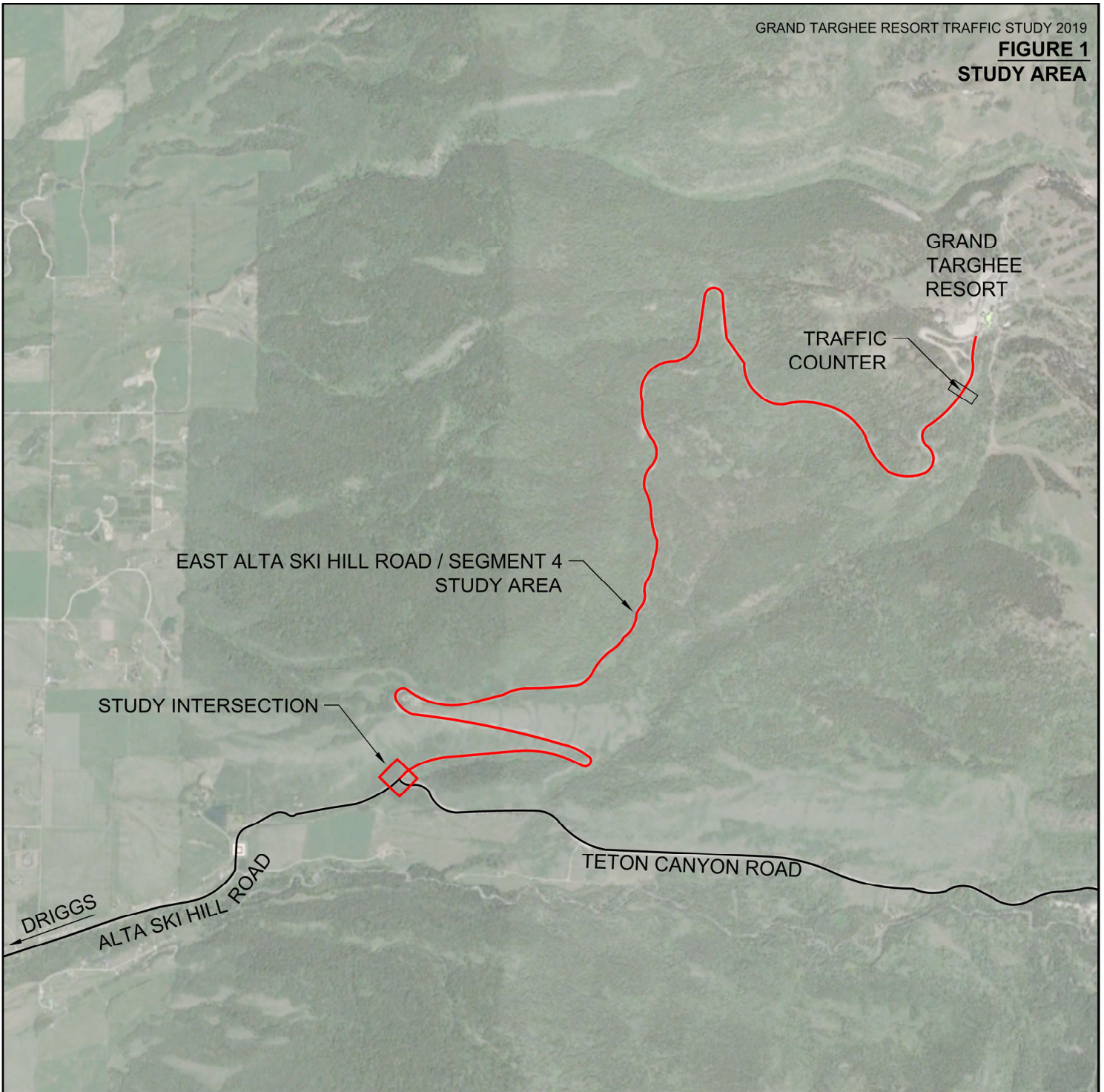
Data used for this study includes the following:

- **Daily Traffic Counts:** Traffic data from August 1, 2020 through July 31, 2021 was provided by Grand Targhee Resort. This data includes traffic data collected by the permanent traffic counter near the resort entrance, which includes 15-minute interval traffic for each day and specifies if traffic is entering or exiting Grand Targhee Resort. When data was extracted from the counter in July 2021 it was discovered that the counter only retains counts for a 90-day period, resulting in

a traffic counter data gap between 1/5/2021 and 4/3/2021. To supplement this 90-day gap, Grand Targhee Resort estimated the inbound cars for the day. These estimated values were based on total skier visits for the day in tandem with the estimated parking volumes, which was evaluated by the parking crew daily. This data was compared to the 2019 traffic volumes. The raw traffic counts are available in an excel format by request.

- **Transit Ridership:** Grand Targhee Resort provided transit ridership numbers for employees and day skiers between March 2020 and July 2021. Prior ridership data provided includes transit ridership numbers for employees and day skiers between June 2019 to February 2020.
- **Intersection Counts:** Jorgensen installed a temporary video camera to record traffic intersection movements at East Alta Ski Hill Road and Teton Canyon Road between Wednesday, September 1st and Sunday, September 5th.

FIGURE 1
STUDY AREA



SCALE: 1 INCH = 0.5 mile
THIS SCALE VALID ONLY FOR 8x11 PRINTS



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C. Segment Analysis of East Alta Ski Hill Road

The *Grand Targhee Resort Master Plan, Section Eight. Traffic Impact Study and Transportation Demand Management Program January 2009* was utilized in the methodology for the road segment Level of Service (LOS). The traffic data and forecasts developed by the FHWA for the reconstruction of Ski Hill Road were used as the basis of this analysis. The FHWA analysis was based upon average annual daily traffic volumes, and essentially analyzed Ski Hill Road as a low volume, rural highway. The East Alta Ski Hill Road segment contains relatively few intersections, the traffic volumes on these intersecting roads are minor. Transportation Research Board's *Highway Capacity Manual* has been used to estimate the level of service for Ski Hill Road.

LOS is a planning level analysis in the *Highway Capacity Manual, Third Edition*, developed by the Transportation Research Board (TRB). General definitions for LOS are shown below.

LOS A describes primarily free-flow operations at average travel speeds. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream.

LOS B represents reasonably unimpeded operations at average travel speeds.

LOS C represents stable operations; however, ability to maneuver may be more restricted than at LOS B. Lower average travel speeds exist.

LOS D borders on a range in which small increases in flow may cause substantial increases in delay and hence decreases in arterial speed.

LOS E is characterized by significant delays and average travel speeds of one-third the free-flow speed or less.

LOS F characterizes flow at extremely low speeds below one-third to one-fourth of the free-flow speed.

Chapter 8 Rural Highways of the *Highway Capacity Manual* prepared by the Transportation Research Board provides planning level ranges of Annual Average Daily Traffic (AADT) from which ranges of LOS can be identified for purposes of highway planning. The ranges are shown in Table 1. Maximum AADT's vs. Level of Service and Type of Terrain for Two-Lane Rural Highways (Highway Capacity Manual Table 8.9). This table was used in estimating LOS for critical road segments in Teton County in Chapter 8 – Transportation of the *Town of Jackson/Teton County Comprehensive Plan*.

The K-factor is normally calculated as $DHV = AADT \times K$, where DHV is the total two-way design hour volume, and K is estimated from the ratio of the 30th Hourly Volume (HV) to the AADT from a similar site. The 30th HV is the 30th highest hourly volume during the year and is often used as a design volume for rural highways.

Table 1. Maximum AADT's vs. Level of Service and Type of Terrain for Two-Lane Rural Highways (HCM Table 8.9)

K-FACTOR	LEVEL OF SERVICE				
	A	B	C	D	E
LEVEL TERRAIN					
0.10	2,400	4,800	7,900	13,500	22,900
0.11	2,200	4,400	7,200	12,200	20,800
0.12	2,000	4,000	6,600	11,200	19,000
0.13	1,900	3,700	6,100	10,400	17,600
0.14	1,700	3,400	5,700	9,600	16,300
0.15	1,600	3,200	5,300	9,000	15,200
ROLLING TERRAIN					
0.10	1,100	2,800	5,200	8,000	14,800
0.11	1,000	2,500	4,700	7,200	13,500
0.12	900	2,300	4,400	6,600	12,300
0.13	900	2,100	4,000	6,100	11,400
0.14	800	2,000	3,700	5,700	10,600
0.15	700	1,800	3,500	5,300	9,900
MOUNTAINOUS TERRAIN					
0.10	500	1,300	2,400	3,700	8,100
0.11	400	1,200	2,200	3,400	7,300
0.12	400	1,100	2,000	3,100	6,700
0.13	400	1,000	1,800	2,900	6,200
0.14	300	900	1,700	2,700	5,800
0.15	300	900	1,600	2,500	5,400

NOTE: All values rounded to the nearest 100 vpd. Assumed conditions include 60/40 directional split, 14 percent trucks, 4 percent RV's, no buses, and PHF values from Table 8-3. For level terrain, 20 percent no passing zones were assumed; for rolling terrain, 40 percent no passing zones; for mountainous terrain, 60 percent no passing zones.

D. Intersection Analysis of Teton Canyon Road and East Alta Ski Hill Road

Section 3.5 Transportation A. Transportation Demand Management B. Annual Daily Traffic of the TDM requires that an observational traffic movement study shall be conducted twice annually east of the intersection of Teton Canyon Road and East Alta Ski Hill Road during one calendar week in February and August to observe and document actual vehicle operations and peak hour traffic counts for both weekday and weekend timeframes. Upon collection of the traffic movements and determination of the peak hours, the LOS for the intersection is determined using methods from the Highway Capacity Manual.

Highway Capacity Analysis

Analysis is completed using process and analysis methods from the *Highway Capacity Manual* (TRB, 2010) and associated Highway Capacity Software (HCS7). This analysis identifies the Level of Service (LOS) of users based on assumed traffic levels and basic traffic principles. LOS is defined by the HCM2010 as a qualitative measure used to relate the quality of traffic service based on roadway capacity and vehicle delay.

Stop Controlled Intersections

For Two-Way-Stop-Controlled Intersections (TWSC), also applicable for One-Way-Stop-Controlled Intersections (OWSC), the LOS is determined by the computed or measured control delay. Control delay can be measured for each minor-street movement (or shared movement) as well as major-street left turning vehicles. Through vehicles are assumed to experience 'zero' delay. As such, a LOS can be approximated or calculated for each minor movement, each minor approach, and left turning major approach vehicles. LOS is not computed as an intersection delay due to fact that through moving traffic is

not subject to intersection delay. Reporting such a control delay or LOS would mask important quality or traffic service issues on minor approaches. Analysis is completed per Chapter 19 of HCM2010. The LOS thresholds based on control delay for TWSC and OWSC are presented on Table 2.

Table 2. Stop Controlled Intersection, LOS Criteria

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio	
	≤1.0	>1.0
≤10	A	F
>10-15	B	F
>15-25	C	F
>25-35	D	F
>35-50	E	F
>50	F	F

Note: For approach-based and intersection wide assessments, LOS is defined solely by control delay

E. Employee and Day Skier Transit Ridership Review

The TDM requires that the Resort continue to encourage and facilitate a transit system for employees, guests and day skiers. The Teton Valley Bus Service is a transportation service which runs daily and is used by employee and day skiers. Refer to **Appendix B** for the Teton Valley Bus Service Schedule.

The TDM specifies that the existing employee and day guest transit shuttle system will continue to operate and will be expanded to carry a minimum of 70% of total Employees at One Time (“EAOT”) at build-out of the base area development. Until such time as a public partner becomes available, the Resort will be responsible for providing the necessary equipment and labor to operate the system at the levels listed in Table 3. Phase One has not yet been initiated as no Development Plan applications were submitted prior to or during this reports study period.

Table 3. Employee Transit Shuttle System % Goals

Employees Transit Shuttle System	
Phase	% Employee using transit
Phase One	33
Phase Two	35
Phase Three	35
Phase Four	70

* Calculated using Employees At One Time (EAOT).
 No reduction for employees living on-site.
 Assumes employees living on-site can use transit to travel to Driggs, Idaho.

The Resort is also required to provide a level of transit service for day skiers as the Master Plan is implemented. A target of 30% of the day skiers will utilize transit at buildout of the base area

development. This will be accommodated by a combination of transit service provided by the Resort, public providers, private providers, and/or lodging facilities.

Employee and day skier counts were collected by shuttle drivers daily and submitted to Grand Targhee Resort. Drivers differentiated between employees and day skiers by issuing employee passes that can be readily discernable and counted by the drivers. Counts were accomplished by providing the shuttles with counters that allow recording by a minimum of two different rider types. All transit provided from private shuttle services were required to record ridership counts. These monthly count summaries will provide daily totals. Providers were instructed on the specific protocol for completing rider summaries.

IV. ANALYSIS

A. East Alta Ski Hill Road

Traffic Summary

Traffic data from August 1, 2020 through July 31, 2021 was provided by Grand Targhee Resort. Below shows the dates traffic was provided by the counter and traffic estimated by staff.

- **August 1, 2020 – January 4, 2021:** Data provided by the permanent traffic counter (traffic volumes provided in 15-min intervals)
- **January 5, 2021 – April 3, 2021:** Estimates from Grand Targhee Resort (traffic volumes provided as daily estimates)
- **April 4, 2021 – July 31, 2021:** Data provided by the traffic counter (traffic volumes provided in 15-min intervals)

Refer to Figure 2 for the average daily traffic volumes between 8/1/2020 and 7/31/2021. The traffic trend shows peak traffic during the winter months, average traffic during the summer months, and low traffic during the spring and fall. Annual average daily traffic (AADT) was 1,056 vpd, average weekday daily traffic (AAWT) was 972 vpd, and average weekend daily traffic (AAWET) was 1,261 vpd.

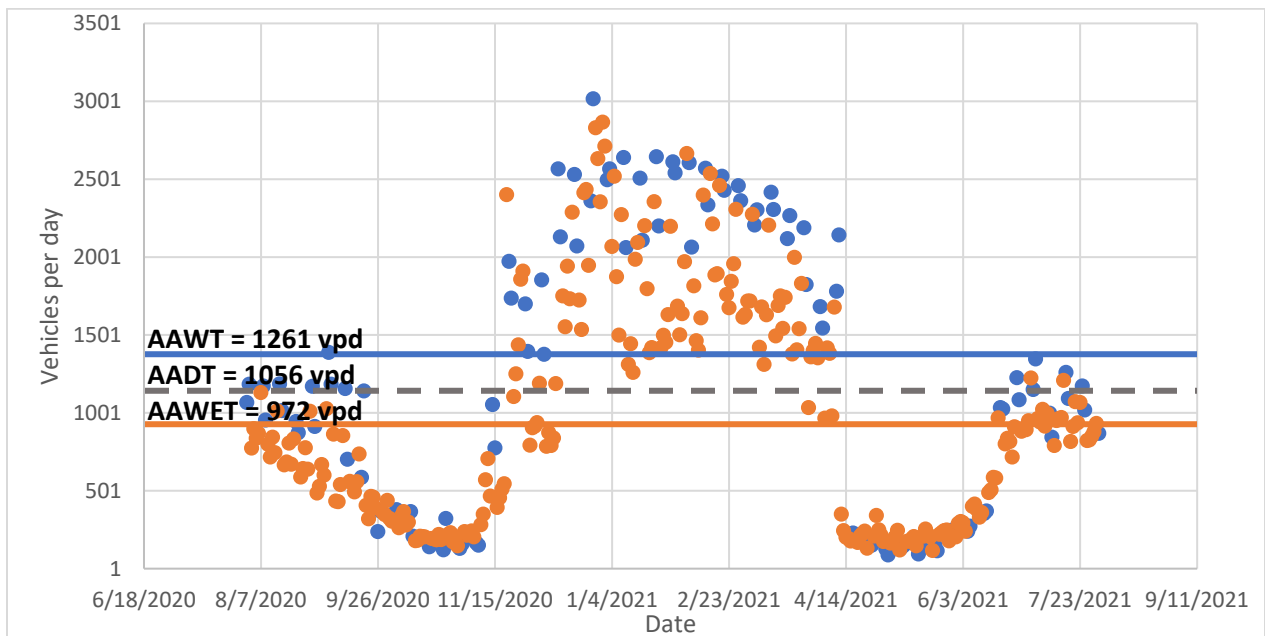


Figure 2. ADT for 8/1/2020 - 7/31/2021

The average morning peak hour took place between 8:00-9:00 AM and was calculated to be 65 vph (8/1/2020-7/31/2021, excluding 1/5/2021-4/3/2021). The average afternoon peak hour took place

between 3:00 – 4:00 PM and was calculated to be 73 vph (for 8/1/2020-7/31/2021, excluding 1/5-4/3). Because 1/5 - 4/3 traffic data provided was daily and not hourly, the hourly traffic within these months was not available for the peak hour calculations. Had this data been available, the average peak hour traffic is expected to have been higher based upon skier counts and parking lot observations. Jorgensen has coordinated with Grand Targhee Resort to ensure the counts are downloaded at regular intervals for 2022 to ensure no data gaps occur moving forward. Of the data provided, December experienced the highest average peak hourly traffic with AM peak of 282 vph and PM peak of 219 vph.

Level of Service

The LOS calculation is based on the annual ADT (AADT), as required by the TDM program and utilized in the HCM method on Table 1. The AADT between 8/1/2020 and 7/31/2021 was 1056 vpd and the 30th Peak Hour Volume was 429 vph. The peak hourly traffic most likely took place during the ski season, of which the majority of data provided was only ADT and not hourly traffic. Since the hourly traffic was not available, the December peak hours were extrapolated to estimate the 30th peak hour for the year, estimated to have been 429 vph. From the AADT and estimated 30th peak hour, a K-factor of 0.40 was calculated.

Table 1. *Maximum AADT's vs. Level of Service and Type of Terrain for Two-Lane Rural Highways*, does not include the LOS for a K-factor of 0.40 and with linear regression, this K-factor is outside of the applicable range. The methodology chosen to determine the LOS is typically used for planning purposes of rural two-way roads. One explanation for this calculated K-factor may be that the road experiences seasonal fluctuations based on the use. Based on the AADT and K-factor, the road is estimated to have operated at a LOS B.

2019-2020 and 2020-2021 Result Comparison

Refer to Table 4 for a comparison of the 2019-2020 and 2020-2021 traffic data. Because the previous study had a limited data range, with usable data from 1/8/2020 through 3/31/2020, and the current study includes a full year's worth of data, the ADT, weekend ADT and weekday ADT traffic data cannot be compared since the time periods averaged are not equal. The 2019/2020 average ADT volumes and peak hours are higher since they only contain the peak traffic volumes. In addition, the Resort closed on 3/16/2020 due to the Coronavirus pandemic, impacting the ADT. The 2020/2021 average AM and PM peak hours include the average for 8/1/2020-7/31/2021 and exclude 1/5/2021-4/3/2021 since hourly data was not available for this time period; the average AM and PM peak hour for the year is expected to be higher. Now that counter issues have been discovered and resolved, future studies will provide an annual comparison.

Table 4. 2019-2020 and 2020-2021 Traffic Comparison

Year	Traffic Data	ADT for Given Time Period	Weekend ADT	Weekday ADT	Average AM Peak	Average PM Peak Hour
2019-2020	1/8/2020 - 3/31/2020 (partial ski season)	1,164 vpd	2,237 vpd	1,393 vpd	228 vpd (8-9AM)	171 vpd (4-5PM)
2020-2021	8/1/2020 – 7/31/2021 (full year)	1,056 vpd	1,261 vpd	972 vpd	65 vpd (8-9 AM)*	73 vpd (3-4PM)*

*Includes data 8/1/2020-7/31/2021 and excludes 1/5/2021-4/3/2021

2020-2021 Traffic Calibration

As Ski Hill Road is a dead-end road, inbound and outbound traffic should be approximately equal; however, this is not the case with the raw data. Because the counter is located on a slight bend to the left, as one is entering the Resort, if there’s no one coming and the visibility of oncoming traffic is unimpeded at this point, the tendency is for vehicles to drift across the centerline. As a result, this vehicle is registered both as an inbound and an outbound trip. For true outbound traffic, it is not as likely to swing wide at that location and trigger both directions, but it is possible. The raw data from the counter was calibrated prior to analysis to account for this operational condition. On average there showed to be an approximate 16% more outbound traffic than inbound traffic. To calibrate and remain conservative, should the raw outbound daily traffic be less than the inbound it was not adjusted, should the daily traffic be greater than the inbound it was decreased by 16%, but not to less than the inbound traffic. The calibration was not applied to the data provided by GTR for data between 1/5/2021 and 4/3/2021.

B. Teton Canyon Road and East Alta Ski Hill Road Intersection Level of Service

Observational Data Level of Service

Video observation took place at Teton County Road and East Alta Ski Hill Road between Wednesday, September 1st and Sunday, September 5th. A full week of observation was not collected because of operational issues during the recording. In future observations, the camera will be checked throughout the study to ensure a full week’s worth of observation is recorded. The video footage was observed, and the hourly peak traffic data was utilized to determine the level of service. While the Master Plan requires this to be completed in August and February, this was not completed for this study due to operational and visitation anomalies. Now that Grand Targhee operations and visitation has returned to pre-Covid conditions, this data will be collected and analyzed in February and August 2022.

The weekday traffic analysis included a review of daily traffic from Wednesday, September 1st through Friday, September 3rd. For each day analyzed, the weekday peak hour took place an hour within the time frame of 4:30 PM to 6:30 PM. The peak hours for each day were averaged and the traffic movements provided on Figure 3 were observed. The weekend traffic analysis included a review of traffic on September 4th and 5th. For each day analyzed, the weekend peak hour took place an hour within the time frame of 4:30 PM to 6:00 PM.

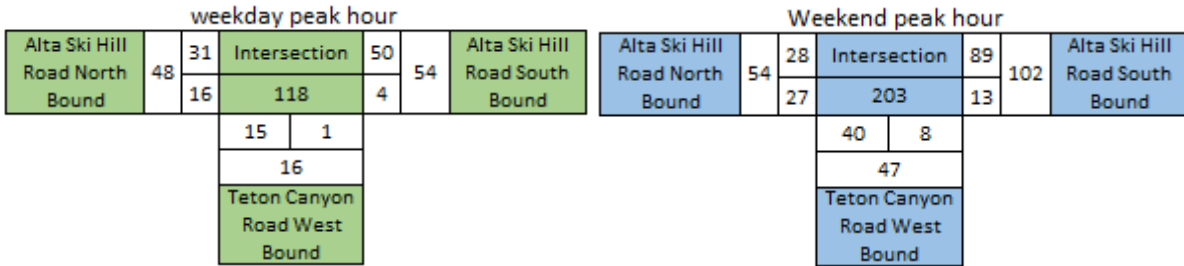


Figure 3. Weekend and Weekday Peak Hour Intersection Movements

The LOS was determined for traffic entering East Alta Ski Hill Road from Teton Canyon Road, for southbound traffic making left-hand turning movements onto Teton Canyon Road, and for the overall

intersection. The analysis concludes that the intersection and turning movements operated at an LOS A during the weekday and weekend peak hours. Refer to **Appendix C** for the HCS analysis.

C. Transit Ridership Program Review

The available number of employees, day skier and guests transit ridership numbers between January 2019 through July 2021 are provided in Table 5. This table includes the month totals and the daily averages.

Prior to November 2020, Grand Targhee Resort provided the total monthly employee ridership values. Based on a conversation with the Grand Targhee Director of Operations, an average of 100 employees-per-day were assumed to be working at the resort between April and November and 300 employees-per-day were assumed to be working at the resort between December and March; this information was utilized to determine the average percent employee transit round trips per month, as provided in the Table 5. Following November 2020, the average number of employees on site per month and number of employees utilizing transit per day was provided to calculate the percent employee transit utilization. The average employee transit ridership for the 2019-2020 and 2020-2021 ski seasons (November-March) was 19% and 18% respectively.

The total number of day skiers was not provided for the 2019-2020 year to calculate an accurate percentage day skier transit ridership for this period. The number of total day skiers and day skiers utilizing transit was provided for the 2020-2021 ski season to better estimate the percent day skier transit ridership utilization. Based on the number of ski visitors per day, the average day skier transit ridership for the 2021-2021 ski season was approximately 3% for the whole ski season, with March 2021 being the highest at 4%. Transit ridership for employees, guests, and day skiers could be higher on busy weekend days when parking availability may be limited. Grand Targhee uses social media and their website to inform the public about parking availability and encourages use of the Teton Valley Bus.

The number of overnight resort guests who utilized transit to and from the airport is provided on Table 5. Because the total number of overnight resort guests was not available, percent of guests utilizing transit was not calculated.

Table 5. Transit Ridership for 2019 - July 2021

Year & Month		Total		Employee			Day Skier		Guest	
		Round Trips Per Month	Average Number Round Trips/Day	Round Trips / Month	Average Round Trips /Day	Average % Employee Round Trips	Round Trips Per Month	Average Round Trips Per Day	Round Trips Per Month	Average Round Trips Per Day
2019	January	3,335	108	2,638	85	28%	479	31	219	7
	February	3,226	111	2,270	78	26%	573	40	383	13
	March	2,956	95	2,080	67	22%	440	28	437	14
	April	763	25	673	22	22%	72	5	18	1
	May	-	-	-	-	-	-	-	-	-
	June	486	16	453	15	15%	14	1	19	1
	July	972	31	794	26	26%	59	4	120	4
	August	881	28	745	24	24%	0	0	136	4
	September	407	14	383	13	13%	12	1	12	0
	October	-	-	-	-	-	-	-	-	-
	November**	294	10	243	8	8%	40	3	12	0
December	3,674	119	2,611	84	28%	906	58	158	5	
2020	January	4,547	147	2,592	84	28%	1,729	112	226	7
	February	3,495	121	2,010	69	23%	1,243	86	243	8
	March	1,509	49	810	26	9%	493	16	207	8
	April	0	0	0	0	0%	0	0	0	7
	May	0	0	0	0	0%	0	0	0	0
	June	107	4	82	5	5%	9	0	17	0
	July	440	14	317	20	20%	107	3	16	1
	August	321	10	219	14	14%	78	3	24	1
	September	185	6	147	10	10%	30	1	8	1
	October	0	0	0	0	0%	0	0	0	0
	November	566	19	377	25	18%	171	6	18	0
	December	2,557	82	1,277	82	20%	1,112	36	169	1
2021	January	3,175	102	1,249	81	20%	1,704	55	223	5
	February	2,321	83	604	22	11%	1,455	52	263	7
	March	3,442	111	1,196	39	20%	1,998	64	249	9
	April	1,102	37	472	16	-	604	20	26	8
	May	0	0	0	0	-	0	0	0	1
	June	169	6	91	3	-	57	2	154	0
	July	490	16	227	7	-	206	7	58	1

**Targhee Indicated reported transit numbers may include error for this month.

Refer to Figure 4 for an annual utilization breakdown of the total transit ridership between employees, day skiers and guests. Because of the Covid-19 pandemic, these values are difficult to trend and compare. In 2020 the Resort closed early in March, in the winter months of 2020/2021 Covid protocols limited ridership, and in 2020/2021 employee ridership decreased as a result to Covid while public ridership increased because of limited parking.

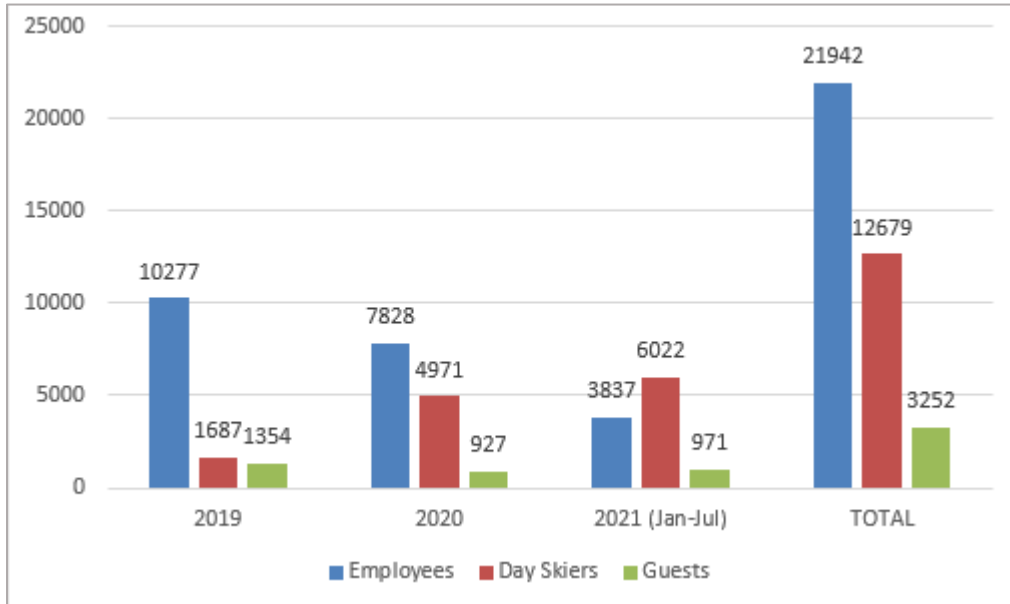


Figure 4. Transit Ridership Utilization Comparison Between Employees, Day Skiers and Guests 2019-2021

V. CONCLUSIONS AND TRAFFIC MONITORING ADJUSTMENTS

The results of this 2020-2021 Transportation Demand Management Program interim traffic study conclude the following:

- The intersection of Teton Canyon Road and East Alta Ski Hill Road operated at a LOS A in September 2021.
- Based on traffic data collected between 8/1/2020 and 7/31/2021, **the portion of East Alta Ski Hill Road, east of Teton Canyon Road is estimated to have operated at a year-round average of a LOS B.**
- The average employee ridership during the 2020-2021 ski season was 18%, while the 2019-2020 ski season experienced 19%. Based on the number of ski visitors per day, the average day skier ridership for the 2021-2021 ski season was approximately 2.5% during the ski season, with March at 4%.

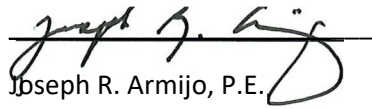
This interim report summarizes the traffic operations for the study period of August 1, 2020 to July 31, 2021 and is the second report prepared as Grand Targhee moves toward initiating Phase One of the Master Plan Amendment. Moving forward, Jorgensen recommends the following adjustments to ensure complete and consistent data collection:

- To improve employee and day skier transit ridership, it is recommended to continue to encourage staff and guests to take advantage of the program. The Resort may want to review the transit schedule and transit fees. In the future, the Resort will need to provide skier values to determine the percent of skiers using the transit system.
- The Resort will formally identify the Transportation Monitoring Program Director and provide that person with necessary training for administering the TDM program, training staff on program requirements, ensuring data is being collected properly, maintaining the data in an organized format, and assisting Jorgensen in preparing the annual report to Teton County. Jorgensen and Grand Targhee are in the process of coordinating this assignment.
- Jorgensen will evaluate and research additional methods to calculate the LOS for East Alta Ski Hill Road. For the 2022/2023 year, traffic will be observed for a full week in February and August at the East Alta Ski Hill Road and Teton Canyon Road.

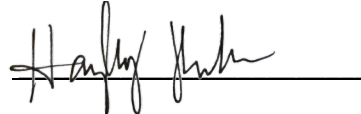
Jorgensen is in the process of coordinating these recommendations with Grand Targhee.

VI. CERTIFICATION

I hereby certify that this Traffic Monitoring Report was prepared by an engineer under my direct responsible charge, and that both the engineer and I have experience and training in the field of traffic and transportation engineering and that I am a registered professional engineer in the State of Wyoming.



Joseph R. Armijo, P.E.
Wyoming P.E. 8309



Hayley Ryckman Ruland, P.E.
Wyoming P.E. 16117



VII. APPENDIX

Appendix A. Master Plan Amendment, Section 3.5 Transportation

Appendix B. Grand Targhee Resort Shuttle Schedule

Appendix C. East Alta Ski Hill Road and Teton Canyon Road HCS Analysis

Appendix A

Master Plan Amendment
Section 3.5 Transportation



3.5 Transportation

A. Transportation Demand Management

The Traffic Impact Study confirms that Ski Hill Road has adequate carrying capacity to handle the increased traffic volumes that are anticipated at Resort build-out. Grand Targhee Resort will implement this Transportation Demand Management Program ("TDM") in accordance with the Master Plan.

The purpose of the TDM is to establish a program whereby the rate of traffic growth generated by the implementation of the Resort Master Plan is reduced by an amount that ensures an adequate parking supply is available at the Resort, and the environmental impacts of vehicular traffic are reduced and minimized.

This TDM is intended to present a menu of options and strategies that can be implemented to manage the rate of traffic growth should operational capacity of Ski Hill Road fall below acceptable levels. This TDM will be monitored and shall be subject to change should the measures not be met. In addition, as regional transportation planning efforts are furthered in Teton Valley, the Resort will continue to be an active participant in these efforts.

1. **Traffic Reduction.** The primary strategy involves reducing traffic by increasing the existing employee transit shuttle system, followed by further encouraging private transit providers, carpooling, and evolving the employee transit system to accommodate day visitors. The increases in transit ridership and carpooling will be strongly linked to the development of park and ride facilities and/or bus stops strategically located in Teton Valley, Idaho. This strategy for TDM includes:
 - a. **Expansion of Lodging Facilities and Commercial Uses.** The expansion of the Resort will include an increase in lodging and commercial facilities that will reduce the need for visitors and guests to leave the Resort for basic services.
 - b. **Remote Resort Destination.** The distance from Grand Targhee Resort to Driggs, Idaho combined with the mountainous roadway geometry will discourage visitors and guests from making frequent trips.
 - c. **Participate in Regional Transportation Planning Efforts.** Grand Targhee Resort will continue to be an active participant in regional transportation planning efforts, including sharing data collected as part of the Traffic Impact Study and subsequent TDM monitoring efforts.
 - d. **Implementation of Strategies.** Several strategies are identified in this section to minimize the rate of traffic growth on Ski Hill Road, and integrate the TDM with future regional transportation planning efforts. These strategies can be refined and/or altered based on results of the annual monitoring program, and the results of regional transportation planning efforts.
 - e. **Formation of a Business and Property Owner's Association.** An association of property and business owners will be formed. All property and business owners will be required to join in the association and participate in the TDM Strategies identified herein.
2. **Public Transit Partner.** The Resort will facilitate a transit system to serve its employees and will provide service to day skiers. Should a viable public partner become available, Grand Targhee Resort will proactively seek a partnered relationship.

3. **Employee Transit Shuttle System.** The existing employee transit shuttle system will continue to operate and will be expanded to carry a minimum of 70% of total Employees At One Time (“EAOT”) at build-out of the Resort. Until such time as a public partner becomes available, the Resort will be responsible for providing the necessary equipment and labor to operate the system at the levels listed in Table 3.5.A.1:

Phase	% Employee using transit
Phase One	33
Phase Two	35
Phase Three	35
Phase Four	70

* Calculated using Employees At One Time (EAOT). No reduction for employees living on-site. Assumes employees living on-site can use transit to travel to Driggs, Idaho.

4. **Day Skier Transit Shuttle System.** The Resort will provide a level of transit service for day skiers as the Master Plan is implemented. A target of 30% of the day skiers will utilize transit at Resort buildout. This will be accommodated by a combination of transit service provided by the Resort, public providers, private providers, and/or lodging facilities.
5. **Park and Ride/Bus Stop Facilities.** Grand Targhee Resort will participate in locating, planning, and designing facilities that will facilitate winter and summer day visitors carpooling and riding transit. Grand Targhee Resort will participate with stakeholders such as the Cities of Driggs, Victor, and Teton, Teton County, Idaho, the Idaho Transportation Department, and the Teton Valley community, and/or other stakeholders to identify a viable location and implement the facilities.
6. **Carpool Promotion.** Grand Targhee Resort will actively promote carpooling through promotional and marketing materials.
7. **Signage Program.** A seasonal signage program to assist in communication of the status of parking lot capacity and the awareness of the park and ride facility services will be located in the Driggs, Idaho area.
8. **Summer Transit Service.** The Resort will operate a summer employee shuttle in the morning and the afternoon to serve up to 40 employees per day. During events, Grand Targhee Resort will operate a shuttle from a designated park and ride on an hourly basis from 9 a.m. until 6 p.m. During the summer, a transit ridership of 20% of daily visitors will be targeted. During special events during the summer, a transit ridership of 25% of daily event attendees will be targeted.
9. **Private Lodging Shuttle.** Private lodging facilities will provide shuttle service for lodged guests taking day trips to Teton Valley, Idaho.
10. **Terms.** Grand Targhee Resort, LLC, as operators of the Resort, and its successors and assigns, shall be subject to the terms of the Transportation Demand Management Program in the Master Plan.

B. Annual Daily Traffic

An observational traffic movement study shall be conducted twice annually during one calendar week in February and August to observe and document actual vehicle operations and peak hour traffic counts for both weekday and weekend timeframes. The study shall be conducted by an independent, qualified engineering firm with staff experienced in transportation/traffic engineering.

If during the reporting time a Level of Service (LOS) of D (as defined by the Transportation Research Board Highway Capacity Manual) is reached on the roadway segment between Teton Canyon Road and Grand Targhee (excluding special events) adjustments will be made to the Transportation Demand Management Plan to improve the LOS, which shall be approved by the Teton County Engineer.

C. Transportation Monitoring Program

The strategies included in the TDM will be monitored to ensure the goals and objectives of the program are being met. The data that is collected throughout the ski season will be reported to the BCC in the annual monitoring report described in Section 3.10. of the Master Plan. The report will keep a running tabulation of data from previous years so that comparisons can be made and trends identified.

1. **Two-Year Consideration.** The results of the reporting will be considered over a two-year period prior to making any adjustments to the strategies identified in the TDM to account for any anomalies that may occur from one year to another (i.e. snow conditions, economic conditions, etc.).
2. **Transportation Monitoring Program Director.** An administrative staff person will be designated as the Transportation Monitoring Program Director. This person will be responsible for administering the program, training staff on reporting requirements, ensuring data is being collected properly, maintaining the data in an organized format, and preparing the annual report to Teton County.
3. **Data Gathering.** The TDM program will be monitored to ensure that the goal of reducing the rate of traffic growth is being effectively achieved. Grand Targhee Resort will monitor the TDM program during each summer and winter season. The following elements will be included in the monitoring program:
 - a. **Annual Training.** An annual training session will be provided for employees involved with the monitoring program. Included in the training will be: providing data collection sheets, instruction on how data sheets are to be filled out, and the required submittal process. The instructions will include how the data sheets are to be entered and stored. Training will be provided to the following employees:
 - I. Parking attendants.
 - II. Bus and shuttle drivers.
 - III. Front desk staff (check-in/check-out staff)
 - b. **Traffic Counts.** A traffic counter shall be installed with the capability to capture daily and hourly traffic counts during peak operations on Ski Hill Road east of the intersection of Teton Canyon Road. The traffic counter shall be in place and operational year-round. Counts shall also be obtained from the Idaho Transportation Department (ITD) counter on Ski Hill Road near Driggs, Idaho.
 - c. **Employee and Day Skier Transit Shuttle.** Counts will be collected by shuttle drivers daily, and turned into Grand Targhee Resort. Drivers will differentiate between employees and day skiers. This will be accomplished by issuing employee passes that can be readily discernable and counted by the drivers. Counts will be accomplished by providing the shuttles with counters that allow recording by a minimum of two different rider types.
 - d. **Private Transit.** All transit providers will be required to record ridership counts. These monthly count summaries will provide daily totals. Providers will be instructed on the specific protocol for completing rider summaries.

4. **TDM Monitoring Reporting.** TDM Monitoring Reporting: The Transportation Monitoring Program Director will prepare an annual report based upon the data. The report will include a discrete summary of the metrics achieved compared with the requirement, which shall include:
 - a. Private Guest Transit Ridership
 - b. Employee Transit Ridership
 - c. Day Skier Transit Ridership
 - d. Annual Average Daily Traffic Counts at Teton Canyon Road and level of service equivalent.
 - e. The report shall also include an assessment of the success of the strategies, trends influencing the metrics, and strategy revisions as necessary.
5. **TDM Review Process.** Based on the results of the monitoring program, the TDM program shall be reviewed by Teton County, Wyoming annually. As part of this review, the effectiveness of the TDM program shall be reviewed and changes to the combination or emphasis of strategies may be required by Teton County, Wyoming or proposed by the Resort. Changes or additions to TDM measures may occur during biennial reviews to ensure measures are fully in place and operating, and anomalies from one season to another are not affecting the success of the measures.
 - a. **Submittal.** By June 1st of each year, the Resort shall submit to Teton County as part of the annual monitoring program a review that includes the data described in Monitoring Program above. The data shall be organized in a reporting format that clearly summarizes:
 - I. Total number of trips generated by the Resort as a whole, with a comparison to the estimated trips in the Traffic Impact Study and the estimated LOS.
 - II. Employee transit ridership, including a summary of estimated ridership from each park and ride.
 - b. **Teton County, Wyoming Review.** The Teton County Engineer will review the submittal and have the authority to approve the submitted program or to require that the TDM program be changed.

D. Road Impact Fees During Construction Phase

Prior to the earlier of either Final Development Plan approval or the issuance of any physical development permit at Grand Targhee Resort that will utilize Ski Hill Road, Grand Targhee shall present to the Teton County Engineer a proposal prepared by an independent, qualified engineering firm with staff experienced in road design, construction and maintenance. The proposal shall include a formula that calculates a road impact fee representing the proportional impacts of development during the construction phase beyond that which would ordinarily occur on a county road. The impact area for this fee shall be defined as Ski Hill Road beginning at Stateline Road to the termination of the public portion of the road at the Resort boundary. The proposal shall consider the proportionate share of traffic generated by the proposed construction, relevant ADT data, and a cost analysis, and is subject to final approval by the County Engineer.

E. Parking Standards

The following parking ratios shall apply within the Resort. Only the land uses in Table 3.5.D.1 of the Master Plan and commercial uses within the Resort shall require parking.

1. Lodging, Accommodation and Residential Parking in Table 3.5.D.1

Table 3.5.D.1 Parking Standards	
Residential/Accommodation Unit Type	Spaces Per Unit
Lodging and Accommodation	1
Studio or lodge, 1-bedroom, 2-bedroom, or 3-bedroom	1
Employee Unit – Studio	1.1
Employee Unit – 1-bedroom	1.5
Employee Unit – 2-bedroom	2
Cabins, Attached Dwelling Units and Alternate Dwelling Units	1.5
Single family residence	2

Appendix B

Grand Targhee Resort Shuttle Schedule



 Uphill Traffic Is Now Closed Until The Start Of The Regular Season [Read More](#)

 [BOOK](#)



TETON VALLEY BUS SERVICE

THE REGULAR WINTER SCHEDULE WILL BEGIN ONCE THE RESORT OPENS FOR THE WINTER.

Thanks for riding along; the mountain is better when you share the ride! Please subscribe to our Teton Valley bus messaging system to get updates on the bus status. Grand Targhee Resort runs a daily bus service between Grand Targhee Resort and Teton Valley and provides passengers with the bike, ski, and snowboard racks.

Text **GTRSHUTTLE** to 855-269-9451 for Teton Valley bus alerts.

[LODGING](#)

[LIFT TICKETS](#)

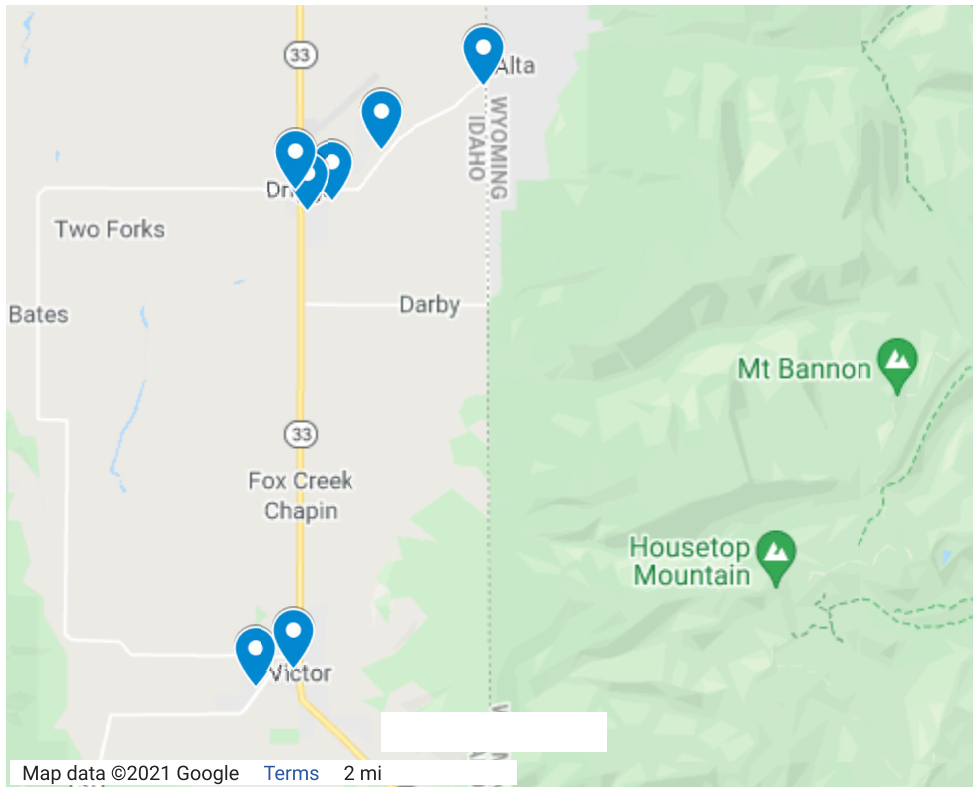
[ACTIVITIES](#)

[EQUIPMENT RENTAL](#)

[COVID-19 INFORMATION >](#)

 Uphill Traffic Is Now Closed Until The Start Of The Regular Season [Read More](#)

 [BOOK](#)



***Public parking is available behind the Community Center (west side) and on Little Avenue.*

****Bus parking is prohibited adjacent to Barrels and Bins, behind Corner Drug Store, at Teton Creek Resort, and at Powder Valley.*

Victor Depot is only an active stop during downhill travel

LODGING

LIFT TICKETS

ACTIVITIES

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7:50 AM	7:55 AM	8:15 AM	8:20 AM	8:25 AM	8:3
8:35 AM	8:40 AM	9:00 AM	9:05 AM	9:10 AM	9:1
9:35 AM	9:40 AM	10:00 AM	10:05 AM	10:10 AM	10:
11:10 AM	11:15 AM	11:35 AM	11:40 AM	11:45 AM	11:
12:10 PM	12:15 PM	12:35 PM	12:40 PM	12:45 PM	12:
1:15 PM	1:20 PM	1:40 PM	1:45 PM	1:50 PM	1:5
2:15 PM	2:20 PM	2:40 PM	2:45 PM	2:50 PM	2:5
3:20 PM	3:25 PM	3:45 PM	3:50 PM	3:55 PM	4:0
4:20 PM	4:25 PM	4:45 PM	4:50 PM	4:55 PM	5:0
5:25 PM	5:30 PM	5:50 PM	5:55 PM	6:00 PM	6:0
6:25 PM	6:30 PM	6:50 PM	6:55 PM	7:00 PM	7:0

LODGING

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7:55 AM	No Stop	No Stop	No Stop	No Stop	1
8:55 AM	No Stop	No Stop	No Stop	No Stop	1
10:15 AM	10:35 AM	10:40 AM	10:45 AM	10:50 AM	1
11:15 AM	11:35 AM	11:40 AM	11:45 AM	11:50 AM	1
12:20 PM	12:40 PM	12:45 PM	12:50 PM	12:55 PM	1
1:20 PM	1:40 PM	1:45 PM	1:50 PM	1:55 PM	2
2:25 PM	2:45 PM	2:50 PM	2:55 PM	3:00 PM	3
3:25 PM	3:45 PM	3:50 PM	3:55 PM	4:00 PM	4
4:30 PM	4:50 PM	4:55 PM	5:00 PM	5:05 PM	5
5:30 PM	5:50 PM	5:55 PM	6:00 PM	6:05 PM	6
7:05 PM	7:25 PM	7:30 AM	7:35 PM	7:40 PM	7

LODGING

LIFT TICKETS

ACTIVITIES

EQUIPMENT RENTAL

[COVID-19 INFORMATION >](#)

Appendix C

East Alta Ski Hill Road and Teton Canyon Road
HCS Analysis



HCS7 Two-Way Stop-Control Report

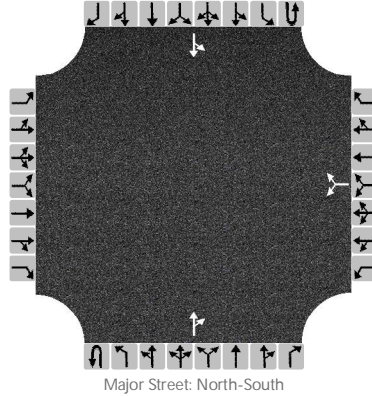
General Information

Analyst	Jorgensen
Agency/Co.	
Date Performed	9/1/21-9/3/21
Analysis Year	2021
Time Analyzed	
Intersection Orientation	North-South
Project Description	Ski Road and County Road Weekday Peak

Site Information

Intersection	
Jurisdiction	
East/West Street	Teton County Road
North/South Street	E Alta Ski Hill Road
Peak Hour Factor	0.88
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						15		1			31	16		4	50	
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						18								5		
Capacity, c (veh/h)						890								1546		
v/c Ratio						0.02								0.00		
95% Queue Length, Q ₉₅ (veh)						0.1								0.0		
Control Delay (s/veh)						9.1								7.3		
Level of Service, LOS						A								A		
Approach Delay (s/veh)					9.1								0.6			
Approach LOS					A											

HCS7 Two-Way Stop-Control Report

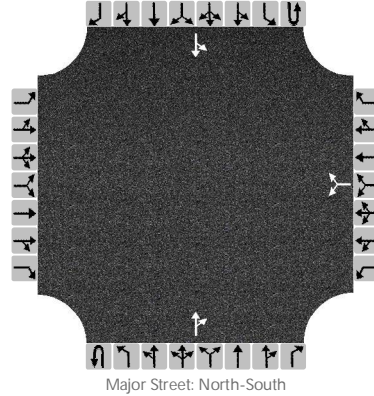
General Information

Analyst	Jorgensen
Agency/Co.	
Date Performed	9/4/21-9/5/21
Analysis Year	2021
Time Analyzed	
Intersection Orientation	North-South
Project Description	Ski Road and County Road Weekend Peak

Site Information

Intersection	
Jurisdiction	
East/West Street	Teton County Road
North/South Street	E Alta Ski Hill Road
Peak Hour Factor	0.88
Analysis Time Period (hrs)	0.25

Lanes



Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Movement																
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		0	0	0		0	1	0	0	0	1	0	0	0	1	0
Configuration							LR					TR		LT		
Volume, V (veh/h)						40		8			28	27		13		89
Percent Heavy Vehicles (%)						3		3						3		
Proportion Time Blocked																
Percent Grade (%)					0											
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)						7.1		6.2						4.1		
Critical Headway (sec)						6.43		6.23						4.13		
Base Follow-Up Headway (sec)						3.5		3.3						2.2		
Follow-Up Headway (sec)						3.53		3.33						2.23		

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)						55								15		
Capacity, c (veh/h)						831								1535		
v/c Ratio						0.07								0.01		
95% Queue Length, Q ₉₅ (veh)						0.2								0.0		
Control Delay (s/veh)						9.6								7.4		
Level of Service, LOS						A								A		
Approach Delay (s/veh)					9.6								1.0			
Approach LOS					A											