



MEMORANDUM

DATE: March 29, 2019
TO: Brian Hansen, Development Coordinator, City of Bloomington
FROM: Jordan Schwarze, PE, Alliant Engineering
Hannah Johnson, Alliant Engineering
SUBJECT: **Great Wolf Lodge Parking Study**

Introduction

Alliant Engineering, Inc. has conducted a parking study for Great Wolf Lodge located in Bloomington, MN. The need for a parking study came in response to Great Wolf Lodge seeking approval to sell waterpark passes to the general public (non-hotel guests). Other Great Wolf Lodge features and amenities are expected to remain unchanged. This study includes an overview of data collection, a parking demand analysis, and conclusions/recommendations offered for consideration.

Background

Great Wolf Lodge, located at 1700 American Boulevard East in of Bloomington, is comprised of 404 hotel rooms, a large indoor waterpark, a four-lane bowling alley, and various other entertainment, restaurant, retail, and meeting room spaces. The onsite waterpark serves as the primary attraction for Great Wolf Lodge, though the hotel is located in close proximity to the Mall of America and Minneapolis/Saint Paul International Airport. Waterpark hours run 9:00 a.m. to 10:00 p.m. during periods of high demand, but openings as late as 10:00 a.m. and closings as early as 8:00 p.m. also occur.

It should be noted that Alliant Engineering completed a parking study in September 2016 for the previous owner of the 1700 American Boulevard East site, when the facility was known as the Radisson Hotel and Waterpark of America. The Great Wolf Lodge Parking Study draws upon some of the data and observations from the prior 2016 study.

Existing Parking Supply

The Great Wolf Lodge existing parking supply consists of the following facilities:

- Onsite Parking – 547 parking spaces
 - Surface Parking Lots – 506 parking spaces
 - Underground Parking Garage – 41 parking spaces
- Offsite Parking:
 - Adjacent Parking Ramp – Great Wolf Lodge leases 178 parking spaces in a parking ramp on an adjacent office property to the west (Friday-Sunday only)
 - Street Parking – A limited number of parking spaces exist on private/public streets bordering Great Wolf Lodge site to the west and north

Consequently, the total Great Wolf Lodge parking supply is 547 parking spaces Monday-Thursday and 725 spaces Friday-Sunday. Great Wolf Lodge and existing on and offsite parking facilities are illustrated in **Figure 1**.

Study Purpose

The purpose of the study is to analyze the existing Great Wolf Lodge parking operations and to evaluate the feasibility of selling waterpark passes to the general public. To achieve this, the following goals have been established:

- Review the 2016 *Radisson Hotel and Waterpark of America Parking Study* to extract data and observations that may be applicable to the current land use.
- Document existing parking demand by collecting parking occupancy data in the on and offsite parking facilities.
- Determine peak parking rates by comparing the number of parked vehicles to the number of occupied rooms.
- Estimate parking demand based on the observed peak parking rates and various increments of hotel room occupancy, including full occupancy.
 - The estimated parking surplus at various increments of hotel room occupancy will determine whether there is sufficient parking capacity to sell general public waterpark passes and provide the associated general parking permits.



Great Wolf Lodge Parking Study

*Figure 1
Existing Site Characteristics*

Parking Demand

Existing parking demand at Great Wolf Lodge was observed over several days in early March 2019. The parking demand and supply was then compared to Bloomington City Code Parking Requirements.

Data Collection

Parking occupancy counts at Great Wolf Lodge were collected once every hour from 6:00 a.m. to 11:00 p.m. over several days:

- Saturday, March 2, 2019 – Parking data was collected in both the on and offsite parking facilities.
 - In the adjacent parking ramp, hotel- and office-related parking was separated to the extent possible.
- Wednesday, March 6, 2019 and Thursday, March 7, 2019 – Parking data was collected in the onsite parking facilities only.

It should be noted that Great Wolf Lodge offers birthday party packages, including waterpark passes, to non-hotel guests. These events are booked in advance and Great Wolf Lodge considers expected hotel occupancy when scheduling birthday parties. However, it should be noted that vehicles associated with birthday party packages are currently undistinguishable from vehicles associated with hotel guests. Therefore, observed vehicles were summed into a single count during the early March 2019 data collection period.

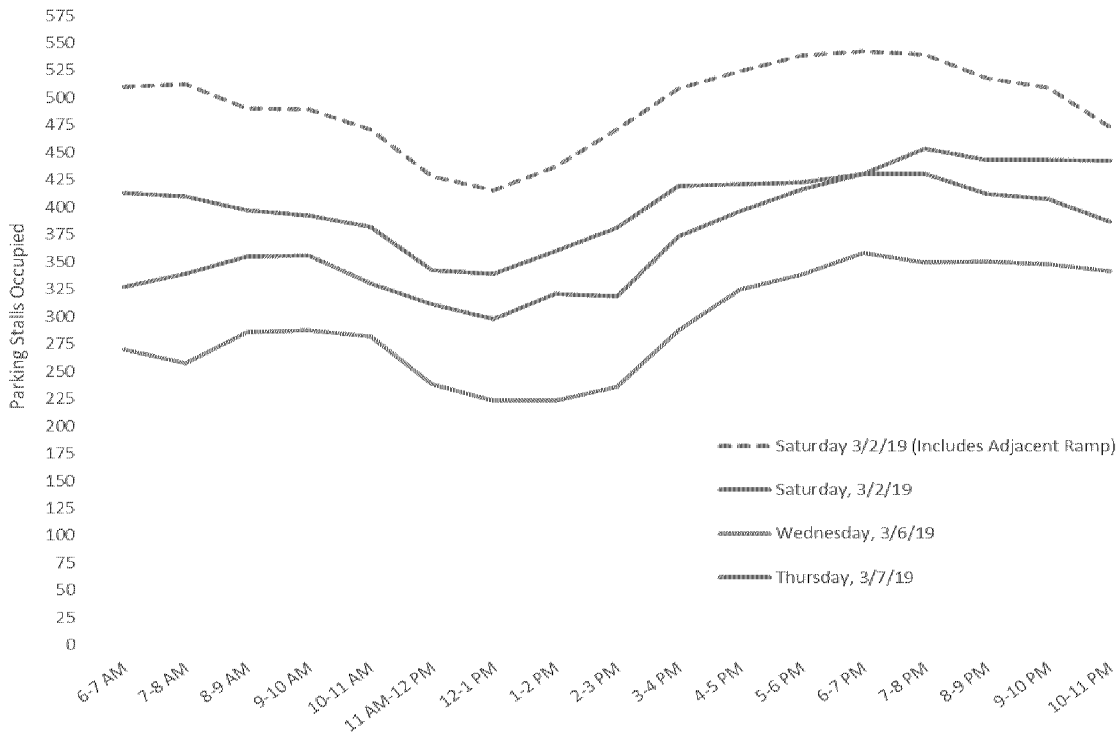
Information provided by Great Wolf Lodge includes the following:

- Hotel room occupancy and birthday party package sales from the evening of March 1, 2019 through the evening of March 8, 2019.
 - Great Wolf Lodge also supplied birthday party package sales from January 1, 2018 through December 31, 2018.

Figure 2 illustrates the results of the parking occupancy counts. The observed peak parking demand over each collection day is as follows:

- Saturday, March 2, 2019: Peak parking demand was observed to be 542 vehicles between 6:00 and 7:00 p.m. at a hotel room occupancy of 98.5 percent (398 rooms).
- Wednesday, March 6, 2019: Peak parking demand was observed to be 358 vehicles between 6:00 and 7:00 p.m. at a hotel room occupancy of 80.2 percent (324 rooms).
- Thursday, March 7, 2019: Peak parking demand was observed to be 453 vehicles between 7:00 and 8:00 p.m. at a hotel room occupancy of 97.3 percent (393 rooms).

It should be noted that no birthday party packages were sold during weekday parking observations (Wednesday, March 6, 2019 and Thursday, March 7, 2019). Therefore, the collected weekday parking data should serve as a true measurement of hotel-related parking demand since parking facilities should have been void of general public users.

**Figure 2. Observed Parking Demand – Great Wolf Lodge**

Bloomington City Code Parking Requirements

The parking supply required for Great Wolf Lodge was estimated in a City of Bloomington staff report (dated February 6, 2017) based on municipal code and is shown in **Table 1**. The available parking supply of 547 parking spaces meets the city code parking requirement of 541 spaces. However, it should be noted that during the early March 2019 data collection period, more than 50 designated parking spaces were unavailable due to snow storage along the perimeter of the surface parking lots as well as excess hotel storage in the underground parking garage. Consequently, the observed Saturday peak parking demand of 542 vehicles exceeded the parking supply available onsite at the time, which illustrated the usefulness of the existing leased spaces in the adjacent parking ramp.

Table 1. Parking Requirement per Bloomington City Code

Land Use	Standard	Units	Required Parking Spaces
Hotel	1.1 spaces/hotel room	404 rooms	444.4
Meeting/Banquet Space	1/3 occupancy of 1 person/15 SF (25% internal capture factor)	3,742 SF	62.4
Additional Employees (Beyond typical hotel operations)	1 space per employee	34 employees	34.0
Total Parking Requirement			541
Parking Supply			547

Parking Analysis

Great Wolf Lodge is proposing to sell waterpark passes to the general public (non-hotel guests) depending on hotel room occupancy. To estimate the ability of Great Wolf Lodge to sell general waterpark passes, peak parking rates must be established to determine the hypothetical parking demand for any given hotel room occupancy.

Hypothetical Maximum Parking Demand

Table 2 summarizes the data and calculations required to determine hypothetical maximum parking demand and needed parking capacity. It should be noted that the parking capacity calculations assume a five percent parking surplus, which is generally recommended to limit unnecessary site circulation and the perception of inadequate parking.

Table 2. Hypothetical Maximum Parking Demand Summary

Hotel/Parking Parameter	Saturday 3/2/2019	Wednesday* 3/6/2019	Thursday* 3/7/2019
Observed Peak Parking Demand (Vehicles)	542	358	453
Occupied Hotel Rooms	398	324	393
Peak Parking Rate (Vehicles/Occupied Room)	1.362	1.105	1.153
Hotel Room Capacity	404		
Hypothetical Maximum Parking Demand (Vehicles)	551	447	466
Five Percent Surplus (Parking Spaces)	28	23	24
Needed Parking Capacity (Parking Spaces)	579	470	490

*Note: No birthday party packages were sold 3/6/2019-3/7/2019.

Results of the hypothetical maximum parking calculations indicate that peak Saturday parking demand would be 551 vehicles at full hotel occupancy. Including a five percent parking surplus, a parking capacity of 579 spaces would be recommended. However, since the Saturday parking count included vehicles associated with events at Great Wolf Lodge (including several birthday parties with non-hotel guests), it is difficult to draw a direct correlation between the observed Saturday parking demand and occupied hotel rooms.

Of greater significance is the hypothetical maximum peak parking demand estimated based on the weekday observations. Since no events (birthday parties, etc.) were documented during the weekday data collection period, the parking observations can be used to determine a parking rate based solely on hotel occupancy. Results of the hypothetical maximum parking calculations indicate that peak parking demand would be approximately 466 vehicles at full hotel occupancy without the presence of contracted events. Including a five percent parking surplus, a parking capacity of 490 spaces would be recommended. Considering the current Great Wolf Lodge parking supply is 547 spaces Monday-Thursday and 725 spaces Friday-Sunday, there appears to be available parking capacity to accommodate a limited number of non-hotel guests.

Hotel/Parking Parameter		Hotel Room Occupancy						
		150	200	250	300	350	400	404
Hotel Parking Rate (Vehicles/Occupied Room)		1.153						
Hotel-Related Peak Parking Demand (Vehicles)		173	231	289	346	404	462	466
Weekday	Five Percent Parking Surplus (Parking Spaces)	27						
	Available Parking Capacity (Parking Spaces)	347	289	231	174	116	58	54
	Allowable General Parking Permit (y) Formula	$y = 547 - 1.153x - 27$ Where x=Occupied Rooms						
Weekend	Five Percent Parking Surplus (Parking Spaces)	36						
	Available Parking Capacity (Parking Spaces)	516	458	400	343	285	227	223
	Allowable General Parking Permit (y) Formula	$y = 725 - 1.153x - 36$ Where x=Occupied Rooms						

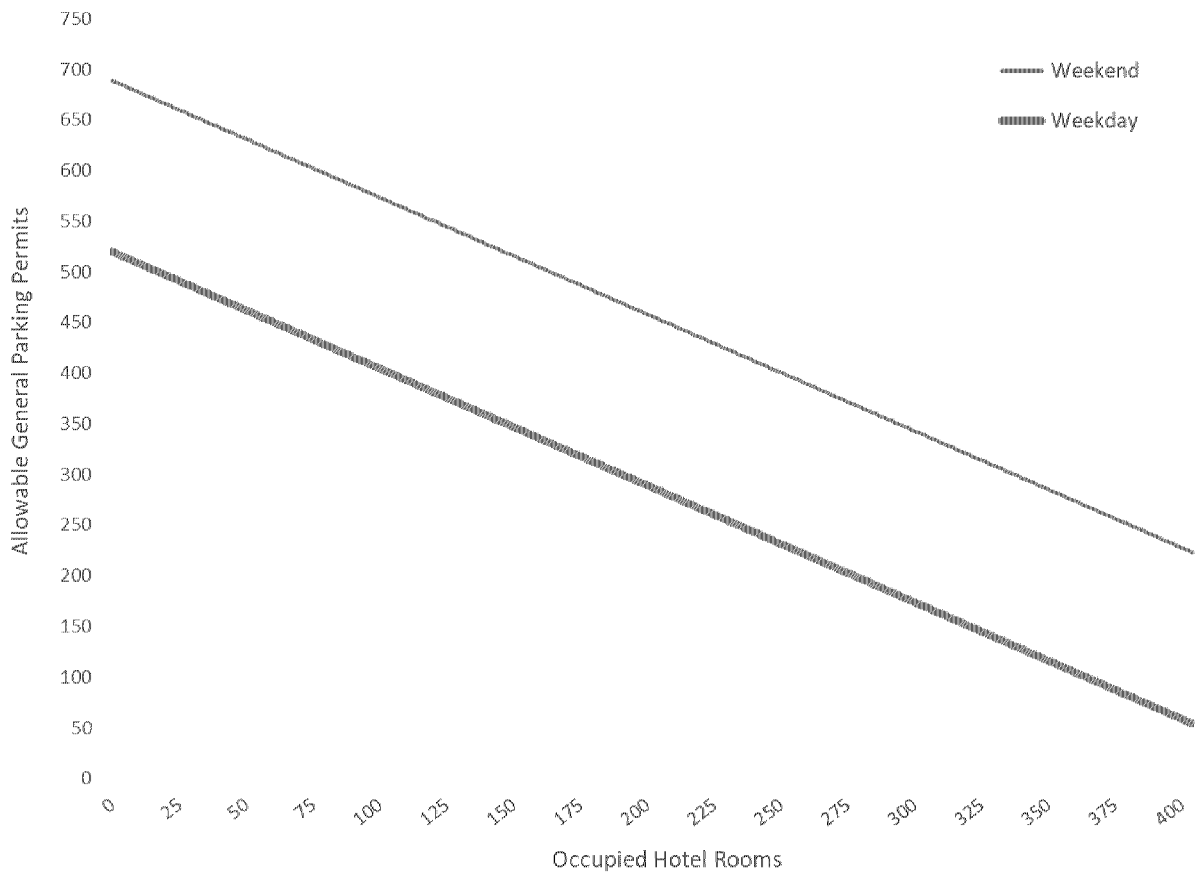


Figure 3. Allowable General Parking Permits per Occupied Hotel Room

In determining the number of allowable general parking permits, several additional considerations must be taken into account:

- The allowable general parking permit formulas and plots in **Table 3** and **Figure 3** do not consider the person capacity of the waterpark. Ensuring that both waterpark and parking capacities are not exceeded is the responsibility of Great Wolf Lodge.
- The allowable general parking permit formulas and plots assume all designated parking spaces are available for use. Adjustments to the formulas and plots should be made if designated parking spaces are unusable by vehicles (e.g. snow or hotel storage).
- General parking permits should be issued with birthday party packages and other contracted events sold to non-hotel guests. These parking permits should then count against the allowable total of general parking permits that can be issued.
- Should the existing Friday-Sunday leased parking agreement with the adjacent property owner cease, the available weekend Great Wolf Lodge general parking permit supply would revert to the weekday formulas and plots.

Conclusions/Recommendations

The following conclusions/recommendations are offered for consideration:

- The observed Saturday peak parking demand was 542 vehicles between 6:00 and 7:00 p.m. at a hotel room occupancy of 98.5 percent (398 rooms).
 - At the time of data collection, more than 50 designated parking spaces were unavailable due to snow storage along the perimeter of the surface parking lots as well as excess hotel storage in the underground parking garage. Consequently, the observed Saturday peak parking demand of 542 vehicles exceeded the parking supply available onsite at the time (typically 547 spaces), which illustrated the usefulness of the existing leased spaces in the adjacent parking ramp (178 spaces).
- The observed weekday peak parking demand was 453 vehicles between 7:00 and 8:00 p.m. at a hotel room occupancy of 97.3 percent (393 rooms).
 - No birthday party packages were sold during weekday parking observations. Therefore, the collected weekday parking data serves as a true measurement of hotel-related parking demand since parking facilities should have been void of general public users.
 - The observed weekday peak parking demand translates to a peak parking rate of 1.153 vehicles per occupied hotel room.
 - At this peak parking rate, a hypothetical maximum parking demand of 466 vehicles could be expected at full hotel occupancy. Including a five percent parking surplus, the recommended parking capacity would be 490 spaces. Considering the current Great Wolf Lodge parking supply is 547 spaces Monday-Thursday and 725 spaces Friday-Sunday, there appears to be available parking capacity to accommodate a limited number of non-hotel guests.
- Several assumptions were made in determining the number of general parking permits that may be issued on any given day:
 - Parking Surplus: A five percent parking surplus (27 parking spaces on weekdays [Monday-Thursday] and 36 parking spaces on weekends [Friday-Sunday]) was factored into the estimation of general parking permits available to limit unnecessary site circulation and the perception of inadequate parking.
 - The maximum observed weekday peak parking rate of 1.153 vehicles per occupied hotel room served as the basis for the formula in determining the number of general parking permits that could be made available on any given day.

- Results of the parking analysis indicate that the following formulas should be used to determine the number of general parking permits that could be made available at various hotel room occupancies:
 - On Weekdays (Monday-Thursday):
$$y = 547 - 1.153x - 27$$
Where y = Allowable General Parking Permits
Where x = Occupied Hotel Rooms
 - On Weekends (Friday-Sunday):
$$y = 725 - 1.153x - 36$$
Where y = Allowable General Parking Permits
Where x = Occupied Hotel Rooms

*Note: The formulas above are plotted in **Figure 3**.*

In determining the number of allowable general parking permits, several additional considerations must be taken into account:

- The allowable general parking permit formulas and plots do not consider the person capacity of the waterpark. Ensuring that both waterpark and parking capacities are not exceeded is the responsibility of Great Wolf Lodge.
- The allowable general parking permit formulas and plots assume all designated parking spaces are available for use. Adjustments to the formulas and plots should be made if designated parking spaces are unusable by vehicles (e.g. snow or hotel storage).
- General parking permits should be issued with birthday party packages and other contracted events sold to non-hotel guests. These parking permits should then count against the allowable total of general parking permits that can be issued.
- Should the existing Friday-Sunday leased parking agreement with the adjacent property owner cease, the available weekend Great Wolf Lodge general parking permit supply would revert to the weekday formulas and plots.