ELDORADO CANYON STATE PARK MANAGEMENT PLAN

Capacity Study

June 2020

Executive Summary

In recent years, Eldorado Canyon State Park (ECSP) visitation has increased dramatically, creating concerns about the visitor capacity of the park and impacts to its facilities and resources. CPW is currently developing new visitor use management strategies for the park's Management Plan. The visitor use management strategies are intended to relieve the pressure and impacts that increased visitation places on the park, the visitor experience, and the surrounding environs. This visitor capacity study informs the strategies with qualitative and quantitative information on visitation for the park and its facilities.

This capacity study does not calculate a visitor capacity figure as related to the natural resources, as this is beyond the scope of this study. This capacity study does provide quantitative information on visitor use, allowing CPW to examine relationships between the existing visitor use and the condition of the natural resources, to identify future monitoring priorities. Visitor use counts are a factor in the condition of the natural resources, but other factors, such as visitor behavior and the sensitivity of the resources are key components as well.

Key Findings and Takeaways

- ECSP visitation had been growing slowly prior to 2017, with approximately 300,000 annual visitors. In 2017, annual visitation jumped to almost 500,000 visitors and then crossed the 500,000 mark in 2018. The number of ECSP visitors declined slightly in 2019 but remained well above pre-2017 levels. Growth in visitation at ECSP has far exceeded the growth at other Colorado State Parks in the Northeast Region.

- While annual ECSP visitation has increased significantly in recent years, the number of visitors on the park's busiest days cannot and has not increased significantly due to the ECSP parking capacity. However, the frequency of these peak, busy days has increased. The growth in visitation occurred throughout the year, rather than solely as an increase in summer visitation.

- The limited number of parking spaces makes ECSP access challenging and limits the number of visitors to the recreational facilities. However, once visitors are in ECSP, they report a pleasant, relatively uncrowded experience. In a way, the limited parking capacity of ECSP leads to a positive experience for visitors once they enter.

Visitor Patterns

- The majority of visitors are from the Denver Metropolitan area. Of visitors surveyed for this study, 11% were from the City of Boulder, 11% were from elsewhere in Boulder County, 53% were from the Denver Metropolitan area, 1% were from elsewhere in Colorado, and 25% of those were out-of-state visitors.

- Of ECSP weekend visitors during the summer, 46% are hiking, 11% are rock climbing, 15% are picnicking, and 25% are sightseeing. During the week, the percent of ECSP visitors picnicking and sightseeing is slightly lower, with the percent hiking slightly higher.

- The majority of visitors (63%) surveyed had visited the park before. While climbers are a small percentage of total summer visitors, individual climbers tend be avid users, visiting the park most frequently, with almost half surveyed visiting 30+ times per year.

Parking and Access

- ECSP has 210 visitor parking spaces and most visitors drive and seek to park at ECSP. Therefore, the number of parking spaces largely dictates the number of park visitors on high demand days. At current rates of vehicle turnover and occupancy, ECSP can support 1,730 parking visitors per day. As vehicle turnover and occupancy can fluctuate, ECSP will not impose a limit at that level, but continue to monitor to ensure parking and other ECSP facilities are not exceeding their capacities and visitors are having a positive experience.

- The limited parking supply in ECSP can lead to vehicles denied entry into the park and/or extended queues at the entrance station that back up into the town of Eldorado Springs. The ECSP entrance station is able to process vehicles quickly but has to hold vehicles in a queue when no spaces are available or as staff assist others in finding a spot. During a July 2019 traffic study, ECSP's five-vehicle queue capacity was exceeded for 15% of a weekend day, including most of the time between 9 a.m. and 1 p.m.

- The estimated number of days in which the demand for parking exceeds the supply and vehicles are turned around has increased from 10 days in 2015 to 15 days in 2019.

- ECSP staff perform law enforcement, visitor services, education, interpretation, maintenance, and natural resource stewardship duties. However, on busy days, many or even all staff on duty are needed to manage parking. Managing parking inhibits staff from performing their primary duties at peak times towards providing a positive visitor experience and limiting the impacts to natural resources.

Recreational Use and Capacity

- ECSP's trails are well used, and rates of growth in use have varied by trail. The Fowler Trail sees the most annual visitors, at almost 90,000 visitors. The least used park trail has fluctuated, with Eldorado Canyon the least used in 2018 and 2019.

- Hiking trail capacity is subjective, and determining factors include trail character, desired experience, and setting. Visitors' experience and sense of trail crowding is often influenced by the regional context and other recent hiking experiences. Of all the activity participants surveyed at ECSP, hikers were the least likely to state that their activity felt crowded. These survey responses suggest that the ECSP hiking trails are not at their capacity, from the user experience perspective, and could accommodate additional users before significantly degrading the user experience.

- Eldorado Canyon has over a thousand climbing routes, but rock climbers tend to congregate on a few most accessible crags. Rock climbers tend to have a very positive experience at ECSP, but many noted crowding issues on a few crags. Like hiking, climbing capacity is also subjective, although safety can be an important factor. Overall, the climbing opportunities may not be at capacity, but the survey results suggest that certain crags are approaching their capacity. Likely,

use will continue to be concentrated on those crags in the future and continued monitoring and strategies to support safer climbing in crowded conditions may be necessary.

- The ECSP picnic sites are a popular destination for large groups. The picnic areas see limited turnover, as length of stay is long, and the demand is concentrated in the middle day. Of activity participants surveyed at ECSP, picnickers were most likely to say they experienced crowding and that it was an issue. Given the concentration of demand during the middle of the day and other factors, the picnic area may be close to its capacity during that time frame on summer weekend days and holidays.

- At present, ECSP visitors are relatively well-distributed between the park activities. However, if the percentage of visitors participating in a single activity increased dramatically, that activity facility may approach or exceed its capacity.

- The proposed multi-use Eldorado Canyon-Walker Ranch Trail would introduce additional mountain bike use at ECSP. The Eldorado Canyon-Walker Ranch Trail Feasibility Study estimated that the trail would attract about 60 visitors to ECSP per day during the summer. If multi-use trail visitors are granted access and arrive at ECSP during peak times, assuming parking and access capacity remains constant, these visitors would slightly reduce the number of visitors participating in other ECSP activities.

Contents

List of Attachments

Attachment A. Fieldwork Program
Attachment B. Traffic Study
Attachment C. Fieldwork Findings

List of Figures

List of Tables

1   Introduction

Eldorado Canyon State Park (ECSP) is a well-visited state park thanks to its world-renowned rock climbing, creekside picnic spots, impressive views, scenic trails, and proximity to a major population center. The park is located near Boulder, Colorado and sees many visitors from Boulder County, the Denver Metropolitan Area, and out-of-state visitors looking to climb, picnic, hike, or sightsee. In recent years, ECSP visitation has increased dramatically, creating concerns about the visitor capacity of the park and impacts to its facilities, resources, and the adjacent communities.

Visitor capacity, as considered by Colorado Parks and Wildlife (CPW) and established by the federal Interagency Visitor Use Management Council, is defined as:
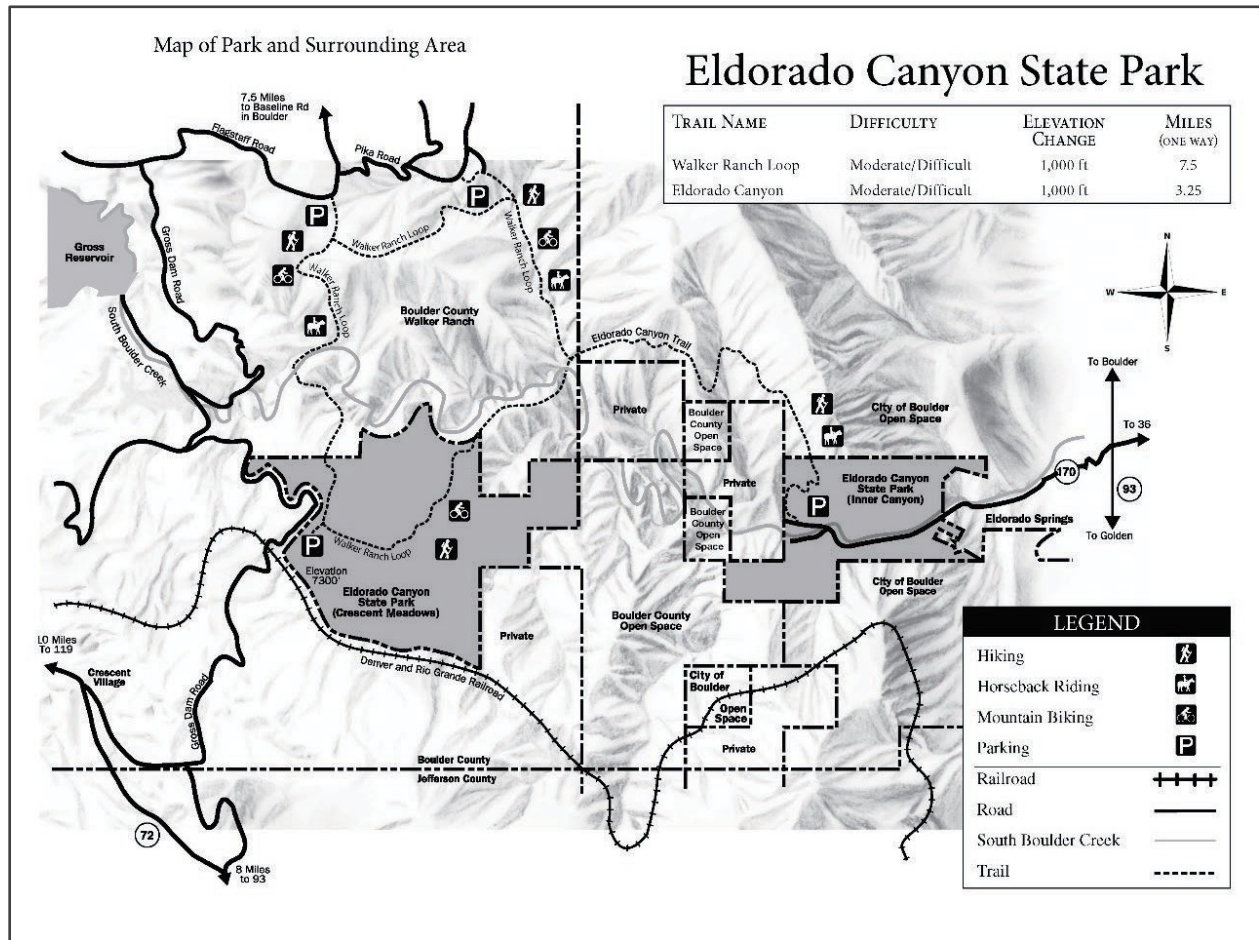
> *"A component of visitor use management, visitor capacity is the maximum amounts and types of visitor use that an area can accommodate while achieving and maintaining desired resource conditions and visitor experiences consistent with the purposes for which the area was established."*

To continue to provide a positive visitor experience and protect the natural resources at the park, CPW must manage ECSP for its visitor capacity. CPW is currently developing new visitor use management strategies for the park's Management Plan. The visitor use management strategies are intended to relieve the pressure and impacts that increased visitation places on the park, the visitor experience, and the surrounding environs. Thus, this visitor capacity study informs the strategies with qualitative and quantitative information on visitation for the park and its facilities. This study also describes how existing visitor use relates to that capacity.

Given that nearly all ECSP visitors will park and begin their activities in the Inner Canyon, this study focuses on that area of the park. The other accessible section of the park, Crescent Meadows, experiences significantly less visitation and minimal crowding issues, and therefore was not included in this study.

Crescent Meadows and residential areas surrounding the park are considered in other reports and plans.

Figure 1. Park Map

Map of Park and Surrounding Area

Eldorado Canyon State Park

TRAIL NAME	DIFFICULTY	ELEVATION CHANGE	MILES (ONE WAY)
Walker Ranch Loop	Moderate/Difficult	1,000 ft	7.5
Eldorado Canyon	Moderate/Difficult	1,000 ft	3.25

LEGEND

Hiking	
Horseback Riding	
Mountain Biking	
Parking	P
Railroad	+++++
Road	———
South Boulder Creek	———
Trail	-------

Daily visitation capacity, rather than an annual figure, is more useful for managing the park's crowded conditions. The daily visitation capacity is the number of people the various park facilities can accommodate on a single day. The busy days at the park largely place the pressure on the park facilities, staff, and resources. Therefore, managing the busy days for their capacity is crucial for providing positive visitor experiences and limiting the resource impacts. An annual capacity figure was not determined because of the intrinsic nature of park visitation, with busier and less busy days: it is not reasonable to expect the park could achieve its capacity each day, nor should it, as slower days provide a different visitor experience, allow park staff to address maintenance projects and other needs, and help maintain park resources. Growth in annual visitation may continue to occur through increases in mid-week or off-season visitation or increasing frequency of busy days, without exceeding the capacity of daily visitation. It is important to look at annual visitation data to get the full picture of trends and ECSP's management needs.

As stated above, this study provides a daily capacity figure for park facilities and experience, however, other factors beyond level of use can have a strong impact on the visitor experience and resources. Visitor behavior, etiquette, and the combination of user types also influence the capacity of a recreational facility for visitor experience and impacts to the natural resources. The condition of the natural resources is presented separately from this study, in the Park Stewardship Plan. However, this study and the Park Stewardship Plan will be understood together to manage the park to its desired condition and develop the strategies of the Management Plan. See Section 8 for a further explanation of how this study relates to the natural resources condition.

In this study, the overall park capacity is based on the capacity of key park assets (parking, access, staff, and recreational facilities). Additional park facilities, such as the Visitor Center and bathroom facilities, were not included in this study but must be monitored and considered in the development of the visitor use strategies of the Management Plan in order to continue to provide positive experiences to park visitors and protect the natural resources.

2   Methodology

This analysis assessed the individual capacities of park facilities to understand the disparities as well as the balance between these facilities. Differences in capacity can result in a facility acting as a limiting factor towards the other facilities achieving their capacity, or the capacity of a facility can place a burden on the other facilities. Capacities were assessed for the hiking trails, rock climbing crags, parking, picnic area, and the access into the park. The method for determining the capacity varied by the facility.

The data sources used to calculate the capacities of the facilities include the park facility information provided by CPW, trail counts collected by CPW, surveys and observations conducted by SE Group, and a traffic study conducted by Martin/Martin Engineers. See Attachment A for more information about fieldwork methodology and Attachment B for the traffic study methodology and the full report.

The parking capacity was assessed based on the number of spaces in the park and visitor behavior. The number of parking spaces in the park was multiplied by the average turnover, as determined in the traffic study, and the Average Vehicle Occupancy (AVO) as determined by the fieldwork.

The hiking trail and climbing crag capacities were assessed subjectively. Surveys of park visitors on busy days describe the current visitor experience and feeling of crowding. Visitor responses were used to ascertain whether the climbing crags and hiking trails reach capacity, from the user experience perspective. Current use is included in this study to provide a baseline for future monitoring.

The capacity of the picnic area was assessed by the number of picnic tables and observations and surveys conducted by SE Group. Group size counts, average lengths of stay, and experience ratings collected by SE Group were incorporated into the capacity calculation.

The access capacities were derived from the data collected in the traffic study. A video recorded the length of the queue and the processing speed at the entrance station. This information was used to understand how many vehicles the entrance station can process during a day and the capacity of the queue to hold waiting vehicles. The traffic study also noted the impact of the limited parking supply on park access.

3 Fieldwork

SE Group conducted fieldwork at the park in June and July 2019 to inform this study. Fieldwork was conducted on two busy weekend days (June 29 and July 13) and one weekday (June 26), to provide a comparison for visitor experience and use on a less crowded day. This fieldwork consisted of 355 surveys of park visitors as they completed their activity, observations of vehicle occupancy, and observations of the percentage of visitors participating in each activity. Of the surveys, 23% were conducted on the weekday and the remaining 77% were conducted across the two weekend days. Key results of the fieldwork, as relevant to this study, are below. The methodology for the fieldwork is included as Attachment A, and the full fieldwork results memo is included as Attachment C.

- Of park visitors on the weekend days, 46% hiked, 25% were sightseeing, 15% picnicked, and 11% climbed. Sightseeing is defined as park visitors who walked along the road and took pictures, crossed Streamside bridge, but did not travel along any other trail.

- Most climbers and picnickers had visited the park before (91% of climbers and 88% of picnickers). Comparatively, 51% of hikers and 44% of sightseers had visited the park before. Climbers tend be avid users, visiting the park most frequently, with 71% visiting 10+ times per year and almost half visiting 30+ times per year. Comparatively, 75% of picnickers visit 1–3 times per year. 61% of hikers and 65% of sightseers visit 1–3 times per year.

- The AVO on the two weekend days was 2.69. Comparatively, the weekday AVO was 2.51. The average AVO varied by activity, with picnickers having the highest AVO and climbers the lowest.

- Overall, visitors rated their experience at the park very positively. 79% of visitors rated their experience as excellent and 18% rated their experience as good. Only 2% of visitors rated their experience as fair, and 1% rated it as poor. Experience ratings were slightly lower on weekend days and by visitors who had been to the park previously. By activity type, climbers and hikers rated their experience most positively, although few picnickers and sightseers said their experience was fair or poor. 86% of climbers and 84% of hikers rated their experience as excellent. Only 66% of picnickers rated their experience as excellent, although 30% did rate their experience as good. Of sightseers, 75% rated their experience as excellent and 18% rated it as good.

- On weekend days, 9% of visitors rated their experience accessing the park as poor and 15%rated it as fair, with the remaining calling it good or excellent. Sightseers and climbers rated their experience accessing the park much more positively than picnickers and hikers, likely based on differences in expectations and arrival times.

- Of weekend visitors, 5% said crowding at their activity was an issue, 24% said the activity was crowded, but the crowding did not detract from their experience, 47% said crowding was moderate, and 24% said their activity was uncrowded. Weekday visitors were even less likely to say that crowding was an issue and 51% said it was uncrowded.

- A significantly higher proportion of picnickers said their activity was crowded compared to participants in other activities. Over 60% of picnickers said their activity was crowded, with 15% of all picnickers saying crowding was an issue. Fewer than 10% of other activity participants said crowding was an issue at their activity, with about 70% of other activity participants calling their activity moderately crowded or uncrowded. Many groups of picnickers took the survey in Spanish.

- About 20% of hikers said their trail was crowded, although very few said crowding was an issue. Hikers on the Eldorado Canyon Trail and Rattlesnake Gulch Trail were slightly more likely to say their trail was crowded, but no hikers on those trails said crowding was an issue.

- Climbers only reported crowding as an issue on the Bastille, Redgarden Wall, and Wind Tower. 20% of Redgarden climbers and 14% of Bastille climbers said crowding was an issue.

- Climbers tend to arrive early in the morning, when parking spaces are available. Many picnickers will arrive, or send a representative, early in the morning as well, to reserve a picnic area. Hikers and sightseers largely arrive during the peak morning access hours.

- In responding to the survey, many climbers expressed strong awareness of the access issues and were very interested in the Management Plan process. Other user groups were less interested in the plan process.

4   Visitation and Use Patterns and Trends

This section presents visitation and use data from the park and comments on patterns and trends that are relevant to understanding the park capacity. The data presented here includes park visitation data from CPW, vehicle and trail count data from CPW, a traffic study conducted by Martin/Martin Engineers, and park observations conducted by SE Group.

4.1   Overall Visitation

Park visitation has increased dramatically in the past few years. Park visitation had been relatively stable prior to 2017, and visitation was growing slowly, approaching 300,000 annual visitors. In 2017, annual visitation jumped to almost 500,000 annual visitors, and visitation crossed the 500,000 mark with another year of growth in 2018. 2019 visitation was down over the previous two years, but the 2019 visitation figure remained higher than annual visitation figures prior to 2017.

Figure 2. Annual Visitation, 2011–2019
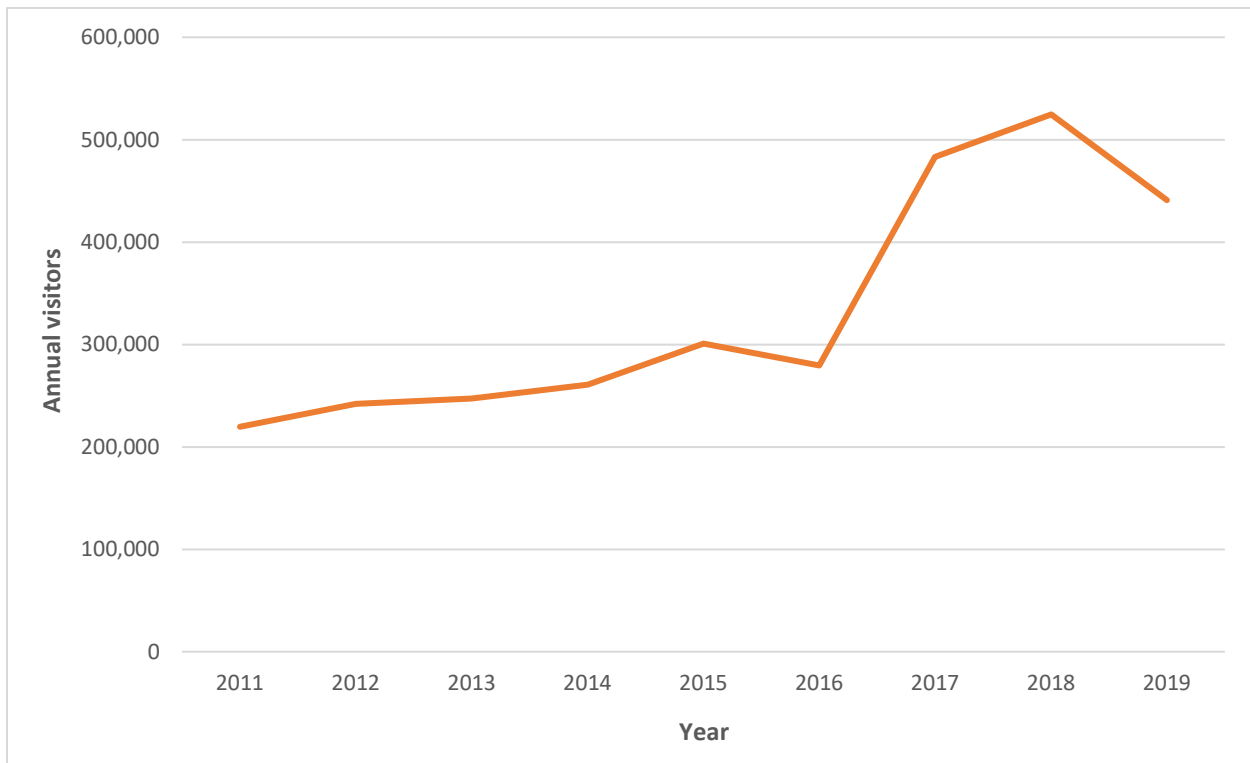
The growth in annual visitation has been a result of a significant increase in visitation in each month of the year rather than solely a spike in summer visitation. The following figure shows visitation each month from 2016 to 2018 and the following table shows the percent increase by month. The first few months of the year had higher percent increases in visitation. The summer months did not have the highest percent growth, as they started with higher visitation in 2016, and there was little room for growth on peak days due to the parking supply.

Figure 3. Monthly Visitation 2016 and 2018
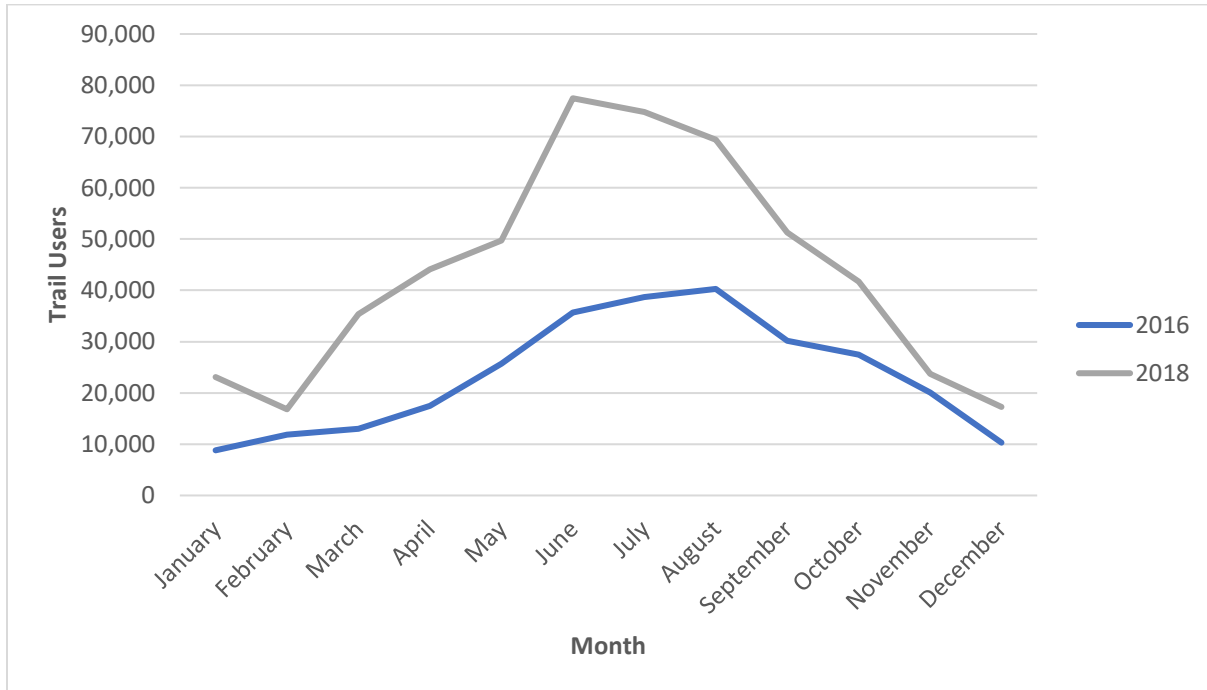
Table 1. Increase in Visitation by Month, 2016 vs 2018

Month	2016 Visitation	2018 Visitation	% Increase
January	8,804	23,136	163%
February	11,858	16,805	42%
March	12,986	35,386	172%
April	17,436	44,112	153%
May	25,706	49,728	93%
June	35,721	77,465	117%
July	38,661	74,738	93%
August	40,280	69,339	72%
September	30,185	51,301	70%
October	27,485	41,720	52%
November	20,037	23,676	18%
December	10,314	17,262	67%

4.2　Trail Usage

This section examines trail usage patterns and trends at the park to explain how and when trails are being used and how that has changed in recent years. The park's trails are well used, and rates of growth in use have varied by trail.

The park has automatic trail counters in place near the trailhead of each trail to count users. The park uses this data to understand use on each trail and record total visitation to the park. All trail counters have been in place since at least 2015 and can provide year-over-year comparisons.

The trail use data pertains to hikers, rock climbers, and sightseers. Eldorado Canyon, Fowler, and Rattlesnake Gulch trails are almost exclusively used by hikers, with some use of Fowler and Eldorado Canyon to access climbing crags and a few mountain bikers on Rattlesnake Gulch. The Streamside Trail is used by a mix of hikers, climbers, and sightseers. Most of the climbing in the park occurs across the Streamside bridge. Those who crossed the Streamside bridge but did not rock climb or venture onto any of the other hiking trails were considered sightseers in this analysis.

The following chart shows annual trail usage at each trail since 2015 and extrapolated for the rest of 2019. The Fowler Trail sees the most annual visitors, at almost 90,000 visitors. The least used park trail has fluctuated, with Eldorado Canyon the least used in 2018 and 2019.

The Fowler Trail and Rattlesnake Gulch Trail have shown a similar growth trend, with an increase in annual users from 2015 to 2016 and relatively stable growth since then. Use of the Streamside Trail decreased dramatically from 2015 to 2016 and 2017, before rebounding in 2018 and 2019. Use of the Eldorado Canyon Trail increased significantly from 2016 to 2017 but declined in 2018.

Figure 4. Annual Trail Usage, 2015–2019

Figure 4. Annual Trail Usage, 2015–2019
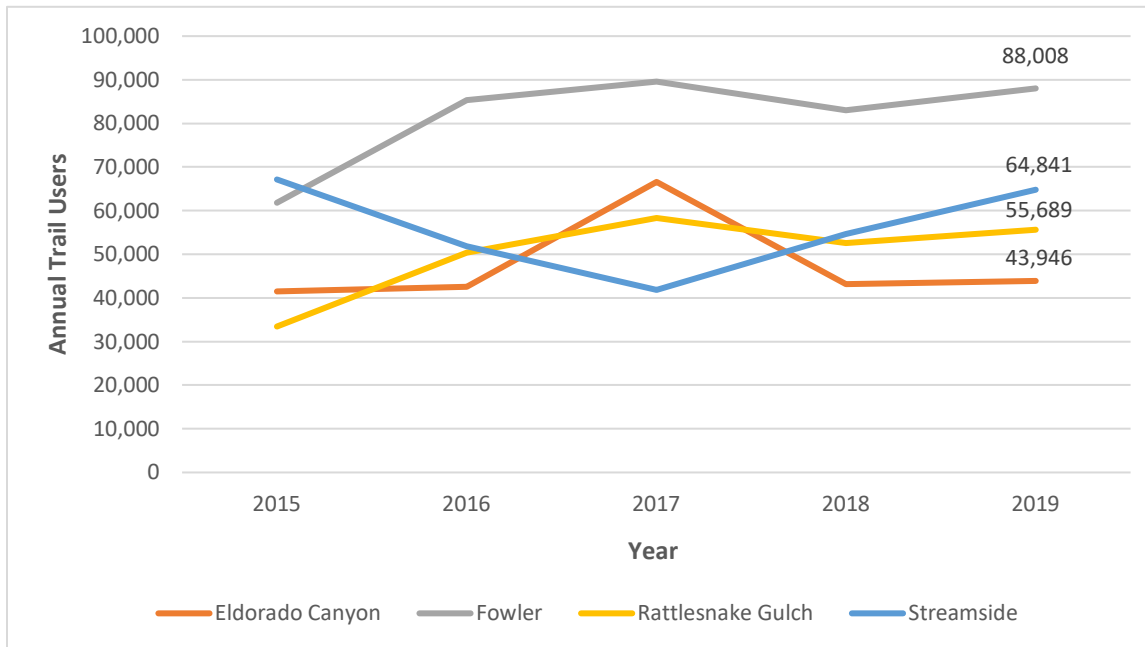
Based on the annual data, a little over 60% of Fowler Trail users also hike the Rattlesnake Gulch Trail. Overall, most of the users captured in this chart are hikers, but it was assumed that 30% of those who crossed the Streamside bridge during the summer were climbers and likely that percentage would be higher in other seasons.

The following table shows the average number of trail users per day across the 10 busiest days in 2015 and 2019. This data shows a slight increase in total users on these days, with increases at the Fowler and Rattlesnake Gulch Trails and decreases at the Eldorado Canyon and Streamside Trail. The minimal difference in average counts is expected, as all or most of the days included here represent days when the park was at or close to its parking capacity. This table also helps understand how many people are using each park trail on days when the park is at or approaching its parking capacity.

Table 2. 10 Busiest Days Average Trail Counts

Trail	2015	2019
Eldorado Canyon Trail	402	343
Fowler Trail	480	560
Streamside Trail	568	513
Rattlesnake Gulch Trail	276	400
Total	**1,727**	**1,815**

Trail usage at the park is concentrated during the summer months (see Figure 3). Across all the trails, June, followed by July and August, are the highest use months, with about 45% of annual trail usage occurring during those months. The spring and fall are also popular times to use the trails, with about 20% of annual use occurring in April/May and just under 20% in September/October. The Streamside Trail and Eldorado Canyon Trail see a slightly higher percentage of their use during the summer months (44.9% and 45.9%) than Fowler Trail and Rattlesnake Gulch Trail. The Eldorado Canyon Trail also sees a relatively high percentage of its use in the winter months (11.3%). Across all trails, the trail usage is more concentrated in the summer months than overall visitation to the park, as measured against vehicle counts. Summer visitors are more likely to explore multiple areas of the park, such as crossing the Streamside bridge to take pictures and then hiking on the Fowler Trail, while winter visitors may be more likely to stay on one trail.

Trail usage at the park is relatively concentrated on weekends, although less so in the summer. In the summer, Saturday and Sunday trail usage makes up 41% of total weekly trail usage, with each of the weekdays representing 11–13% of total usage. Across the whole year, weekend trail usage is 47% of trail usage, with less use especially on Tuesdays, Wednesdays, and Thursdays. This discrepancy is likely due to summer vacations enabling greater mid-week use in the summer. Of the trails, Eldorado Canyon Trail sees the highest percentage of its use on weekends, while Streamside sees the most use relatively during the week, likely due to the high number of climbers and sightseers who visit the park during the week. Across all the trails, summer weekend use is about 1.5 times the annual average of weekend use. Summer weekday use is about double the annual average of weekday use.

Trail use tends to peak in the middle of the day, with some variation by trail. Across all trails, the busiest hour is the 12 p.m. hour, with the 11 a.m. and 1 p.m. hours similarly busy. On the weekends, the trails see use beginning earlier in the day and continuing later into the afternoon. The Rattlesnake Gulch Trail and Fowler Trail's peak hours of use are on the earlier side, 11 a.m. and 12 p.m., with the Eldorado Canyon Trail's peak use slightly later, and the Streamside Trail's peak hours between 1 p.m. and 3 p.m.

Visitors' experience and sense of trail crowding is often influenced by the regional context and other recent hiking experiences. Many hiking trails in the Boulder area are very popular, with annual usage well above that recorded at ECSP. Table 3 shows annual visits at City of Boulder Open Space and Mountain Parks (OSMP) trails and the ECSP trails. Notably, on a system-wide level, use of ECSP trails is more concentrated during the summer months and weekends. Figure 5 below shows the percent of monthly use occurring on ECSP trails compared to OSMP trails. For example, 14% of ECSP trail usage occurs in July, while only 9% of Boulder OSMP trail usage does. Thus, on a summer weekend day, the Eldorado Canyon trails may see greater relative use than a Boulder OSMP trail with higher annual visits.

Figure 5. Monthly Percent of Annual Use of ECSP trails and City of Boulder OSMP trails
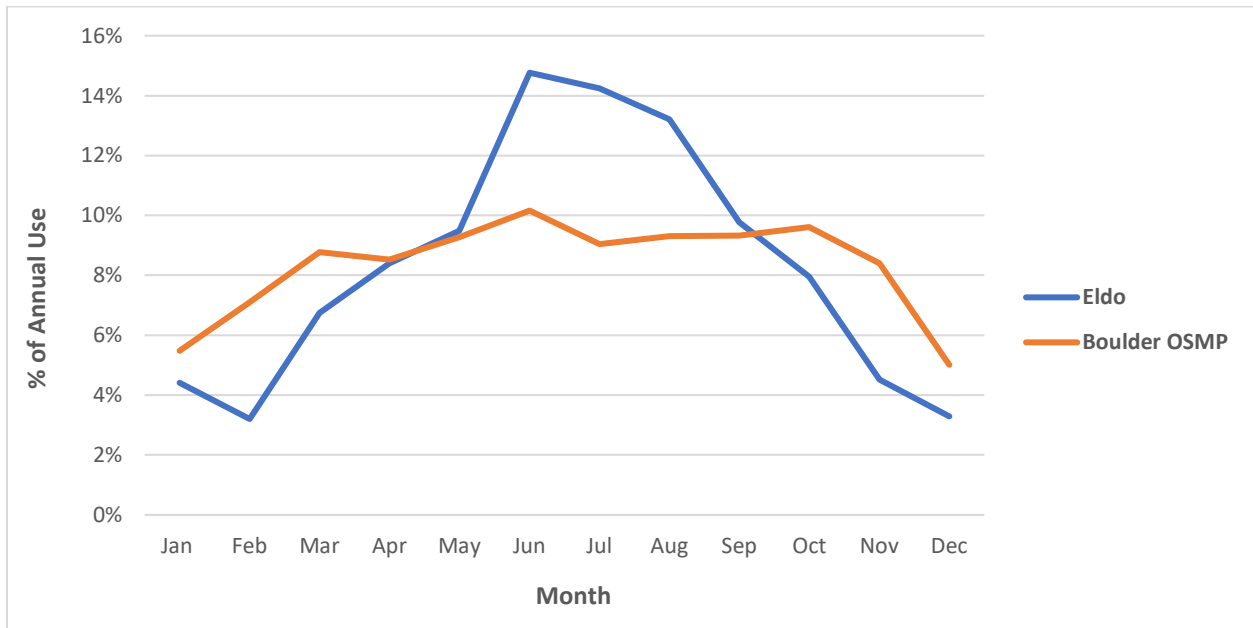
Table 3. Comparative Annual Visits, 2018

Trail (Eldorado Trails in Bold)	Annual Visits
Chautauqua Trail	349,050
Sanitas Valley Trail	132,758
South Mesa Trail	121,639
Mount Sanitas Trail	117,800
Marshall Mesa Trail	99,556
Fowler Trail	**80,148**
Gregory Canyon Trail	63,057
Streamside Trail	**55,206**
Rattlesnake Trail	**50,740**
Boulder Valley Ranch Trail South	44,146
Eldorado Canyon Trail	**39,623**
Doudy Draw Trailhead	23,628

4.3   Vehicles

As part of this capacity study, a traffic study was conducted on park vehicular access. The study was conducted on Saturday July 13, 2019 and counters were placed on Eldorado Springs Drive in front of the Arts Center, at the park entrance station, and on the turnoff to the Kneale Road residences. In the eastbound direction (vehicles headed into the park), 949 vehicles passed the Arts Center, 689 passed through the entrance station, and 21 went towards Kneale Road residences during the day's monitoring.

On the day of the study, 41 vehicles were turned around and denied entry at the entrance station because the park was full. These vehicles did pass through the entrance station but were sent back out onto Eldorado Springs Drive. Of the turned around vehicles, some circled back through and were granted entry, some parked illegally in town and the passengers walked into the park, and the remaining left the area. Therefore, 627 vehicles passed through the entrance station and parked at the park during the day of the traffic study (excluding turned around vehicles and Kneale Road). Across the day, 6% of vehicles passing through the entrance station were denied entry, 3% headed towards residences on Kneale Road, and 91% of vehicles were destined and granted entry to the park. During the morning period, 9 a.m. to 12 p.m., 15% of the vehicles that passed through the entrance station were denied entry, 3% headed towards residences on Kneale Road, and 82% were destined and granted entry to the park. Many of those granted entry did have to wait at the entry station.

Of the vehicles that passed the Arts Center, 73% also passed through the park entrance station. Early in the morning, nearly all vehicles enter the park, while later in the day the percentage declines due to greater non-park traffic and longer delays to enter the park. Based on anecdotal evidence, the vehicles that do not enter the park head to residences in town, park in town and passengers walk in to visit the park, or the vehicle turns around before reaching the entrance station due to the length of the queue. On this day, 27% of vehicles that passed the Arts Center did not go through the entrance station. The percentage of vehicles passing the Arts Center that did not go through the entrance station was highest in the 10 AM and evening hours.

The traffic study was conducted when the Eldorado Springs Pool & Resort was not open. The Eldorado Springs Pool & Resort is a public hot spring pool that is very popular on warm summer weekend days, when the park is crowded as well. When the pool is open, the percent of vehicles who pass the Arts Center and seek to enter the park is likely lower due to vehicles headed to the pool. On the day of the traffic study, there was no backup of traffic by the Arts Center.

The following chart shows the count of vehicles passing the entrance station in each direction during the traffic study. The highest number of vehicles entered the park in the 8 a.m. and 9 a.m. hours (84 vehicles each). The number entering declined during the 10 a.m. hour, as the park was full and new vehicles were being admitted slowly. By the 11 a.m. hour, the number of vehicles exiting exceeded the number entering the park.

Figure 6. Traffic Study Vehicles Entering and Exiting the Park
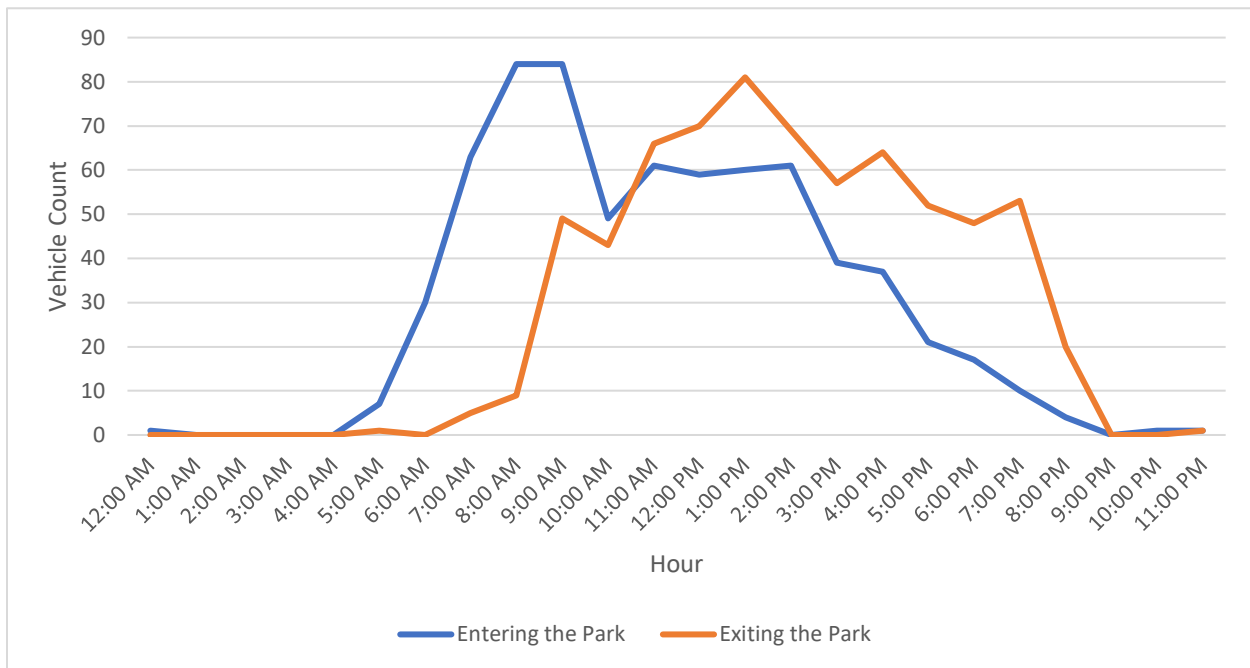
The parking at the park tends to fill up on summer weekends and holidays. The park did fill up on the day of the traffic study, Saturday July 13. The following chart (Figure 7) shows the estimated number of vehicles in the park at a given time, based on the count of vehicles entering and exiting at 15-minute intervals throughout the day. The dashed red line is at 190 vehicles and signifies when the park is effectively full. Although there are 204 visitor spaces in the park, with visitors coming and going and park staff relaying when spots open up, the park is effectively full at around 190 vehicles in the park. There were more than 190 vehicles in the park and the park was effectively full from 9 a.m. to 1 p.m.

Figure 7. Estimated Vehicles in the Park 7/13/19
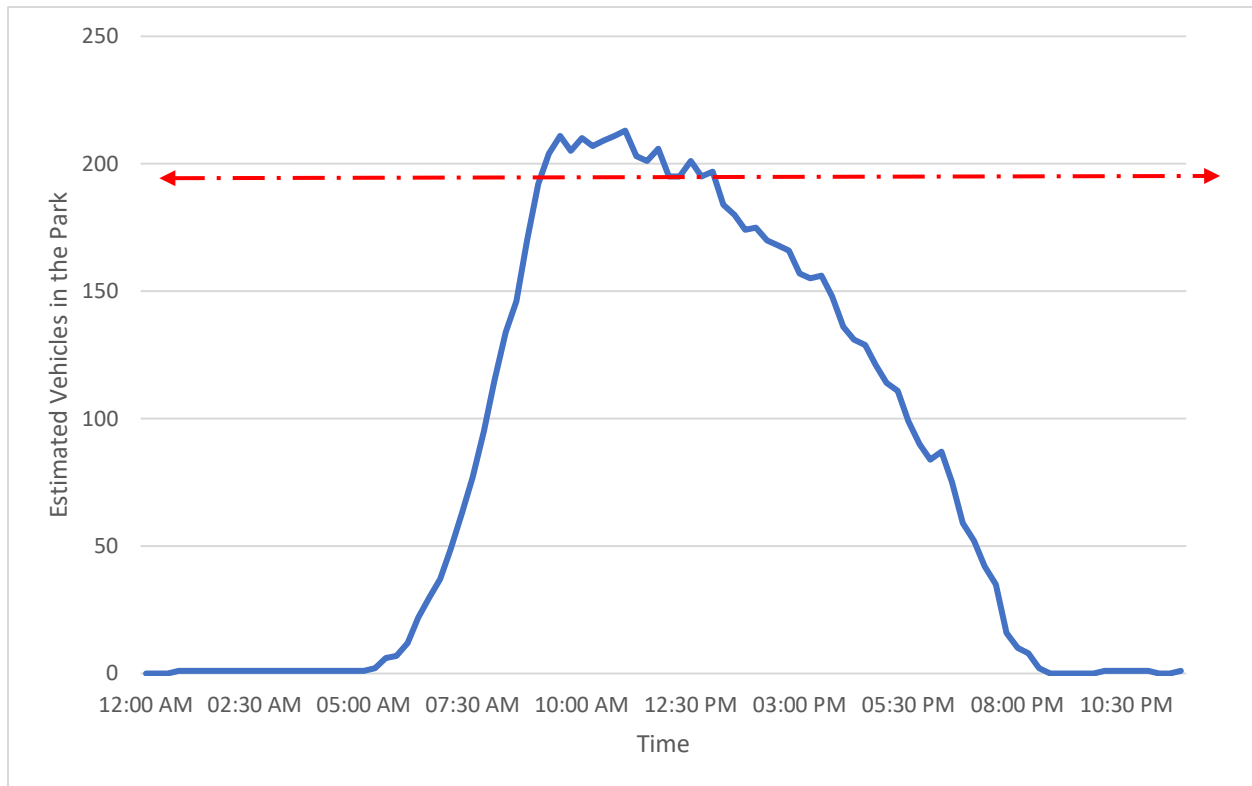
The traffic study calculated the service time for each vehicle at the entrance station, as measured by the length of time between when one car arrived at the entrance station until the next car arrived. The average length of time was 33 seconds. The longest a vehicle spent at the entrance station was 244 seconds and the shortest was 5 to 6 seconds, likely with annual passholders or a Kneale Road resident, as those vehicles are waved through quickly. When vehicles were being turned around and not admitted into the park, the service time was about 14 seconds per vehicle.

On busy days, with many vehicles arriving and a full park, a queue typically forms from mid-morning through the early afternoon. When the park is full, the entrance station holds vehicles until another vehicle exits and denies entry to vehicles if the queue is very long and few vehicles are exiting. The park seeks to limit the queue to five vehicles, to preserve access to and from Artesian Drive for local and pool traffic and limit the delay for those seeking access to Kneale Road residences. During the traffic study, the queue length exceeded five vehicles from 10:15 a.m. to 10:55 a.m., from 11:15 to 11:55 a.m., and sporadically from 12:45 to 2:40 p.m. The longest queue recorded was 15 vehicles at 11:35 a.m. From 7 a.m. to 7 p.m., a queue length of five was exceeded for about 19% of the day, and a total of 41 vehicles were turned around at two times to reduce the length of the queue as well.

4.4   Peak Days

As described above, annual park visitation has increased significantly over the past few years. However, the numbers of visitors on the busiest days cannot increase significantly, as once the parking spaces are full, no additional vehicles are admitted. There are no limits on non-vehicle access (walk or bike in), but there are limited legal parking spaces in town. Therefore, this section looks at the frequency and character of these peak, near capacity, days. This section compares 2015, when annual visitation was 300,618, to October 2018 through September 2019, when visitation was 466,330 over the 12-month period.

High vehicle count days at the park have increased slightly in frequency. In this analysis, the threshold for a high vehicle count day was 685 vehicles. This threshold was derived from the results of the traffic study, when 689 vehicles passed through the entrance station and many vehicles were turned around and denied entry. Whether vehicles are turned around depends on the concentration of vehicle arrival times, but 685 vehicles was used as a threshold in this analysis for when vehicles would likely be turned around over the course of the day. In 2015, there were 10 days where 685+ vehicles passed through the entrance station (some of them may have been turned around and denied entry). In 2018/19, there were 15 days at 685+ vehicles. The maximum vehicle count day in 2019 had slightly more vehicles than the maximum day in 2015. On July 4, 2019, 833 vehicles passed through the entrance station. In 2015, 803 vehicles passed through the entrance station on Sunday, June 14. On both of these days, likely over 100 vehicles were turned around.

High trail count days have shown minimal increases in frequency and magnitude of trail users since 2015. For this analysis, 1,500 trail counts across the four counters was used as a threshold for a very busy day on the trails. This threshold was derived from the trail count on July 13 (1,542) when surveys and the traffic study were conducted, and the parking was full for many hours. In 2015, 24 days had over 1,500 trail counts. In 2018/19, 25 days had over 1,500 trail counts. Effectively, the number of busy days on the trails has not changed over the past four years. In 2015, the busiest day on the trails was Sunday, August 23, with 2,006 total counts. In 2019, that figure was slightly higher, at 2,140 trail counts on Sunday, May 26.

4.5   Heat Maps

The following heat maps show the relative level of use of park trails and destinations on the park's 10 busiest days from fall 2018 to summer 2019. Notably, the first section of trails sees the most use as many people turn around after a short hike. The Fowler trailhead is a primary destination within the park and sees many more visitors than the other park destinations where use was measured.

Figure 8. Daily Level of Use – Trail Use Counts

Eldorado Canyon State Park

Daily Level of Use Map

- - - Park Boundary

Trail Use Count
- ——— 0 - 100
- ——— 101 - 200
- ——— 201 - 300
- ——— 301 - 400
- ——— 401 - 600

Prepared by:

SE GROUP

Eldorado Canyon

Streamside

ELDORADO SPRINGS DR

Fowler West

Fowler East

Rattlesnake Gulch

SCALE (ft)

0   500   1,000   1,500   2,000

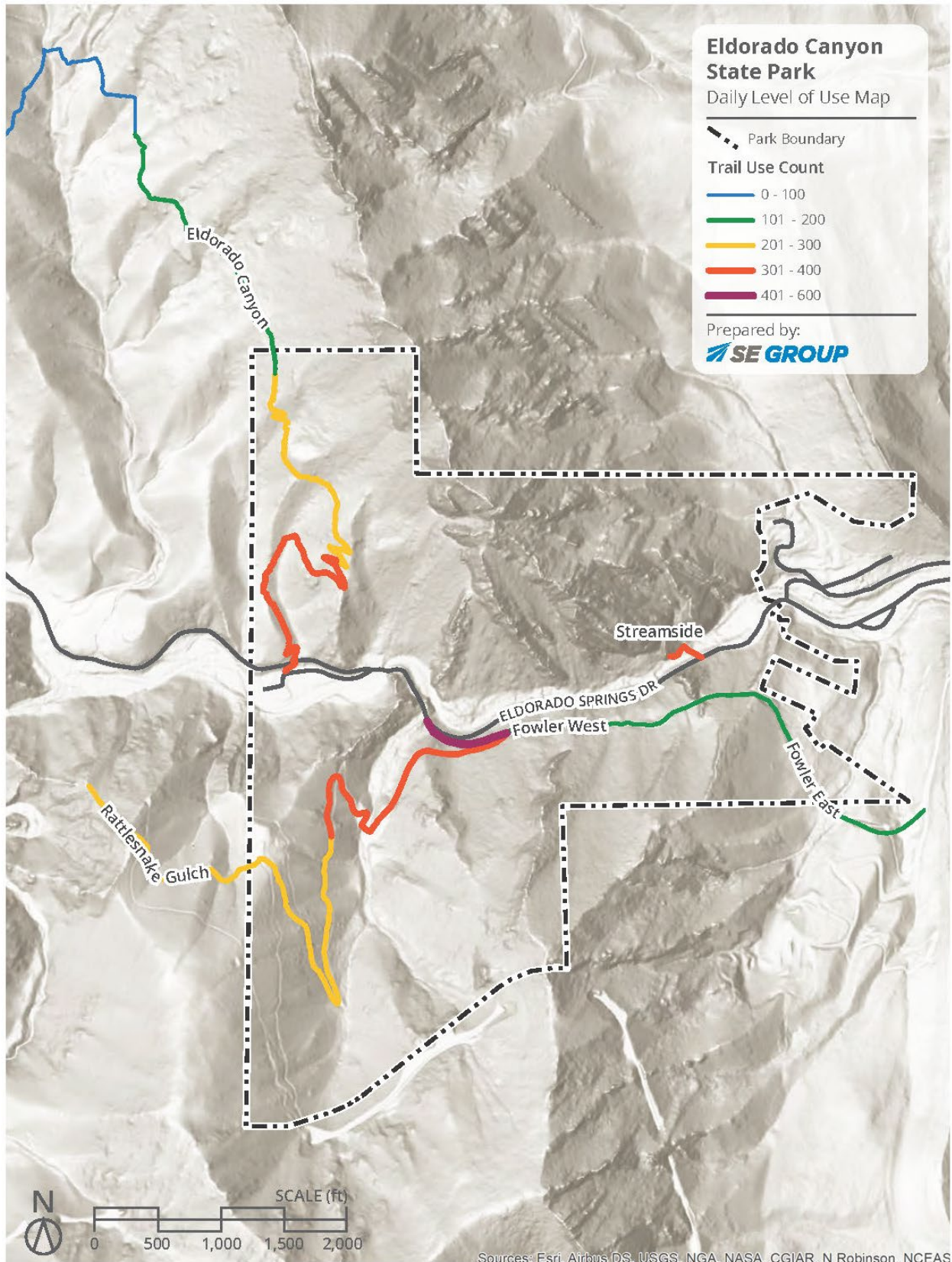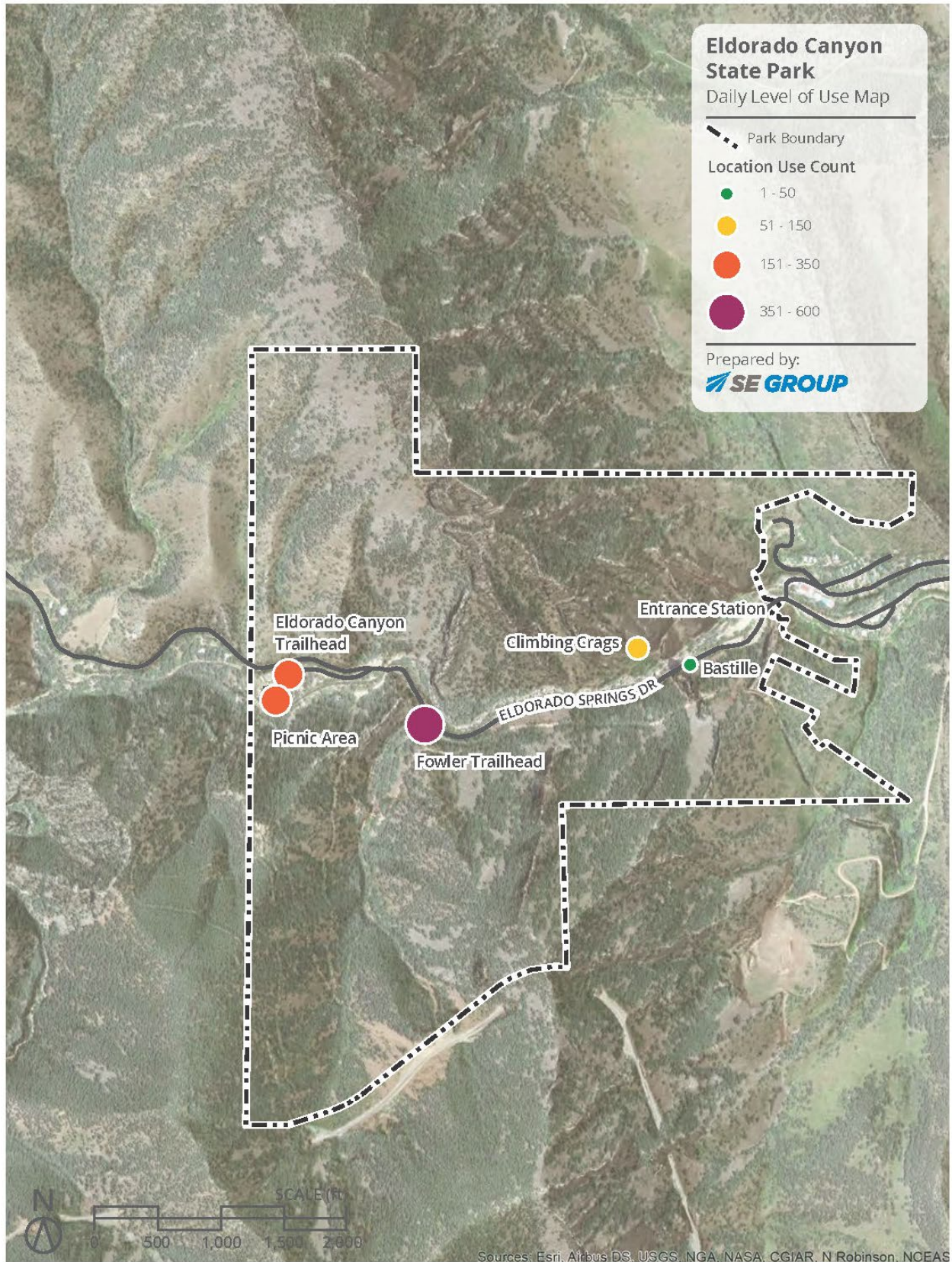Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS

Figure 9. Daily Level of Use – Location Use Counts

5 Park Facilities

5.1 Parking

Eldorado Canyon State Park has a limited supply of parking, with 214 spaces that are well-utilized on busy days. Of those spaces, six are for visitors with a disability, four are employee spaces, and the remaining 204 are visitor spaces. The disabled visitor parking spaces in the park are used frequently, especially with the Fowler Trail, and 210 spaces was used for calculations.

On the fieldwork weekend days, AVO was recorded at 2.7 persons per vehicle. Therefore, when the park visitor and handicapped spaces are all in use, the park typically accommodates about 576 visitors arriving in vehicles at one time.

Over the course of the day, the parking spaces will turn over approximately three times. Although the average length of stay in the park on weekends, as determined by the fieldwork, is 3.6 hours, the parking spaces are not used evenly throughout the day, with higher demand in the morning, and spaces available in the afternoon. On the traffic study day, July 13, 2019, 689 vehicles sought entry to the park, 21 continued on to the neighborhood past the park, and 41 vehicles were turned away. With 627 vehicles parking at the park that day, and 210 visitor and handicapped spaces, the average turnover rate would be approximately 3.0, where each spot is used by three different vehicles over the course of the day, on average. This turnover rate and estimated vehicle capacity are based on the patterns observed on July 13. The daily vehicle capacity would vary based on the concentration of vehicle arrival times and lengths of stay. The 630-capacity figure includes only the cars who park in the park the park, as opposed to the 685-threshold which included turned around vehicles and Kneale Road vehicles.

Based on the number of vehicles parking per day, the number of visitors can be estimated. Assuming the average vehicle occupancy above, 2.7, the park can accommodate 1,728 visitors arriving in a vehicle per day.

The parking spaces are not lined, and improper parking can slightly reduce the number of parking spaces as well. Given the limited parking supply, people are willing to park in any available space, regardless of the location of their activity within the park and make the short walk to their activity.

A percentage of park visitors do not park a vehicle in the park. Eldorado Springs residents will often walk or run into the park. However, given the current pricing structure, it is cheaper for many residents to buy a vehicle annual pass and drive in than buy many walk-in passes and enter the park on foot. In addition, park visitors will park along County Road 67 and access the Fowler Trail from that trailhead.

When the park is full and vehicles are being turned away, anecdotally, park visitors will park in town and walk into the park. There are few legal parking spaces to accommodate these visitors, but many visitors park in town in non-legal spaces regardless. Walk-in data was recorded for a few summer weekend days in 2016. The number of walk-ins ranged from 252 on May 30, Memorial Day Monday, 179 on July 4, to 64 on June 12, a regular Sunday. While walk-ins when the park is full have and will continue to occur, this analysis does not include in-town parking as an additional source of parking capacity as many of the spaces are owned by the Eldorado Artesian Springs and it is illegal for park visitors to park there.

However, daily walk-ins must be considered in understanding daily park visitation. In the past few years, there have been about 5,000 walk-ins passing through the entrance station annually. The summer months typically see 700–800 walk-ins each month, while the spring and fall months are 300–400 each, and the winter months are 100–200 walk-ins each. Given the number of walk-ins during the spring and fall, when the park does not reach its parking capacity frequently, we can assume a high number of walk-ins are local residents. Assuming that 70% of walk-ins occur on weekends and holidays, and there are eight nice weather weekend or holiday days per month, walk-ins through the entrance would be 60 additional visitors on each of weekends/holidays beyond the parking capacity. There are a small number of visitors who walk into the park via the Fowler or Eldorado Canyon trails, but those figures could not be estimated.

The impact of the parking capacity issues on the roadway and at the entrance station is described below.

5.2   Access

Park visitation and capacity issues affect the flow of traffic on Eldorado Springs Drive through the town. When the park is at or approaching its parking capacity, a queue of vehicles will extend towards town. On busy days, the park's parking spaces fill up early in the morning (as early as 8:30 a.m.) and additional vehicles enter the park only when a vehicle exits. Vehicles are held at the entrance station until a space becomes available and long queues can form quickly. Visitation to the Eldorado Springs Resort and Pool can further compound the queue issues and has caused traffic backups all the way through town. Typically, the backups in town are not a result of the sheer number of vehicles passing through town, according to the results of the traffic study. Rather, the backups are likely an extension of the queue to enter the park and vehicles looking for parking to visit the pool. The park turns around vehicles as the queue extends towards town to limit the back up.

As part of this capacity study, a traffic study was conducted on a busy summer weekend day. The study was conducted during the summer of 2019, when the pool was not open. Therefore, this study presents the individual impact of the park on the roadway and queue. Additional traffic counts when the pool is back open would be valuable for a full understanding of the traffic conditions in Eldorado Springs.

The entrance station has a high capacity for processing vehicles into the park, but at busy times, the number of vehicles the entrance station processes declines due to lack of available parking spaces. The traffic study recorded the average length of time per vehicle at the entrance station, at 33 seconds per vehicle. This average includes times when vehicles were being held at the entrance station until a parking space became available, and likely, the entrance station could process visitors at a faster rate when spaces are available. However, we carried the 33-second figure forward in our analysis. With 33 seconds per vehicle, the entrance station can process approximately 109 vehicles per hour. Between 7 a.m. and 7 p.m., the entrance station can process over 1,300 vehicles (assuming constant demand). From 8 a.m. to 1 p.m., when there typically is constant demand at the park, the entrance station can process up to 545 vehicles. In contrast, on the date of the traffic study, the entrance station processed 356 vehicles and denied entry to an additional 41 vehicles during that time period.

The queue backup can inhibit access to the pool and Artesian Drive in Eldorado Springs and create delays to access the homes beyond the park. The park has the space to store five vehicles in a queue before access to these other areas is inhibited or further delayed. Queues store vehicles to enter the

park later, when spaces become available. A queue allows additional vehicles to enter the park when the rate of arriving vehicles is slower than the rate at which vehicles are admitted to the park. While a vehicle in a queue may be admitted to the park in a few minutes, it delays the admittance of the vehicles that are continuing to arrive, and the length of queue will remain constant or continue to grow until the rate of arrival slows. When the arrival rate is slower than the admittance rate, the capacity of the vehicle storage can be added to the park. With a queue that clears frequently during the day, the additional vehicle storage capacity of the queue would be added repeatedly and allow a significant number of additional vehicles to enter the park. However, at the park, there is a relatively constant stream of vehicles arriving through the morning and early afternoon, when the park is full and the admittance rate of vehicles into the park is very slow. Thus, the park is forced to clear the queue occasionally on its busy days, effectively foregoing that additional capacity. On the day of the traffic study, the arrival rate exceeded the admittance rate each hour from 9 a.m. to 2 p.m. For example, in the 11 a.m. hour, a vehicle passed the Arts Center heading towards the park every 47 seconds on average, compared to every 71 seconds heading away from the park (signaling a vehicle could be let in). Thus, the capacity of the vehicle storage is not added into the park until later in the day and does not significantly increase the number of vehicles that can access the park.

A redesign of the entrance station is currently in progress. The proposed design would enable the park to store eight vehicles in the queue, before the access to Artesian Drive would be inhibited. On the day of the traffic study, an eight-vehicle queue was exceeded for about 10% of time between 7 a.m. and 7 p.m., as opposed to 19% of the 7 a.m. to 7 p.m. window for a five-vehicle queue. With an eight-vehicle queue, the park could keep a few more vehicles in storage and slightly reduce the number of vehicles turned away. The redesign also adds an extra lane for residents of Kneale Road beyond the park, staff, and service/emergency vehicles to bypass the queue.

5.3   Trails

Hiking is the most popular park activity, with almost half of summer weekend visitors going for a hike during their visit. Hikers are dispersed across three trails: Fowler, Rattlesnake Gulch, and Eldorado Canyon trails. In this study, the Streamside Trail was considered sightseeing and not going for a hike. Hiking trail capacity is subjective, and determining factors include the trail character, desired experience, and setting. The condition of the natural resources is also important, and the condition along the trail is included in the Park Stewardship Plan.

Of all the activities at the park, hikers were the least likely to state that their activity felt crowded. Of hikers surveyed, 20% said that the trail was crowded, with only 1% saying that crowding was an issue that detracted from their experience. Hikers on the Fowler Trail were slightly less likely to state the trail was crowded (17%), and hikers on Rattlesnake Gulch (26%) and Eldorado Canyon (24%) were slightly more likely to state the trail was crowded. The Fowler Trail has more users than the other trails but is wider and offers a beginner experience. Likely, the width of the trail and the user expectations contribute to fewer people stating it was crowded. Overall, these crowding ratings and the small percentage of visitors stating that crowding detracted from their experience suggests that the hiking trails are not at capacity, from the user experience perspective.

Therefore, these trails would likely be able to accommodate additional users before significantly degrading the user experience. At present, there are approximately 775 visitors who hike at the park on a given busy summer weekend day. About 500 of those visitors are on the Fowler Trail, with 350 of

those continuing on to the Rattlesnake Gulch Trail. About 280 visitors will hike on the Eldorado Canyon Trail, and a small number of visitors likely hike on both the Eldorado Canyon Trail and the Fowler/Rattlesnake Gulch trails. If these trail counts increase significantly, it is important to survey visitors and see if crowding has become more of an issue and monitor the condition of the natural resources, to see if the hiking trails are degrading the natural resources.

5.4 Climbing Crags

Eldorado Canyon is a world-renowned climbing area, with hundreds of routes. Mountain Project, a climbing website with information about park routes, lists 1,181 climbing routes in the park. However, the climbers do not evenly disperse themselves and many of the routes are seldom climbed, while other routes can be crowded or have lines of people waiting to climb. Many of the seldom climbed routes tend to have large gaps between gear placements, making them more dangerous and frightening for those less experienced in the sport, and therefore are and will continue to be climbed less frequently.

Climbers tended to have very positive experiences in their survey responses at the park but did note crowding at certain crags. During the fieldwork surveys, 85% of climbers reported an excellent experience, and the remaining 15% reported a good experience. However, feelings of crowding were prevalent, with 26% of climbers reporting that their climbing route was crowded, and 9% saying that crowding was an issue that detracted from their experience. The percent stating that crowding was an issue varied by location, with 20% of those climbing on Redgarden, 14% of those climbing on the Bastille, and 6% of those climbing on the Wind Tower stating that crowding was an issue. Few climbing at other crags said crowding was an issue. Overall, the climbing area may not be at capacity, but the survey results suggest that certain crags are approaching their capacity.

The "crowding is an issue" figures from Redgarden and the Bastille are significant. Those crags are very accessible both due to their location and the fact that they have some of the easier routes available.

Likely, use will continue to be concentrated on those crags in the future. These "crowding is an issue" figures should be monitored going forward, especially if the percentage of park visitors climbing or the number of daily visitors in the park increases. Strategies to support safer and more enjoyable climbing in crowded conditions may be necessary.

While climbing in the park is popular on summer weekends and holidays, other times of year can be very, if not more, popular. Thus, strategies to mitigate the impacts of crowding at crags may be necessary during non-peak periods as well.

5.5 Picnic Area

Eldorado Canyon State Park is a popular destination for large groups looking to picnic in Boulder and the Denver Metropolitan Area due to the scenery, shade, and riverside picnic sites. The park has 10 picnic sites in the Visitor Center area. Each picnic site has between one and four tables, with an eight people per table maximum. In total, there are 30 tables, supporting up to 240 visitors at a single time. While some groups tend to be smaller than eight people per table, some tend to be larger than eight people per table. On Saturday, June 29, 2019, 50% of groups observed had over eight people per table, and the overall average was just over eight people per table. Each picnic table turns over, on average, 1.4 times per day, as 40% of tables are used by multiple groups over the course of the day. Therefore, the park could be expected to accommodate 336 picnickers per day.

On the fieldwork days, picnickers were observed to be 15% of park visitors. Typically, high picnic demand occurs on the park's busiest days – weekends and holidays. On peak days, members of a picnicking party may arrive very early in the morning to hold a table for the day. However, the parking lots may be full when the rest of the picnicking party arrives at the park and the whole group may not be able to picnic in the park. Other groups arriving later in the day may not be able to park or find a picnic spot at all, despite their prior plan to gather family and friends in the park.

Of the four main park activities (rock climbing, hiking, picnicking, and sightseeing), those picnicking were most likely to experience crowding and say it was an issue. Over 60% of picnickers said it was crowded, compared to 20–25% of other activity participants who said their activity was crowded. Of the 60% of picnickers who said it was crowded, 75% said crowding did not detract from their experience, and 25% said crowding was an issue, typically those who were unable to find a picnic spot.

5.6 Conclusion

At present, the parking capacity determines the number of parking visitors who can enter the park each day. The park's spaces can support approximately 1,730 visitors parking per day at the current distribution of arrival times and turnover.[1] Typically, an additional 60 visitors will walk into the park on a day when the parking spaces are full. This makes the daily capacity 1,790 visitors per day.

The limited parking capacity at the park makes access challenging and limits the number of users on the park's recreational facilities. For most visitors at peak times, accessing and parking at the park are challenging. Even for those admitted to the park, the accessing experience may involve a long queue, a delay to reach a parking spot, and uncertainty. The park fills quickly on weekends and once full, vehicles can only be admitted to the park when another vehicle leaves, creating a long queue at the entrance station that exceeds the vehicle storage capacity for significant periods.

However, once visitors are in the park, they tend to have a pleasant, relatively uncrowded experience especially on the hiking trails. The hiking trails are below their capacity, from a user experience perspective. In a way, the limited parking capacity of the park leads to a positive park experience for visitors once they enter the park.

While the overall climbing experience is relatively uncrowded and positive, certain crags do experience some crowding issues. If the number of climbers increases, either through an increase in total park capacity or in percentage of visitors climbing, certain highly accessible crags may reach their capacity.

Picnicking in the park is approaching its capacity at the present number of parking spaces. The picnic area can support up to 240 people at one time or 336 people over the course of the day. Picnickers represent 15% of total weekend park visitors, as determined in the fieldwork. Therefore, there are an estimated 270 picnickers in the park on a busy weekend day. Given the concentration of picnicking during the middle of the day and the unlikelihood that all groups would have exactly eight people per table, the picnic area can be close to its capacity during the middle of the day on summer weekend days and holidays.

---

[1] 1,730 represents 210 spaces that turn over three times a day, with an average vehicle occupancy of 2.7. See Section 5.1 for further explanation

6   User Types

At present, the park visitors are relatively well distributed between the various park activities. However, if the percentage of visitors participating in a single activity increased dramatically, that activity facility may approach its capacity. For example, if the percentage of climbers relative to other users increased dramatically, certain climbing crags may approach their capacity. Factors that might create these changes include growing popularity of certain sports, growing populations, increased publicity, or changed access into the park. Given the limited potential for vastly increasing the number of people who can access the park daily, a shift in user type distribution would be necessary for a recreational facility to further approach its capacity.

6.1   Proposed Eldorado Canyon – Walker Ranch Trail

The proposed multi-use Eldorado Canyon – Walker Ranch Trail would support additional mountain bike use in the park. The feasibility study of the trail estimates the trail would attract about 60 additional visitors to use the trail per day during the summer.[2] The existing parking capacity supports about 1,790 users, and about 3% of daily park visitors would use the new multi-use trail. Assuming the multi-use trail visitors arrived at the park during the peak times and parking capacity remains constant, if multi-use trail users are granted access, they would slightly reduce the number of visitors participating in the other park activities. On non-peak days, mountain bike use would slightly increase the number of visitors and vehicles in the park. Some mountain bikers may start at Walker Ranch and ride down through the park but would not use a parking space at the park.

Mountain biking tends to be a small group activity, and assuming an AVO of 2.3 (the AVO at Boulder County Open Space trailheads), the trail would attract about 26 vehicles to the park. Most likely, 26 additional vehicles seeking to access the park will not significantly impact the existing challenging access. However, the increase in mountain bike use could potentially affect the visitor experience and result in trail user conflict.

---

[2] Eldorado Canyon – Walker Ranch Trail Feasibility Study Findings Report. 2018. Prepared for Boulder County Parks and Open Space, City of Boulder Open Space, and Mountain Parks, and Colorado Parks and Wildlife.

7 Staff Capacity

Eldorado Canyon park staff perform law enforcement, visitor services, maintenance, and natural resource stewardship duties. They also provide education and interpretation to park visitors, enforce park rules and Colorado statutes, and rehabilitate eroded areas in the park.

However, on busy days, many or even all of the staff on duty are needed to manage parking. The staff are needed to count available parking spaces, man the entrance station, turn vehicles away, and instruct visitors on where available spaces are. Managing parking inhibits the staff from performing their primary duties at these busy times. Staff do not have the capacity to inform visitors about the park activities, trail etiquette, stewardship of the natural resources, or rules around picnicking and other activities. This information from staff can be vital to providing a positive visitor experience and limiting the impacts to the natural resources during high visitation periods. In addition, staff have been primarily managing parking on weekends for many years and catching up on their other duties during the week and off-season. As use continues to grow, with more high visitation days, staff will not have those quieter periods to perform their other duties.

8   Natural Resources

As part of the Management Plan process, CPW has updated the Eldorado Canyon State Park Resource Stewardship Plan (Stewardship Plan), its comprehensive biological and cultural resource inventory, assessment, and management document. The Stewardship Plan describes the existing conditions of the natural resources and biological condition of park resources, including wildlife species, vegetation communities, noxious weeds, and cultural resources. Areas of high ecological sensitivity and management priority are also identified. In addition, the Stewardship Plan contains goals and objectives to maintain quality habitat and species diversity, protect and enhance wetland habitats, and implementation of stewardship prescriptions. Stewardship prescriptions focus on noxious weed management, stabilizing soils in streamside areas, and restoring areas with bare ground (including social trail areas).

The visitor use strategies in the ECSP Management Plan will be informed by the condition of the natural resources, as presented in the Stewardship Plan, and the capacity of park facilities, as presented in this capacity study. This capacity study does not calculate a visitor capacity figure as related to the natural resources, as this is beyond the scope of this study. Additional research and fieldwork would be needed to understand exactly how the level of visitor use would influence natural resources in certain areas of the park. Rather, this study presents key visitor use information to be understood alongside the condition of the natural resources as documented in the Stewardship Plan. This capacity study provides quantitative information on where visitors are going in the park, what they are doing, and how this use is changing over time. This allows CPW to examine relationships between existing visitor use and the condition of the natural resources and identify future monitoring priorities. Visitor use counts are a factor in the condition of the natural resources, but other factors, such as visitor behavior and the sensitivity of an area, are key components as well. Therefore, a visitor capacity of the natural resources cannot be quantified. However, the capacity study findings of visitor use must guide the Management Plan strategies towards protecting the natural resources.

Attachment A. Fieldwork Program

FIELDWORK PROGRAM

This memorandum outlines the proposed field work program at Eldorado Canyon State Park. Fieldwork will be conducted on the following dates and times:

- Wednesday June 26th from 9:00 AM to 3:30 PM

- Saturday June 29th from 10:00 AM to 4:30 PM

- Saturday July 13th from 10:00 AM to 4:30 PM

It is anticipated that SE Group will be collecting data for six hours on each of the dates listed, with thirty minutes built for a transition between counting/surveying locations and for breaks.

Fieldwork will consist of intercept surveys and counts. This fieldwork will contribute to the capacity analysis along with data collected through the park's trail counters, the traffic study, and other park recordkeeping.

SURVEY AND COUNTING LOCATIONS

SE Group staff members will be located at the following sites for counting and surveying. On trails, the staff will be located close to the trailhead itself. The time spent collecting data at each location is listed in parentheses.

- Exit to the park – asking people what activity they participated in that day and recording number of people in the vehicle (2 hours)

- Streamside trail bridge – full survey, with climbing-oriented question (4 hours)

- Eldorado Canyon trail – full survey, with hiking-oriented question (2 hours)

- Fowler trail – full survey, with hiking-oriented question (2 hours)

- Picnic areas – counting and full survey, with picnic-oriented question (2 hours)

  o The staff person will be asking picnickers questions and recording the number of people at each picnic site

SURVEY

SE Group staff will be asking questions to park visitors at the above locations, as people are finishing their hike or leaving their climbing spot. Then, they could describe with better accuracy where they climbed or how far they hiked. Picnickers will likely be surveyed during their activity. The staff person

administering the survey will also take notes on additional comments and group makeup from those surveyed. The survey will ask the following questions:

1. Where are you coming from today?

2. Have you ever visited the park before? If so, how long have you been coming here and with what frequency?

3. Rate your experience in the park today (excellent, good, fair, poor).

4. How much time did you spend in the park today?

5. How was your experience driving to and parking at the park today (excellent, good, fair, poor)? Did you have to leave and come back?

6. If you've ever been turned away from the park, what did you do differently this time? What did you do instead?

7. How many people did you drive to the park with?

8. Hiking

    a. How far did you or are you intending to hike today?

9. Picnicking

    a. Did you have trouble (or have you in the past) had trouble finding a picnic spot?

10. Climbing

    a. Where did you climb today? (name the crag)

11. How crowded was your activity today (crowding was an issue, crowded but it did not detract from my experience, moderate, uncrowded)?

ADDITIONAL DATA SOURCES

The park's trail counters are located at the start of the Fowler, Rattlesnake Gulch, and Eldorado trails and at the bridge crossing of the Streamside trail. Intercept surveys conducted right near these counters will gather a further understanding of these users (what activity are they participating in, how far along the trail they are going, where they are climbing, etc.). These survey results will be extrapolated to understand the patterns of all users on these trails.

The traffic study will provide key information about parking and roadway capacity. The traffic study will provide the data on how long people stay in the park, average vehicle occupancy (AVO), and total number of vehicles both entering and seeking to enter the park. This data will be used to understand the total number of people in the park and the turnover of the parking spaces. Walk-in and bike-in counts from the park will included when calculating a daily number of park visitors.

OUTCOMES

The fieldwork and other data are intended to provide the following maps/figures:

- Heatmaps for trails, climbing crags

  - These heatmaps will illustrate where use is concentrated in the park. The heat maps will also show how far people hiking along each trail.

- Parking Capacity

  - Will divide the total number of park spaces by average length of time in the park (as determined by the traffic study and confirmed by the intercept survey) to understand overall parking capacity.

  - Will use AVO and walk-in/bike-in counts to understand how many park visitors the parking capacity supports.

- Road Capacity

  - The capacity of the road leading to the park will be determined through the traffic study.

- Activity Capacities

  - Picnic Capacity

    - Calculated from total number of picnic tables times eight. During fieldwork, will develop an average turnover rate for each table.

    - Will also count number of picnickers at each table and have conversations to develop a figure around picnicking demand

  - Hiking

    - A precise hiking capacity will not be determined through this fieldwork. The counts and survey will inform a final capacity figure based on the desired experience described by CPW. The counts will quantify the experience described in the survey to understand the potential impacts related to an increased number of visitors.

    - Trail counts will be taken and compared to survey results on both an hourly and daily basis.

  - Climbing

    - A precise climbing capacity will not be determined through this fieldwork. The counts and survey will inform a final capacity figure based on the desired experience described by CPW. The counts will quantify the experience described in the survey to understand the potential impacts related to an increased number of visitors.

- Breakdown by Activity

- o We will calculate the percentage of park visitors participating in each of the park activities (hiking, climbing, picnicking, general sightseeing). With this information, if an increased number of visitors is anticipated (due to a shuttle service or other program), the park can understand how that would affect each of the activity areas.

Attachment B. Traffic Study

October 8, 2019

Shawn Krier
Colorado Parks and Wildlife
Department of Natural Resources
6060 Broadway
Denver, CO 80216

Re: Eldorado Canyon State Park Entrance Improvements – Traffic Study
        Martin/Martin, Inc. Project No.: 18.1633

INTRODUCTION

Colorado Parks and Wildlife is proposing to improve the entrance of the Eldorado Canyon State Park (Inner Canyon) located along Kneale Road at the west end of Eldorado Springs, Colorado. The Eldorado Canyon State Park is approximately 1,393 acres and its Inner Canyon portion (270± acres) is accessed from Eldorado Springs Drive, which passes through the town of Eldorado Springs. The park is popular for rock climbing, hiking trails, fishing, picnic areas and its scenery along South Boulder Creek. At 30 miles from Denver and 10 miles from Boulder, it is visited by almost 400,000 people per year.

Regional access to the park is accommodated solely by Eldorado Springs Drive (State Highway 170), which becomes Kneale Road near the park entrance. Eldorado Springs Drive provides a connection to State Highway (SH) 93 approximately 3-miles to the east of the park entrance. SH 93 extends from Golden to Boulder along the Front Range.

Due to the volume of people visiting the park and its limited parking (214 parking stalls), queuing issues at the park's entrance are common on weekends and holidays from March to November. The 1/3-mile portion of Eldorado Springs Drive immediately prior to the park boundary is privately owned by Eldorado Artesian Springs, Inc. and the state park, along with several other users, has an access easement along this segment. The existing park entrance station is approximately 125' from the property boundary, which means when more than 5 vehicles are present at the entrance station, the queue spills back onto the private road.

The purpose of this study is to review, assess and identify existing traffic related issues that the visitors of the park and residents beyond the park are experiencing and assess the impact that the proposed improvements will have on these existing issues. This letter and analysis will document the existing vehicular demand that the state park experiences and the average and 95th percentile queues that occur on a Saturday. Also, it assesses the improvement that may occur with the proposed reconstruction of the park entrance, and discusses future potential operations for the park to minimize queuing and delay at the park entrance.

PROJECT DESCRIPTION

The Eldorado Canyon State Park is proposing a construction project for the park's entrance station, which, along with other improvements, will relocate the entrance booth, add a bypass lane for non-park users (i.e. residents, emergency vehicles, park staff, utility companies) and oversized vehicles, and provide a turnaround area prior to the entrance booth for when the park is closed or at capacity. The project is intended to make turning away visitors when the park is at capacity a more efficient process to reduce delay and queuing. The relocation of the entrance station to 200' from the property boundary will add queue storage for vehicles within the park. The bypass lane is intended to allow non-park-users that either live on the other side of the park or are accessing utility or water district land to not be delayed by park users stopping at the entrance gate to make their pass purchase. A vicinity map is included as **Exhibit 1**. The existing site with an aerial underlay is shown as **Exhibit 2** and a current site plan, which is currently in the schematic design phase, is included as **Exhibit 3**.

ANALYSIS METHODOLOGY

The various analyses conducted and reported in this document include average vehicle delay (capacity analysis) and queuing analysis.

Average Vehicle Delay (Capacity Analysis) Methodology

A typical intersection capacity analysis would be performed in accordance with the procedures in the *Highway Capacity Manual* (HCM), which quantifies driver perception for such elements as travel time, number of stops, total amount of stopped delay, and impediments caused by other vehicles afforded to drivers who utilize the transportation network. "Level of service" is a defined measure correlated to vehicle stop delay, which is used to grade signalized and unsignalized (stop-controlled) intersections. However, the entrance gate at a state or national park may operate under different expectations than one would have for a common signalized or stop-controlled intersection. The "level of service" premise is applied to determine when an intersection should be improved due for safety considerations. When a driver experiences excessively high delay and congestion, they are more likely to take unnecessary and unsafe risks. However, at an entrance gate, a driver that is experiencing excessive delay is less likely to make an unsafe maneuver and may have a higher threshold for delay than at a typical intersection. Therefore, the HCM methodology and level of service thresholds should not apply in this case. This is not to say that drivers waiting for several minutes will not make an unsafe maneuver out of frustration. This absolutely occurs during peak times at the entrance station and then following the entrance station as drivers can speed to try to find a parking spot, often times not paying attention to other users.

The average vehicle delay was calculated using traffic simulation software, SimTraffic, to model the entrance gate with the peak ingress volume (as counted) and the average service time per vehicle (as estimated from observations). The resulting delay per vehicle is based on SimTraffic output from the simulation model.

Queuing Analysis Methodology

As a part of the data collection completed for this study, the maximum, average and 95th percentile queues were measured. The queue lengths were then compared to the existing and planned queue storage length for the ingress traffic at the entrance station.

TRIP GENERATION

Typically trip generation estimates for development projects are determined using the *Trip Generation Manual, 10th Edition* published by the <u>Institute of Transportation Engineers</u> (ITE). However, the current proposed improvements are not anticipated to generate any new trips to the park, but rather mitigate an existing traffic issue that currently occurs.

EXISTING CONDITIONS

The purpose of this section is to document the existing conditions within the study area for the proposed project.

Land Use

The Eldorado Canyon State Park has been operational since 1978. Its Inner Canyon portion is bordered by City of Boulder open space to the north and south, the community of Eldorado Springs to the east, and Boulder County Open Space and private residences to the west. The trails within the Eldorado Canyon State Park Inner Canyon connect through City of Boulder and Boulder County open space and to the Crescent Meadows portion of the state park.

Existing Roadways

As shown on the site plan, the Eldorado Canyon State Park is accessed from Eldorado Springs Drive / Kneale Road (SH 170). Eldorado Springs Drive is a two-lane, two-way state highway, which extends from State Highway 93 to the community of Eldorado Springs. The road provides access for hundreds of residents, the Rocky Mountain Fire Station No. 6, South Mesa Trailhead, Doudy Draw Trailhead, Eldorado Artesian Springs, and Eldorado Canyon State Park. It is paved and posted at 45 mph for most of its length, but reduces to 35 west of Doudy Draw Trailhead, 25 mph west of County Road 67 and 10 mph through the community of Eldorado Springs. At Eldorado Springs, the paving terminates and the roadway continues as a private access to a bridge crossing of South Boulder Creek where it enters the Eldorado Canyon State Park. Beyond the state park, the roadway continues as Kneale Road and serves several residents and access to Denver Water's diversion canal.

Entrance Station

The Eldorado Canyon State Park entrance station is located approximately 125' from the property boundary (essentially the bridge crossing of South Boulder Creek) along Kneale Road. The entrance station is a 160± square foot (10'x16') booth with a service window for taking payment from park users, providing information and answering questions. The entrance area also has a self-service "Iron Ranger" pay-station for hours when the booth is not manned (early morning/late evening/off-peak season) or for pedestrians and bicycles entering the park.

The bridge crossing of South Boulder Creek is two lanes wide without a designated pedestrian walkway. Pedestrians accessing the park from Eldorado Springs Drive must share the bridge with vehicular traffic. A sidewalk is provided along the west side of the entrance road, which directs people to the "Iron Ranger" pay-station.

Existing Parking

The Inner Canyon portion of the Eldorado Canyon State Park currently has approximately 214 parking stalls including handicap accessible spaces. Due to the topography of the park, which is in a canyon and has South Boulder Creek running through it, there is not sufficient space to easily add parking. During most weekends and holidays from March to November, the park reaches its parking capacity by 10:00 AM. Weather can affect this, but in general the park operates at capacity for a significant portion of its operational hours.

Data Collection: Traffic Volumes, Queuing, Park Capacity, Entrance Service Time

24-hour traffic counts were collected with video cameras on Saturday, July 13, 2019 at three locations along Eldorado Springs Drive; approximately 1000' east of the state park entrance station, at the entrance station (looking from the bridge into the park) and along Kneale Road beyond the state park visitor center. The peak hour and daily volumes from these counts are shown within the following figures. The raw count data is provided in the technical appendix.

Figure 1 – Traffic Volumes at Entrance Station (7.13.2019)
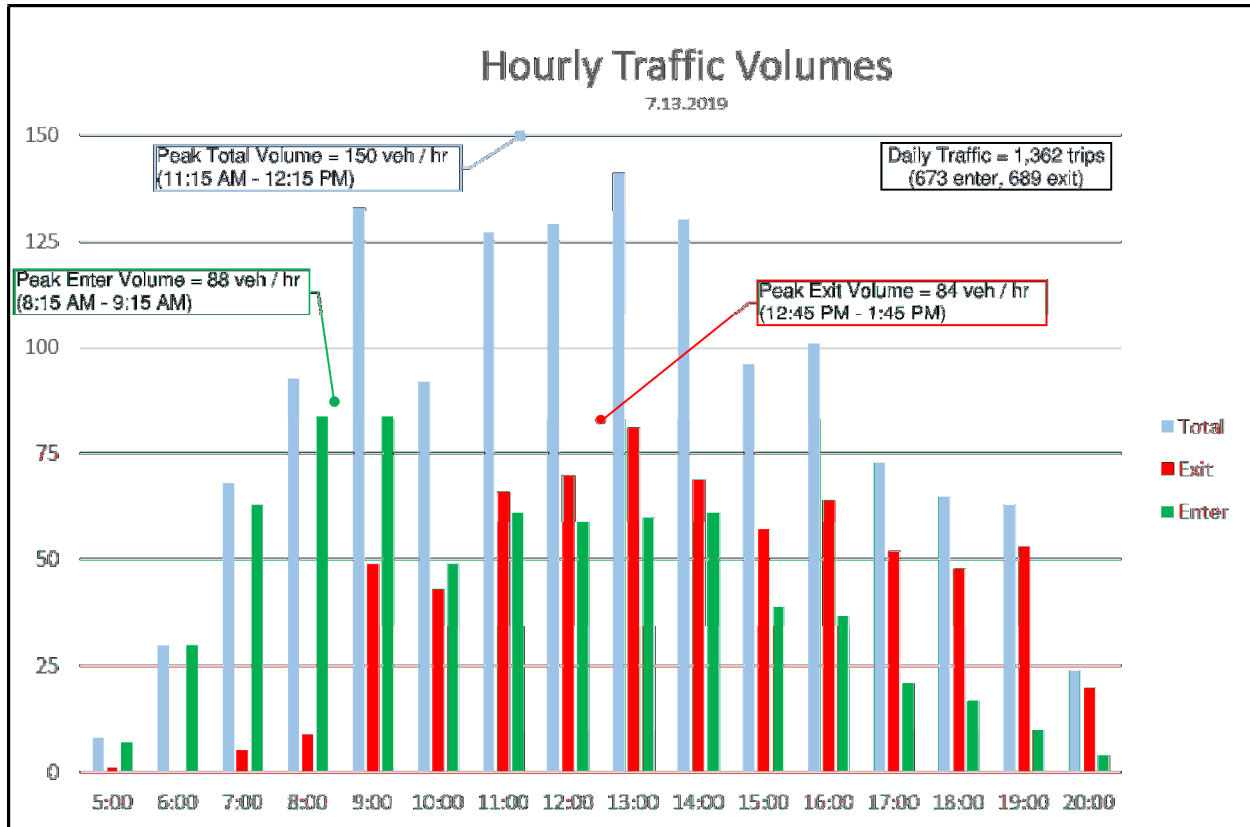
As shown in Figure 1, there were 1,362 trips that passed through the entrance station area during the day of the count with 673 vehicles entering and 689 exiting. The peak hourly ingress volume was 88 vehicles, which occurred from 8:15 AM to 9:15 AM. The peak hourly egress volume was 84 vehicles, which occurred from 12:45 PM to 1:45 PM.

Figure 2 – Traffic Volumes along Eldorado Springs Drive near the Art Center (7.13.2019)
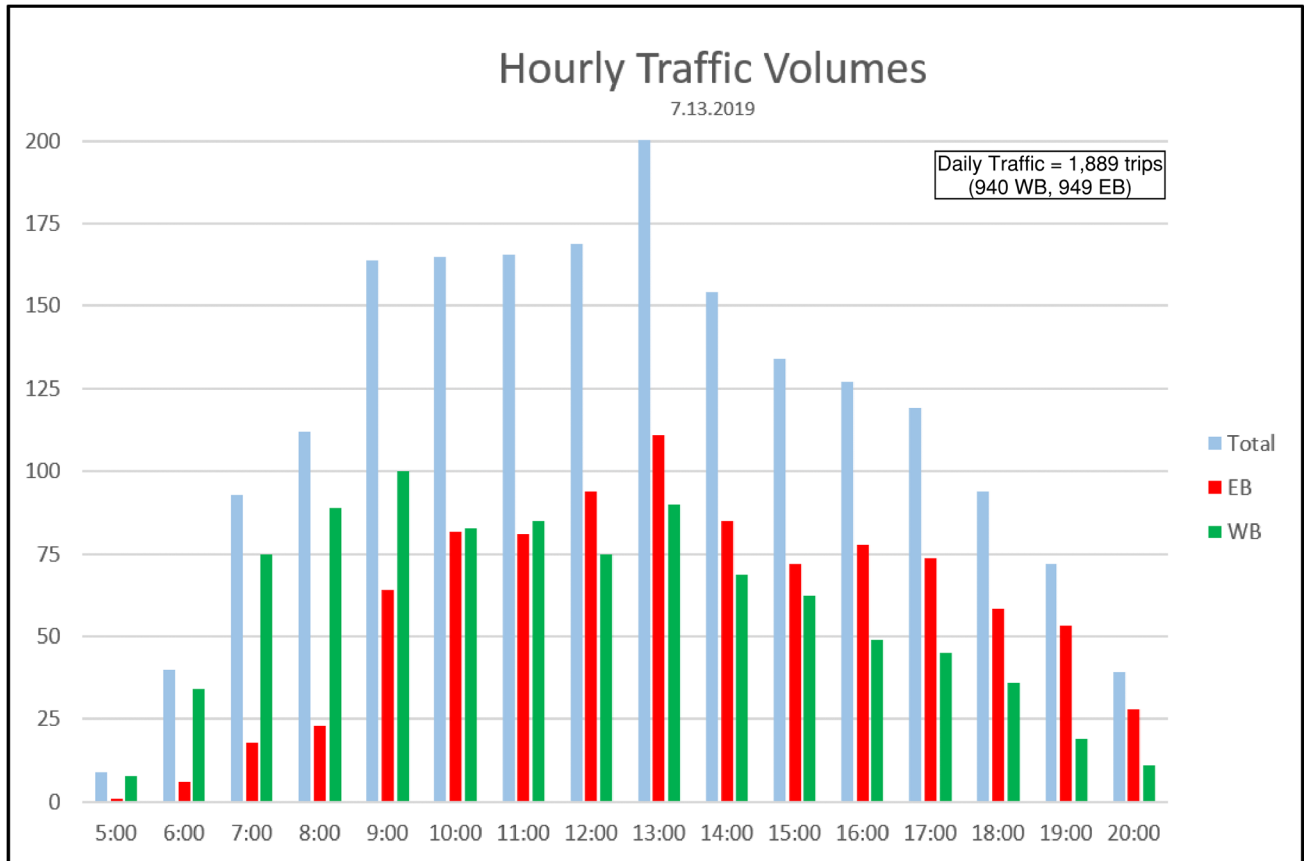
East of the Eldorado Canyon State Park, along Eldorado Springs Drive, the traffic volumes were slightly higher than at the entrance station. The traffic count at this location includes vehicles visiting the state park and other users of the roadway accessing the Eldorado Artesian Springs facility / pool and residences. However, for the summer of 2019, the Eldorado Springs Pool was closed for renovations, which included the day of the traffic count. The total traffic counted on this day at this location was 1,889 trips with 940 travelling westbound and 949 travelling eastbound. The peak hour occurred from 1:00 PM to 2:00 PM with 201 trips.

Figure 3 – Traffic Volumes at Kneale Road beyond State Park (7.13.2019)
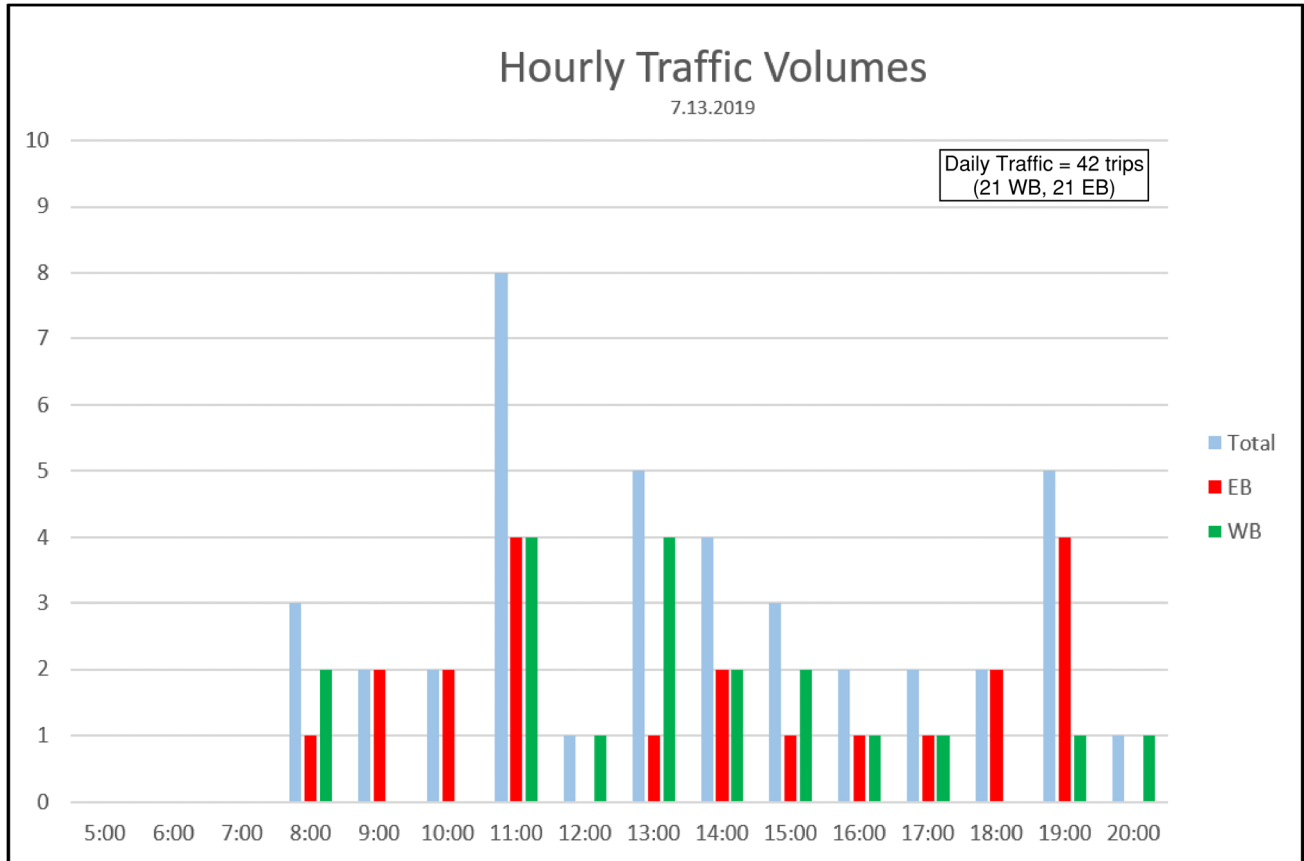
A traffic count was also collected along Kneale Road at the west end of the Eldorado Canyon State Park to determine the number of non-park users. This showed 42 vehicles (21 each way) accessed this portion of Kneale Road.

The park also has embedded traffic counting equipment (Trafx) in the roadway near the entrance station. These counts date back to 2014 and show how the traffic volumes have increased over the past several years, the average monthly volume, average traffic volume during each day of the week, and average hourly volume. These are shown in the bar graphs in the next four figures.

Figure 4 – Traffic Volume per Year

Yearly Totals
2014 to 2018
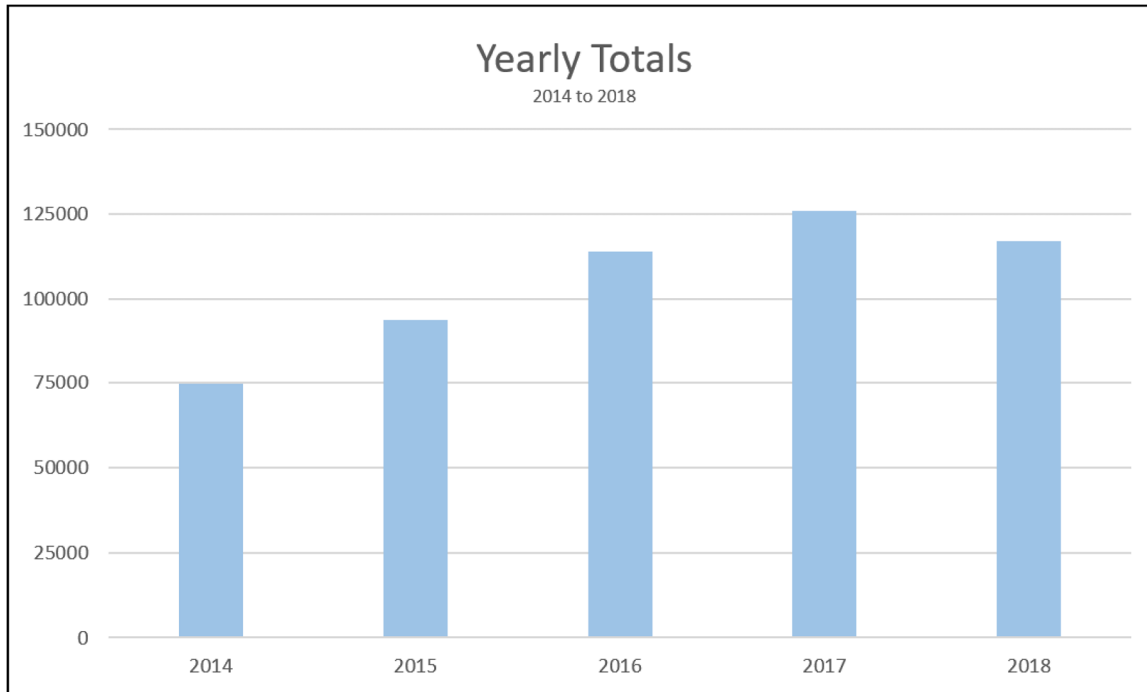
As shown in the figure above, the traffic volumes at the park entrance have generally increased at 7%-8% per year over the past four years. The traffic growth trend leveled out slightly last year, but traffic is anticipated to continue to grow in the future.

Figure 5 – Traffic Volume per Month

Months of the year
01/2014 to 07/2019
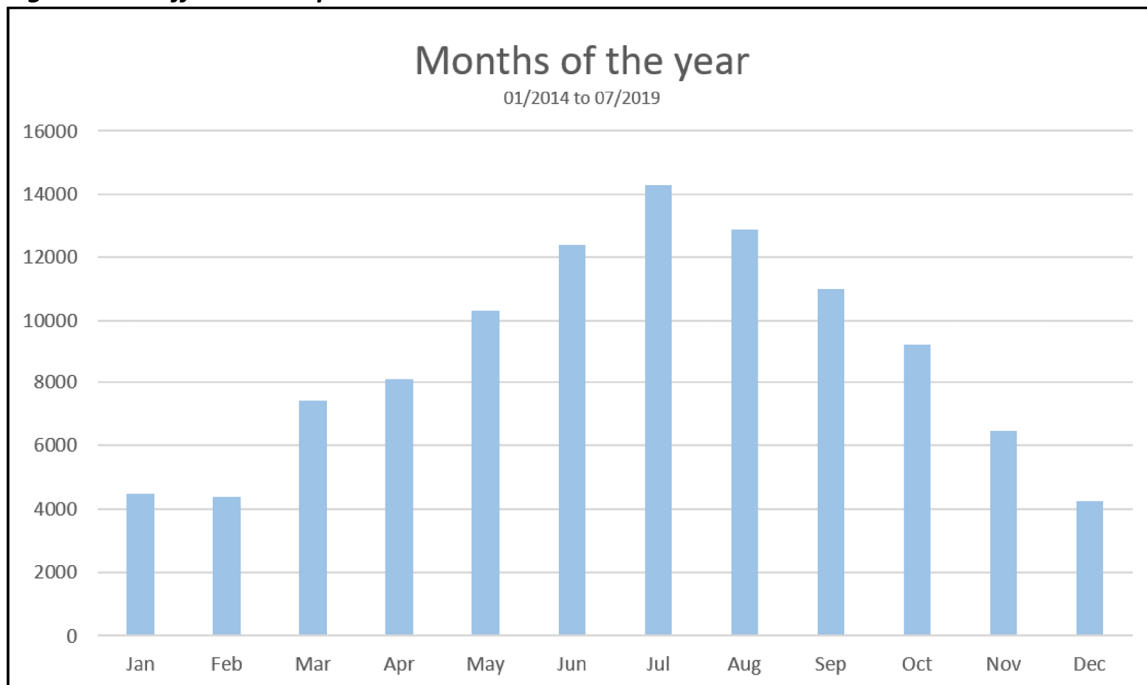
As expected, the summer months are the busiest times of the year for the Eldorado Canyon State Park with July as the busiest month. The traffic counts for this study were collected in July, which means traffic for all other months would likely be less and the counts should represent one of the busiest times for the park.

Figure 6 – Traffic Volume of Days of the Week
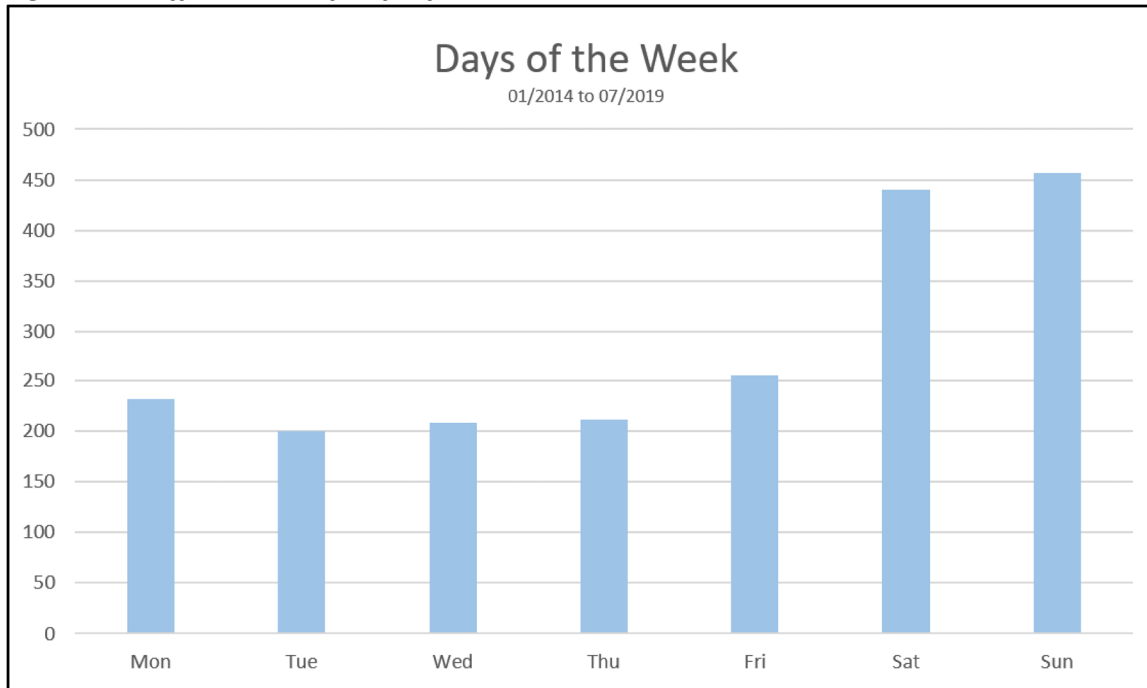
As shown, weekend traffic is approximately double the amount of weekday traffic. Sunday traffic is shown to be slightly higher on average than Saturday traffic. The traffic count collected for this study was conducted on a Saturday in July, which is one of the busiest days of the year for the park.

Figure 7 – Traffic Volume for Hours of the Day
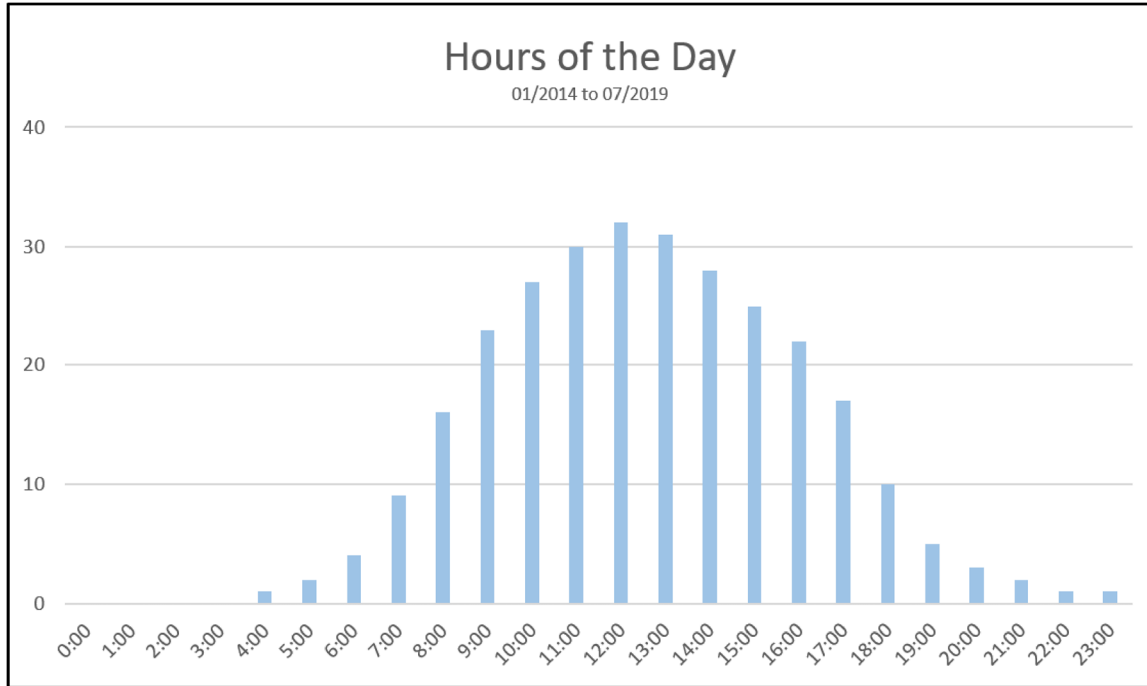
The traffic volume information shown above for the average hourly traffic shows the general distribution of traffic throughout the day at the park entrance. This includes both ingress and egress traffic. It also includes all weekday traffic, which is approximately half of weekend traffic volumes and traffic throughout the year, which includes both off-season and summer volumes.

In addition to traffic counts, queuing lengths (in number of vehicles) at the state park entrance station were also collected on Saturday, July 13, 2019. The data shows the actual queue at five-minute increments throughout the day. From this data, the average queue during the park operational hours was between two and three vehicles. The 95th percentile queue was at 11 vehicles, and the maximum queue was at 15 vehicles. The existing storage of 5 vehicles was exceeded approximately 15% of the day, which occurred predominantly from 10:15 AM to 12:00 PM and sporadically from 12:45 PM to 2:45 PM. The raw queue data is provided in the technical appendix. A graphic representation of the average queue (Q_{AVE}), 95th percentile queue (Q_{95}) and maximum queue (Q_{MAX}) is shown on the next page. As shown in this graphic, the 95th percentile and maximum queues extend beyond the access to the pool.
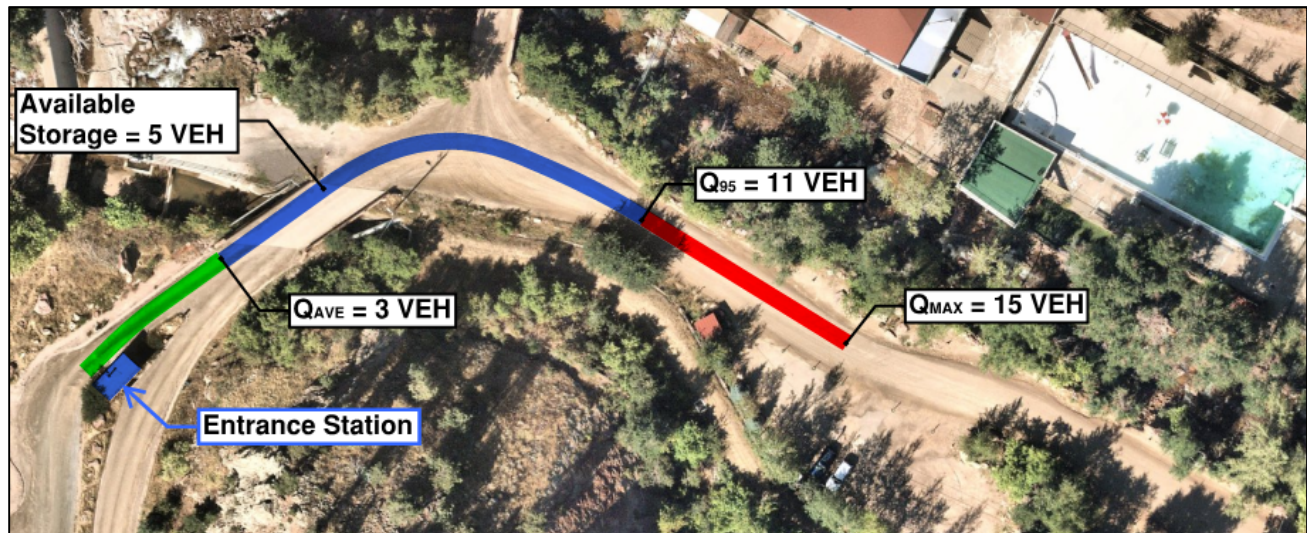
The video recording data was reviewed to determine when the park reached capacity and vehicles started being turned away. This occurred at 9:50 AM, lasted for approximately 15 minutes and 26 vehicles were turned away. The park remained near capacity, but vehicles were allowed to enter until 11:55 where again vehicles were turned away for a ten-minute stretch, 15 vehicles during this time. After noon, more vehicles were exiting than entering and no more vehicles were turned away.

The park operates from dawn to dusk and each vehicle must pass by a manned entrance station where they will pay park fees, gather information about the park and be instructed where to proceed for parking. Each transaction varies depending on if the park user is familiar with the park, new to the park, has a season pass, is paying with cash or credit, or has extensive questions for the park ranger in the booth. The video recording data was reviewed to determine the average, maximum and minimum service times at the entrance station during the peak hour. The service time was defined as the time between a vehicle reaching the entrance booth to the time the next vehicle reaches the entrance booth (assuming a vehicle was queued immediately behind the first vehicle). The average service time per vehicle at the park entrance station is approximately 33 seconds per vehicle (or 109 vehicles per hour). The maximum service time was 244 seconds, which was presumably a season pass purchase or a patron requiring extra assistance and information. The minimum service time was around 5-8 seconds, which occurred several times presumably for season pass holders or non-park users passing through. At an average service time of 33 seconds per vehicle, a 10-vehicle queue would take about 5 ½ minutes to clear.

During the times when vehicles which were refused entrance when the park was at capacity, the service time averaged 14 seconds per vehicle and the queue was quickly cleared.

Average Delay

The peak hourly volume entering the park occurred from 8:15-9:15 AM, which was 88 vehicles. Based on the hourly volume entering the park during this time and the average service time experienced at the entrance station, the average delay experienced per vehicle is approximately 79 seconds. The average delay per vehicle was determined by modeling the entrance station within SimTraffic, a traffic simulation software.

PROPOSED CONDITIONS

Eldorado Canyon State Park is planning to relocate its entrance station booth, realign and lengthen the approach lane, add a turnaround area prior to the booth, and add a bypass lane for non-park users and oversized vehicles. The new location of the entrance station booth will provide approximately 200' of queue storage between the park boundary and the booth.

The popularity of Eldorado Canyon State Park has increased almost every year since its inception. With the population growth of the Denver-metro area, this trend is anticipated to continue. With more vehicles attempting to access the park, there is the potential for increased delay and congestion at the park entrance.

With 200' of storage or 8 vehicles, the current queue (as observed) would be accommodated approximately 90% of the park operating times if the operations are not improved with the new configuration. However, the new layout of the entrance is anticipated to improve the operations, allowing for easier turnaround prior to the entrance booth when the park is at capacity.

Pedestrian facility improvements will be incorporated into the entrance station reconstruction, providing sidewalk on both sides of the roadway, crosswalks and easy access to the "Iron Ranger" automated pay-station.

FUTURE CONDITIONS

The number of vehicles that wish to enter the park already exceeds the capacity on weekends and as traffic to the park increases (as it has over the past several years), delay and queuing at the park entrance may also continue to increase. The ability to increase parking within the Inner Canyon portion of the park is not viable due to the terrain. Other options for improve access to the park on a weekend were explored. One option is to purchase property outside of the park, but within 5 miles, to add a remote parking lot with a shuttle system. This is not currently in the short-term or long-range plans of the State Park, but could allow for additional visitors to the park.

A shuttle system alone could also be implemented, which would originate in Boulder or another nearby community. Allowing for mass-transit to provide a stop at the park entrance or within the park would allow access to the park without needing a vehicle. This could be accomplished by coordinating with existing mass-transit services in Boulder or with RTD (Regional Transportation District).

Another options, which may allow for improved access and experience for visitors and would alleviate some of the delay and congestion issues at the park entrance, is to implement a pre-purchase permit / reservation system. Similar to other high-demand parks, such as Hanging Lake in Glenwood Canyon, a reservation system would require users of the park to plan their trip ahead of time and make a reservation online. Without a reservation, users would not be allowed entry to the park.

CONCLUSIONS/RECOMMENDATIONS

The Eldorado Canyon State Park (Inner Canyon) currently has almost 700 vehicles per weekend day. The existing parking for the Inner Canyon portion of the park is currently providing approximately 214 parking spaces, which is insufficient based on the demand on most weekends and holidays from March to November. At times, the park staff must turn away visitors when the parking has reached its capacity. The parking typically reaches capacity by 10:00 AM on weekend days and hovers around that capacity point until 1:00-2:00 PM. On weekdays, the park typically operates within it parking capacity.

The existing entrance station booth is located approximately 125' from the park property boundary, which allows for up to 5 vehicles to queue on the park property. When queues exceed 5 vehicles, stacking occurs on the private roadway that provides access to the park. This occurs approximately 15% of the time during the park operational hours on weekends.

There are several residences west of Eldorado Canyon State Park and utility / water district staff that use the park canyon roadway for access. These users are often delayed as they must wait behind queued vehicles at the entrance. During peak hours, these non-park users can wait 10 or more minutes to enter the park.

To add queuing space, address non-park users (residents, utility / water district staff), and more easily clear queues when the park is at capacity, improvements are proposed at the park entrance. These improvements will include demolishing the existing entrance booth and constructing a new booth in a new location. The new booth is proposed to be located approximately 200' from the property boundary, providing queue storage on the park property for up to 8 vehicles. A bypass lane is also proposed to allow non-park users to circumvent the entrance station. Finally, a turnaround (sized to accommodate a large pickup truck) is proposed in advance of the entrance station to more easily turn away visitors when the parking is at capacity.

Pedestrian facilities are also planned to be improved at the park entrance as many visitors access the park on foot or bicycle, especially when parking is at capacity. Pedestrian improvements will include sidewalk and crosswalks within the entrance area. Pedestrians are encouraged to utilize the "Iron Ranger" automated pay-station instead of the manned booth.

Additional measures may be required in the future to address the continual increase in demand at the park. These measures may include adding an off-site parking area with a shuttle system and/or incorporating a permit / reservation system for visitors.

Should you have any questions regarding this document or the information contained herein, please do not hesitate to contact me at (303)431-6100 or via email at cmacphee@martinmartin.com

Sincerely,

Craig MacPhee, P.E.
Sr. Project Engineer

Boulder

ELDORADO SPRINGS DR (SH 170)

Crescent
Meadows

Inner Canyon

Eldorado Springs

Eldorado Canyon
State Park

Eldorado
Mountain

Eldorado
Mountain

Scar Top
Mountain

Coal Creek
Canyon Park

Crescent
Mountain

Coal Creek
Peak

City of Boulder
Open Space

Flatirons Vista

Greenbelt
Plateau

Marshall Lake

Marshall Mesa Trailhead

Rocky Flats
National
Wildlife
Refuge

US 36

SH 128

SH 93

PROJECT
LOCATION

EXHIBIT 1
VICINITY MAP

N

NOT TO SCALE
OCTOBER 8, 2019

MARTIN/MARTIN
CONSULTING ENGINEERS

12499 WEST COLFAX AVENUE, LAKEWOOD, COLORADO 80215
303.431.6100   MARTINMARTIN.COM

ENTRANCE STATION

IRON RANGER AUTOMATED PAY-STATION

RESTROOM

PARKING

ELDORADO SPRINGS DR (PRIVATE)

N

NOT TO SCALE

OCTOBER 8, 2019

EXHIBIT 2

Existing Site (topo) with Aerial Underlay

Martin/Martin
CONSULTING ENGINEERS

12499 WEST COLFAX AVENUE, LAKEWOOD, COLORADO 80215
303.431.6100   MARTINMARTIN.COM

EXISTING BRIDGE

ELDORADO SPRINGS DR

TURNAROUND CIRCLE

6.00' WALK

RAISED CURB

AREA #1
A= 1,742 SF
BASE BID: HEAVY DUTY CONCTERE
ADD-ALT #1: PERMEABLE PAVERS WITH UNDERDRAIN

BYPASS LANE

ELDORADO SPRINGS DR (PRIVATE)

PROPOSED BUILDING

ENTRANCE STATION

AREA #2
A= 4,569 SF
BASE BID: GRAVEL PAVING
ADD-ALT #1: PERMEABLE PAVERS WITH UNDERDRAIN
ADD-ALT #2: ASPHALT PAVING

4.00' WALK

RAISED CURB

RAISED CURB

RAISED CURB

INTERMEDIATE FLUSH CURB/EDGE
RESTRAINTS (TYP.) FOR
PERMEABLE PAVERS ADD-ALT

BASE BID DIVISION LINE

PEDESTRIAN ACCESS

ADD-ALT LOWER PARKING
A= 10,417 SF
ADD-ALT #1: PRE-GRADING FOR FUTURE PAVEMENT
ADD-ALT #2: GRAVEL PAVING REFLECTIVE MARKERS
FOR PARKING STALL DELINEATION
ADD-ALT #3: ASPHALT PAVING WITH CURB AND
GUTTER

BOLLARD (TYP)

AREA #3
A= 5,322 SF
BASE BID: GRAVEL PAVING
ADD-ALT #1: ASPHALT PAVING

PARKING

ELDORADO
SPRINGS WELL

BASE BID DIVISION LINE

EXISTING RESTROOM

RESTROOM

ADD-ALT UPPER PARKING
A= 15,830 SF
ADD-ALT#1: PRE-GRADING FOR FUTURE PAVEMENT
ADD-ALT #2: GRAVEL PAVING REFLECTIVE
MARKERS FOR PARKING STALL DELINEATION
ADD-ALT #3: ASPHALT PAVING WITH CURB AND
GUTTER

EXISTING
BUILDING

N

NOT TO SCALE

OCTOBER 8, 2019

EXHIBIT 3
CURRENT SITE PLAN

MARTIN/MARTIN
CONSULTING ENGINEERS

12499 WEST COLFAX AVENUE, LAKEWOOD, COLORADO 80215
303.431.6100 MARTINMARTIN.COM

This page left blank intentionally

Traffic Study
Eldorado Canyon State Park

TECHNICAL APPENDIX
October 8, 2019

This page left blank intentionally

RAW TRAFFIC COUNTS

This page left blank intentionally

All Traffic Data Services

Wheat Ridge, CO 80033

Start Time	13-Jul-19 Sat	EB	WB							Total
12:00 AM		0	1							1
01:00		0	0							0
02:00		0	0							0
03:00		0	0							0
04:00		0	0							0
05:00		0	0							0
06:00		0	0							0
07:00		0	0							0
08:00		1	2							3
09:00		2	0							2
10:00		2	0							2
11:00		4	4							8
12:00 PM		0	1							1
01:00		1	4							5
02:00		2	2							4
03:00		1	2							3
04:00		1	1							2
05:00		1	1							2
06:00		2	0							2
07:00		4	1							5
08:00		0	1							1
09:00		0	0							0
10:00		0	0							0
11:00		0	1							1
Total		21	21							42
Percent		50.0%	50.0%							
AM Peak	-	11:00	11:00	-	-	-	-	-	-	11:00
Vol.	-	4	4	-	-	-	-	-	-	8
PM Peak	-	19:00	13:00	-	-	-	-	-	-	13:00
Vol.	-	4	4	-	-	-	-	-	-	5
Grand Total		21	21							42
Percent		50.0%	50.0%							

ADT   ADT 42   AADT 42

All Traffic Data Services
Wheat Ridge, CO 80033

Start Time	13-Jul-19 Sat	EB	WB								Total
12:00 AM		0	1								1
01:00		0	0								0
02:00		0	0								0
03:00		0	0								0
04:00		0	0								0
05:00		1	7								8
06:00		0	30								30
07:00		5	63								68
08:00		9	**84**								93
09:00		49	84								**133**
10:00		43	49								92
11:00		**66**	61								127
12:00 PM		70	59								129
01:00		**81**	60								**141**
02:00		69	**61**								130
03:00		57	39								96
04:00		64	37								101
05:00		52	21								73
06:00		48	17								65
07:00		53	10								63
08:00		20	4								24
09:00		0	0								0
10:00		0	1								1
11:00		1	1								2
Total		688	689								1377
Percent		50.0%	50.0%								
AM Peak	-	11:00	08:00	-	-	-	-	-	-	-	09:00
Vol.	-	66	84	-	-	-	-	-	-	-	133
PM Peak	-	13:00	14:00	-	-	-	-	-	-	-	13:00
Vol.	-	81	61	-	-	-	-	-	-	-	141
Grand Total		688	689								1377
Percent		50.0%	50.0%								

ADT   ADT 1,377   AADT 1,377

All Traffic Data Services

Wheat Ridge, CO 80033

Start Time	13-Jul-19 Sat	EB	WB								Total
12:00 AM		2	2								4
01:00		1	4								5
02:00		0	0								0
03:00		1	0								1
04:00		0	0								0
05:00		1	8								9
06:00		6	34								40
07:00		18	75								93
08:00		23	89								112
09:00		64	**100**								164
10:00		**82**	83								165
11:00		81	85								**166**
12:00 PM		94	75								169
01:00		**111**	**90**								**201**
02:00		85	69								154
03:00		72	62								134
04:00		78	49								127
05:00		74	45								119
06:00		58	36								94
07:00		53	19								72
08:00		28	11								39
09:00		4	6								10
10:00		2	3								5
11:00		2	4								6
Total		940	949								1889
Percent		49.8%	50.2%								
AM Peak	-	10:00	09:00	-	-	-	-	-	-	-	11:00
Vol.	-	82	100	-	-	-	-	-	-	-	166
PM Peak	-	13:00	13:00	-	-	-	-	-	-	-	13:00
Vol.	-	111	90	-	-	-	-	-	-	-	201
Grand Total		940	949								1889
Percent		49.8%	50.2%								

ADT   ADT 1,889   AADT 1,889

This page left blank intentionally

RAW QUEUE DATA

This page left blank intentionally

Start Date: 7/13/2019
Start Time: 12:00:00 AM
Site Code: 1
Location 1: ELDORADO CANYON STATE PARK QUEUE

Date	Time	QUEUE	Date	Time	QUEUE	Date	Time	QUEUE
7/13/2019	12:00 AM	0	7/13/2019	03:25 AM	0	7/13/2019	06:50 AM	0
7/13/2019	12:05 AM	0	7/13/2019	03:30 AM	0	7/13/2019	06:55 AM	0
7/13/2019	12:10 AM	0	7/13/2019	03:35 AM	0	7/13/2019	07:00 AM	0
7/13/2019	12:15 AM	0	7/13/2019	03:40 AM	0	7/13/2019	07:05 AM	0
7/13/2019	12:20 AM	0	7/13/2019	03:45 AM	0	7/13/2019	07:10 AM	0
7/13/2019	12:25 AM	0	7/13/2019	03:50 AM	0	7/13/2019	07:15 AM	0
7/13/2019	12:30 AM	0	7/13/2019	03:55 AM	0	7/13/2019	07:20 AM	0
7/13/2019	12:35 AM	0	7/13/2019	04:00 AM	0	7/13/2019	07:25 AM	0
7/13/2019	12:40 AM	0	7/13/2019	04:05 AM	0	7/13/2019	07:30 AM	0
7/13/2019	12:45 AM	0	7/13/2019	04:10 AM	0	7/13/2019	07:35 AM	0
7/13/2019	12:50 AM	0	7/13/2019	04:15 AM	0	7/13/2019	07:40 AM	0
7/13/2019	12:55 AM	0	7/13/2019	04:20 AM	0	7/13/2019	07:45 AM	0
7/13/2019	01:00 AM	0	7/13/2019	04:25 AM	0	7/13/2019	07:50 AM	0
7/13/2019	01:05 AM	0	7/13/2019	04:30 AM	0	7/13/2019	07:55 AM	0
7/13/2019	01:10 AM	0	7/13/2019	04:35 AM	0	7/13/2019	08:00 AM	0
7/13/2019	01:15 AM	0	7/13/2019	04:40 AM	0	7/13/2019	08:05 AM	0
7/13/2019	01:20 AM	0	7/13/2019	04:45 AM	0	7/13/2019	08:10 AM	0
7/13/2019	01:25 AM	0	7/13/2019	04:50 AM	0	7/13/2019	08:15 AM	0
7/13/2019	01:30 AM	0	7/13/2019	04:55 AM	0	7/13/2019	08:20 AM	3
7/13/2019	01:35 AM	0	7/13/2019	05:00 AM	0	7/13/2019	08:25 AM	1
7/13/2019	01:40 AM	0	7/13/2019	05:05 AM	0	7/13/2019	08:30 AM	2
7/13/2019	01:45 AM	0	7/13/2019	05:10 AM	0	7/13/2019	08:35 AM	1
7/13/2019	01:50 AM	0	7/13/2019	05:15 AM	0	7/13/2019	08:40 AM	4
7/13/2019	01:55 AM	0	7/13/2019	05:20 AM	0	7/13/2019	08:45 AM	1
7/13/2019	02:00 AM	0	7/13/2019	05:25 AM	0	7/13/2019	08:50 AM	2
7/13/2019	02:05 AM	0	7/13/2019	05:30 AM	0	7/13/2019	08:55 AM	1
7/13/2019	02:10 AM	0	7/13/2019	05:35 AM	0	7/13/2019	09:00 AM	3
7/13/2019	02:15 AM	0	7/13/2019	05:40 AM	0	7/13/2019	09:05 AM	1
7/13/2019	02:20 AM	0	7/13/2019	05:45 AM	0	7/13/2019	09:10 AM	2
7/13/2019	02:25 AM	0	7/13/2019	05:50 AM	0	7/13/2019	09:15 AM	3
7/13/2019	02:30 AM	0	7/13/2019	05:55 AM	0	7/13/2019	09:20 AM	3
7/13/2019	02:35 AM	0	7/13/2019	06:00 AM	0	7/13/2019	09:25 AM	2
7/13/2019	02:40 AM	0	7/13/2019	06:05 AM	0	7/13/2019	09:30 AM	0
7/13/2019	02:45 AM	0	7/13/2019	06:10 AM	0	7/13/2019	09:35 AM	2
7/13/2019	02:50 AM	0	7/13/2019	06:15 AM	0	7/13/2019	09:40 AM	3
7/13/2019	02:55 AM	0	7/13/2019	06:20 AM	0	7/13/2019	09:45 AM	3
7/13/2019	03:00 AM	0	7/13/2019	06:25 AM	0	7/13/2019	09:50 AM	2
7/13/2019	03:05 AM	0	7/13/2019	06:30 AM	0	7/13/2019	09:55 AM	1
7/13/2019	03:10 AM	0	7/13/2019	06:35 AM	0	7/13/2019	10:00 AM	3
7/13/2019	03:15 AM	0	7/13/2019	06:40 AM	0	7/13/2019	10:05 AM	4
7/13/2019	03:20 AM	0	7/13/2019	06:45 AM	0	7/13/2019	10:10 AM	1

Date	Time	QUEUE	Date	Time	QUEUE	Date	Time	QUEUE
7/13/2019	10:15 AM	6	7/13/2019	02:10 PM	10	7/13/2019	06:05 PM	2
7/13/2019	10:20 AM	8	7/13/2019	02:15 PM	6	7/13/2019	06:10 PM	1
7/13/2019	10:25 AM	6	7/13/2019	02:20 PM	1	7/13/2019	06:15 PM	0
7/13/2019	10:30 AM	12	7/13/2019	02:25 PM	0	7/13/2019	06:20 PM	1
7/13/2019	10:35 AM	12	7/13/2019	02:30 PM	0	7/13/2019	06:25 PM	0
7/13/2019	10:40 AM	9	7/13/2019	02:35 PM	4	7/13/2019	06:30 PM	0
7/13/2019	10:45 AM	9	7/13/2019	02:40 PM	7	7/13/2019	06:35 PM	0
7/13/2019	10:50 AM	11	7/13/2019	02:45 PM	5	7/13/2019	06:40 PM	0
7/13/2019	10:55 AM	8	7/13/2019	02:50 PM	0	7/13/2019	06:45 PM	0
7/13/2019	11:00 AM	1	7/13/2019	02:55 PM	1	7/13/2019	06:50 PM	0
7/13/2019	11:05 AM	0	7/13/2019	03:00 PM	0	7/13/2019	06:55 PM	0
7/13/2019	11:10 AM	4	7/13/2019	03:05 PM	1	7/13/2019	07:00 PM	0
7/13/2019	11:15 AM	8	7/13/2019	03:10 PM	0	7/13/2019	07:05 PM	0
7/13/2019	11:20 AM	12	7/13/2019	03:15 PM	0	7/13/2019	07:10 PM	0
7/13/2019	11:25 AM	12	7/13/2019	03:20 PM	1	7/13/2019	07:15 PM	0
7/13/2019	11:30 AM	12	7/13/2019	03:25 PM	2	7/13/2019	07:20 PM	1
7/13/2019	11:35 AM	15	7/13/2019	03:30 PM	2	7/13/2019	07:25 PM	0
7/13/2019	11:40 AM	12	7/13/2019	03:35 PM	0	7/13/2019	07:30 PM	0
7/13/2019	11:45 AM	8	7/13/2019	03:40 PM	1	7/13/2019	07:35 PM	0
7/13/2019	11:50 AM	11	7/13/2019	03:45 PM	4	7/13/2019	07:40 PM	1
7/13/2019	11:55 AM	7	7/13/2019	03:50 PM	2	7/13/2019	07:45 PM	0
7/13/2019	12:00 PM	2	7/13/2019	03:55 PM	0	7/13/2019	07:50 PM	0
7/13/2019	12:05 PM	3	7/13/2019	04:00 PM	0	7/13/2019	07:55 PM	0
7/13/2019	12:10 PM	3	7/13/2019	04:05 PM	0	7/13/2019	08:00 PM	0
7/13/2019	12:15 PM	2	7/13/2019	04:10 PM	0	7/13/2019	08:05 PM	0
7/13/2019	12:20 PM	1	7/13/2019	04:15 PM	0	7/13/2019	08:10 PM	1
7/13/2019	12:25 PM	1	7/13/2019	04:20 PM	0	7/13/2019	08:15 PM	0
7/13/2019	12:30 PM	5	7/13/2019	04:25 PM	1	7/13/2019	08:20 PM	0
7/13/2019	12:35 PM	1	7/13/2019	04:30 PM	1	7/13/2019	08:25 PM	0
7/13/2019	12:40 PM	3	7/13/2019	04:35 PM	0	7/13/2019	08:30 PM	0
7/13/2019	12:45 PM	9	7/13/2019	04:40 PM	1	7/13/2019	08:35 PM	0
7/13/2019	12:50 PM	5	7/13/2019	04:45 PM	0	7/13/2019	08:40 PM	0
7/13/2019	12:55 PM	7	7/13/2019	04:50 PM	0	7/13/2019	08:45 PM	0
7/13/2019	01:00 PM	1	7/13/2019	04:55 PM	0	7/13/2019	08:50 PM	1
7/13/2019	01:05 PM	4	7/13/2019	05:00 PM	0	7/13/2019	08:55 PM	0
7/13/2019	01:10 PM	7	7/13/2019	05:05 PM	1	7/13/2019	09:00 PM	0
7/13/2019	01:15 PM	3	7/13/2019	05:10 PM	0	7/13/2019	09:05 PM	0
7/13/2019	01:20 PM	0	7/13/2019	05:15 PM	1	7/13/2019	09:10 PM	0
7/13/2019	01:25 PM	0	7/13/2019	05:20 PM	1	7/13/2019	09:15 PM	0
7/13/2019	01:30 PM	4	7/13/2019	05:25 PM	0	7/13/2019	09:20 PM	0
7/13/2019	01:35 PM	1	7/13/2019	05:30 PM	0	7/13/2019	09:25 PM	0
7/13/2019	01:40 PM	4	7/13/2019	05:35 PM	3	7/13/2019	09:30 PM	0
7/13/2019	01:45 PM	11	7/13/2019	05:40 PM	2	7/13/2019	09:35 PM	0
7/13/2019	01:50 PM	10	7/13/2019	05:45 PM	2	7/13/2019	09:40 PM	0
7/13/2019	01:55 PM	7	7/13/2019	05:50 PM	0	7/13/2019	09:45 PM	0
7/13/2019	02:00 PM	2	7/13/2019	05:55 PM	0	7/13/2019	09:50 PM	0
7/13/2019	02:05 PM	5	7/13/2019	06:00 PM	0	7/13/2019	09:55 PM	0

Date	Time	QUEUE
7/13/2019	10:00 PM	0
7/13/2019	10:05 PM	0
7/13/2019	10:10 PM	0
7/13/2019	10:15 PM	0
7/13/2019	10:20 PM	0
7/13/2019	10:25 PM	0
7/13/2019	10:30 PM	0
7/13/2019	10:35 PM	0
7/13/2019	10:40 PM	0
7/13/2019	10:45 PM	0
7/13/2019	10:50 PM	0
7/13/2019	10:55 PM	0
7/13/2019	11:00 PM	0
7/13/2019	11:05 PM	0
7/13/2019	11:10 PM	0
7/13/2019	11:15 PM	0
7/13/2019	11:20 PM	0
7/13/2019	11:25 PM	0
7/13/2019	11:30 PM	0
7/13/2019	11:35 PM	0
7/13/2019	11:40 PM	0
7/13/2019	11:45 PM	0
7/13/2019	11:50 PM	0
7/13/2019	11:55 PM	0

This page left blank intentionally

SIMTRAFFIC RESULTS

This page left blank intentionally

1: Main Access Driveway & Gate Entrance Performance by approach

Approach	WB	EB	SB	All
Denied Del/Veh (s)	0.1	0.2	0.1	0.2
Total Del/Veh (s)	20.4	78.8	1.2	77.4

does not exist. only included
for modeling purposes

Total Network Performance

Denied Del/Veh (s)	0.2	
Total Del/Veh (s)	78.1	

Intersection: 1: Main Access Driveway & Gate Entrance

Movement	WB	EB	SB
Directions Served	T	T	LR
Maximum Queue (ft)	28	174	7
Average Queue (ft)	1	78	0
95th Queue (ft)	12	176	5
Link Distance (ft)	231	379	98
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 0

Attachment C. Fieldwork Findings

ELDORADO CANYON STATE PARK MANAGEMENT PLAN CAPACITY STUDY FIELDWORK FINDINGS

As part of the recreation capacity analysis, SE Group conducted fieldwork at Eldorado Canyon State Park on the following dates:

➢ Wednesday June 26th

➢ Saturday June 29th

➢ Saturday July 13th

On each fieldwork day, SE Group staff members surveyed park visitors and collected additional data regarding vehicle occupancy, activity participation, picnicking, and visitor use of the Streamside Bridge. In total, SE Group surveyed 356 visitor groups across three six-hour fieldwork sessions. The surveys were conducted as visitors were wrapping up their activity at trailheads, in the picnic area, and on Streamside Bridge.

Each fieldwork day had warm weather, with temperatures between 80 and 95 degrees, and clear to partly cloudy skies. According to park data collection, the fieldwork weekend days saw a similar level of visitation as a typical, busy weekend day over the summer.

The full capacity analysis will also include data from the traffic study and park trail counts and recordkeeping. This document summarizes the findings from the fieldwork surveys and other data collection.

DATA COLLECTION KEY FINDINGS

➢ Average Vehicle Occupancy (AVO) observed was 2.7 people per vehicle on both weekend days and 2.5 on the weekday (average 2.65 overall). Comparatively, an average of 2.3 people occupied each car driven to Boulder County Parks and Open Space properties in 2015. Anecdotally, many Eldorado visitors reported meeting outside the park and carpooling in, even visitors arriving very early in the morning to rock climb, when spaces are available.[1]

o Single occupancy vehicles were 10% of vehicles on Saturday, June 29th and 16% of vehicles on Saturday, July 13th.

[1] The traffic study will also be collecting vehicle occupancy data.

➢ On the weekend days, 50% of visitor groups were hiking, 23% were sightseeing[2], 14% were climbing, 10% were picnicking, and 3% were categorized as other (i.e. fishing, passing through, etc.).

- o We recorded this information near the park exit as visitors were leaving, for two hour-long segments each fieldwork day. The activity breakdown does vary throughout the day (i.e., climbers tend to leave earlier in the day, picnickers leave later). As we conducted our fieldwork later in the day to capture a larger volume of people leaving, climbers may represent a slightly higher percentage of total visitor groups than recorded here.

- o We recorded activity for each vehicle as it exited the park. Based on the intercept survey data described below, vehicle occupancy varies significantly by activity. Climbers tend to have the lowest vehicle occupancy, while picnickers have the highest. Using the survey data provided below, by percent of total park visitors, hikers represent an estimated 46% of total park visitors, climbers are 11%, picnickers are 15%, and sightseers are 25%.

SURVEY KEY FINDINGS

➢ **Visitor Origin:** Visitors to the park are predominantly from the Denver Metropolitan Area.[3] Of groups surveyed, 11% were from the City of Boulder, 11% were from elsewhere in Boulder County, 53% were from the Denver Metro, 1% were from elsewhere in Colorado, 5% were out-of-state visitors accompanying a local resident, and 20% were out-of-state visitors coming to the park independently.

- o On the weekends, the breakdown shifted slightly, with more visitors from Denver Metro and a smaller percentage of out-of-state visitors. On the weekends, City of Boulder residents were 13% of visitor groups, elsewhere in Boulder County were 8%, Denver Metro residents were 57%, out-of-state accompanying were 4%, and out-of-state independently were 17%. Including City of Boulder, Boulder County residents were 21% of weekend visitor groups.

---

[2] Sightseers were people who walked around the park but did not travel down the Fowler, Rattlesnake Gulch, or Eldorado Canyon Trail. They may have crossed the Streamside Bridge.
[3] The Denver Metropolitan Area consists of Adams, Arapahoe, Broomfield, Denver, Douglass, and Jefferson Counties.

Weekend Visitor Origin

Out of State, 21%

City of Boulder, 13%

Elsewhere in Boulder County, 8%

Elsewhere in Colorado, 1%

Denver Metro, 57%
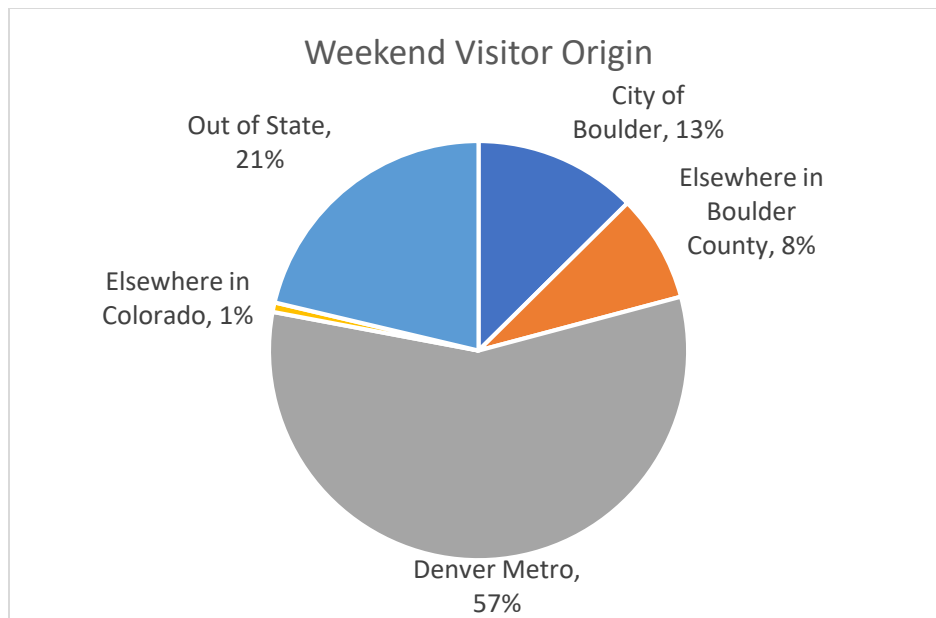
- o Boulder County residents are a high proportion of the park's climbers. In the survey, 46% of climbers were from Boulder County. In comparison, Boulder County residents are only 22% of park visitors surveyed. Nearly all picnickers are from Denver Metro (83%). Sightseers are more likely to be from out-of-state or Denver Metro, while the breakdown of hikers is closely in line with the breakdown overall.

- ➢ **Vehicle Occupancy:** In the survey, we asked groups how many people were in each vehicle coming to the park. People reported a slightly higher vehicle occupancy than was observed (3.03 vs. 2.7).

  - o Vehicle occupancy varies based on the activity. Picnickers have the highest vehicle occupancy (estimated 4.23 persons per vehicle) while rock climbers had the lowest (estimated 2.06). Rock climbers typically climbed in small, two to three person groups, while picnics tended to be large affairs, with an average weekend picnic group size of 13.1. Hikers reported an average vehicle occupancy of 2.55, slightly below the park average while sightseers were slightly higher, at 3.0. These patterns reflect the nature of the activities, as climbers must climb in smaller groups. However, the park's average vehicle occupancy is already well above that at Boulder County Parks and Open Space (2.3 in the 2015 Visitor Survey).

Vehicle Occupancy by Activity

| Activity	Occupancy
Climb	~2.05
Hike	~2.55
Picnic	~4.25
Sightseeing	~3.0
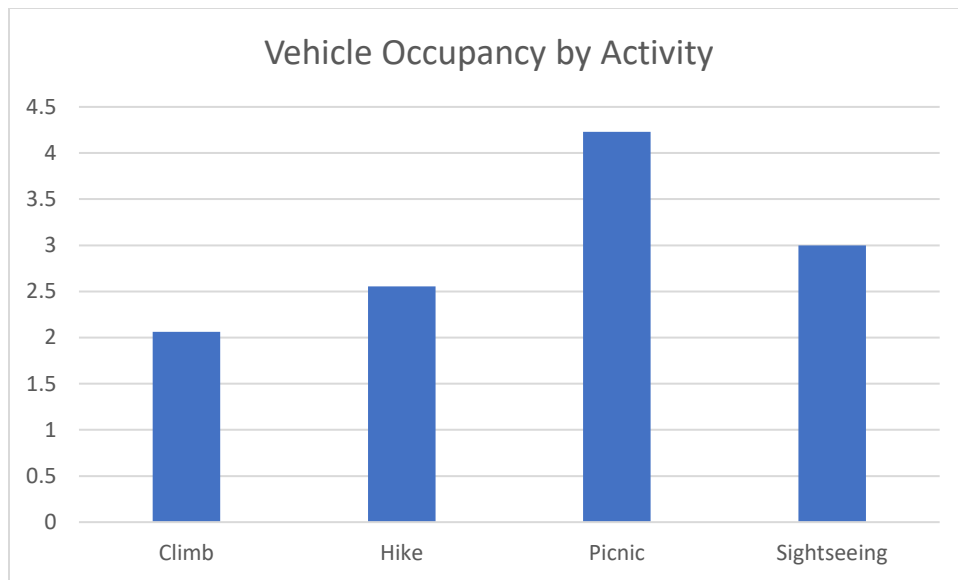
- o Visitors' origin location is related to vehicle occupancy, likely due to a multitude of factors such as distance from the park and activity while at the park. City of Boulder residents have the lowest vehicle occupancy on average, at 2.49, while other Boulder County residents are closer to 2.6. Denver Metro visitors have the highest vehicle occupancy, at 2.93, while out-of-state visitors are 2.73. While local visitors may present an opportunity for increasing vehicle occupancy, they tend to be climbers who recreate in smaller groups.

- ➤ **Visitor Experience:** Of visitor groups, 79% rated their experience as excellent, with an additional 18% rating their experience as good. Only 2% of visitor groups rated their experience as fair, and 1% rated it as poor.

  - o Visitors who hadn't been to the park before rated their experience slightly higher, at 83% excellent and 14% good, compared to 77% excellent and 20% good of those that had been there before.

  - o Visitors rated their experience slightly lower for weekend visits than weekday. Of weekday visitors, 84% rated their experience as excellent, compared to 78% of weekend visitors. Experience ratings were relatively aligned between the two weekend days.

  - o Of activity participants, climbers and hikers rated their experience most positively, with 86% of climbers and 84% of hikers rating their experience as excellent. Of picnickers, only 66% rated their experience as excellent, but 30% still rated the experience as good, with only 4% rating it as fair or poor. Of sightseers, 75% rated their experience as excellent, 18% rated it as good, 7% as fair, and no one rated it as poor.
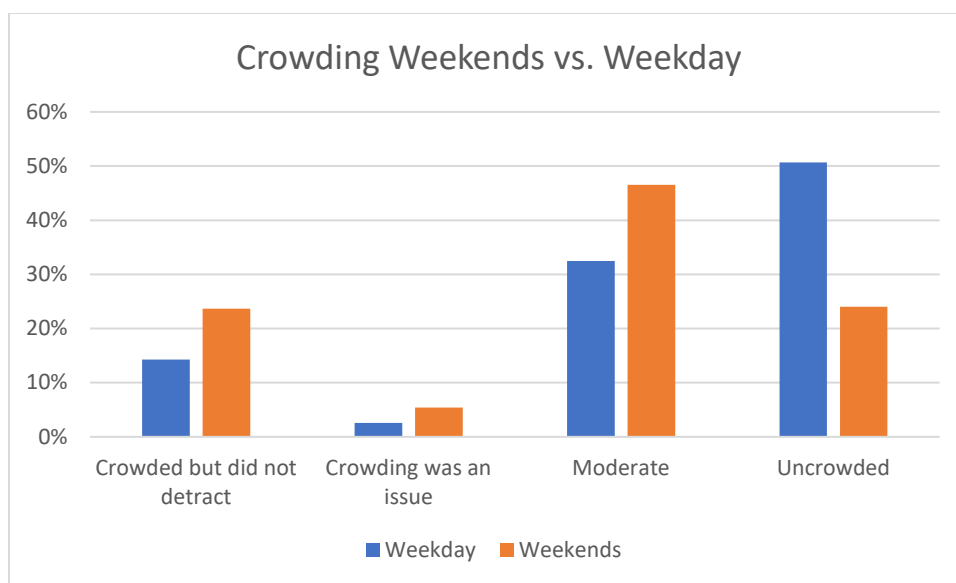
Experience, by Activity

Legend: Excellent, Good, Fair, Poor
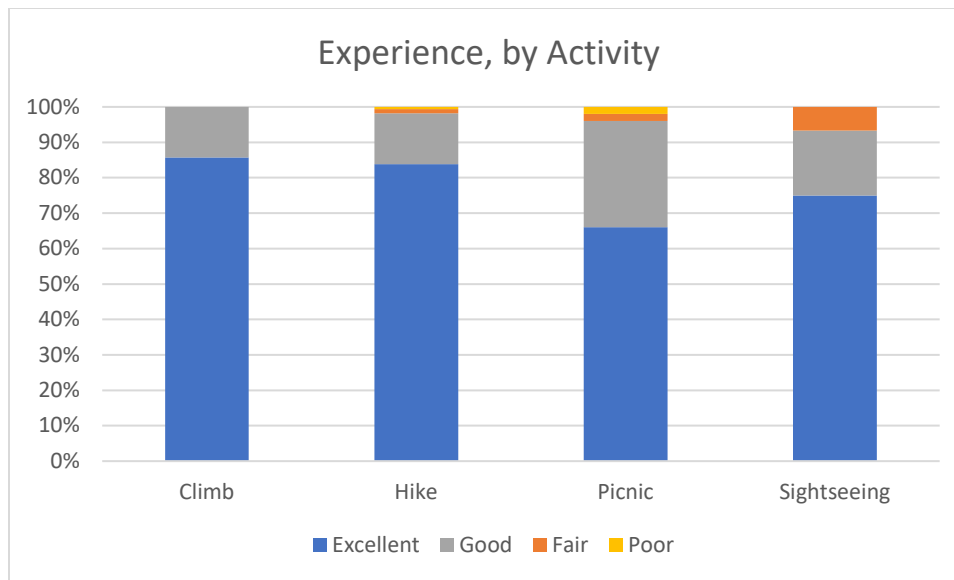
> ➢ **Visitor Frequency:** Most visitors had been to the park before. Those that had typically visit the park only a few times a year.

- o Overall, 63% of visitor groups had been to the park before, while 37% had not visited before.

- o Most climbers and picnickers had visited the park before, and hikers and sightseers were evenly divided between those that had and hadn't. 91% of climbers and 88% of picnickers had been to the park before. Comparatively, 51% of hikers and 44% of sightseers had visited the park before.

- o Of those who had been to the park before, 49% visit 1-3 times a year, 15% visit 4-10 times per year, 18% visit 11 to 30 times a year, and 18% visit more than 30 times per year.

- o Those who visit the park most frequently rated their experience most positively, with 91% of those who visit 30+ times per year rating their experience on that day as excellent. Of those who visit 1-3 times per year, 75% rated their experience as excellent; 85% of those visiting 4-10 times per year rated their experience as excellent; and 72% of those visiting 11-30 times per year rated their experience as excellent.

- o By activity, climbers visit most frequently and picnickers visit least frequently. Of climbers surveyed who had been to the park before, 48% visit 30+ times per year, 33% visit 11-30 times per year, and 10% visit 1-3 and 10% visit 4-10 times per year. Of hikers, only 6% visit 30+ times per year, 16% visit 11-30 times per year, 16% visit 4-10 times per year, and 61% visit 1-3 times per year. Of picnickers, none visited 30+ times per year, 3% visited 11- 30 times per year, 22% visited 4-10 times a year, and 75% visited 1-3 times per year. Of sightseers, 15% visited 30+ times per year, 5% visited 11-30 times per year, 15% visited 4-10 times per year, and 65% visited 1-3 times per year.
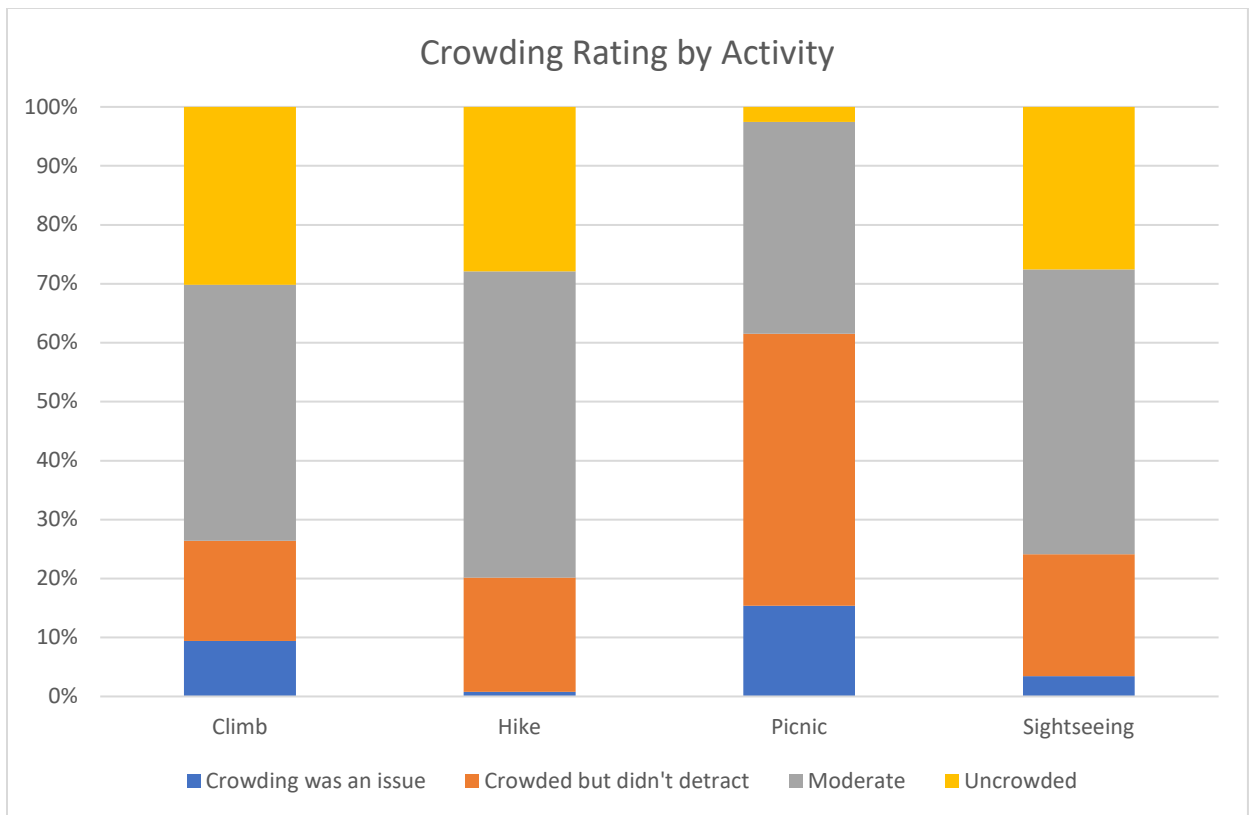
Visit Frequency, by Activity
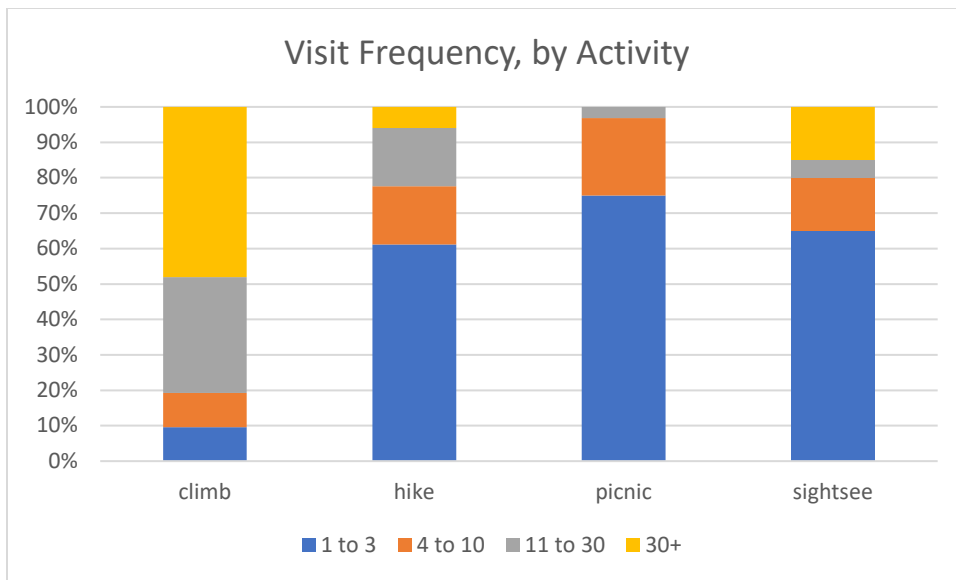
> **Accessing the Park:** Overall, 39% of visitors rated their experience accessing the park as excellent, 40% rated it as good, 14% rated it as fair, and 8% rated it as poor.

> o However, the ratings varied significantly by day. On the Wednesday, 66% of people rated their accessing experience as excellent, 21% as good, 12% as fair, and 1% as poor. On the first Saturday, June 29th, 40% of people rated their accessing experience as excellent, 36% as good, 15% as fair, and 9% as poor. On the second Saturday, July 13th, 22% rated their experience as excellent, 53% as good, 15% as fair, and 9% of poor. Of note, between the two Saturdays, the percent rating their experiences as fair or poor was identical, with the difference in the percent rating it as good vs. excellent. While people generally found parking on both days, they may have experienced a longer line or had other issues entering the park on July 13th.


Accessing the Park Weekends vs. Weekday
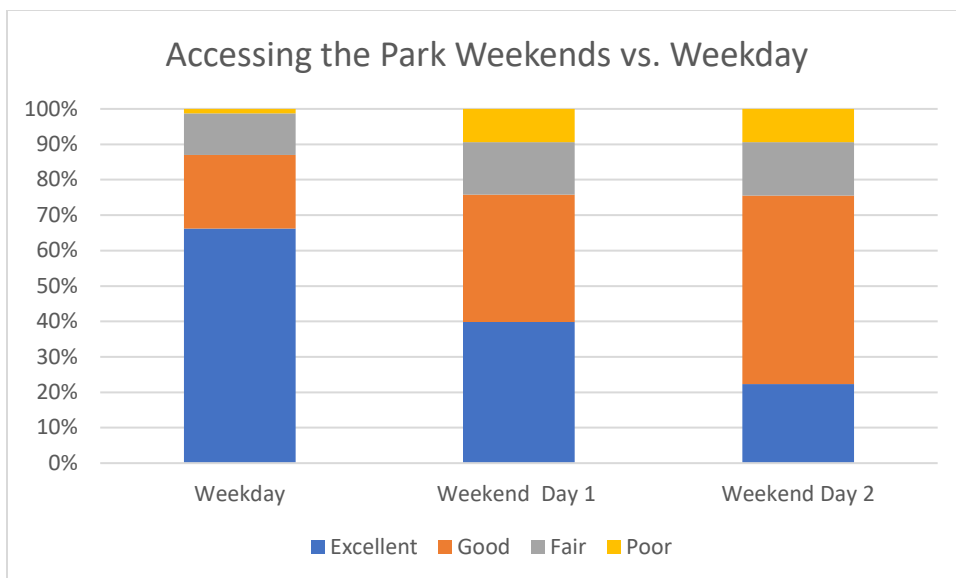
- Unsurprisingly, those who rated their experience accessing the park as excellent were more likely to have an overall excellent experience. Of those who rated their experience accessing the park as excellent, 84% rated their overall experience as excellent, compared to 79% of those who rated their access as good, 76% who rated it as fair, and 58% of those who rated it as poor. Of those who rated their accessing experience as poor, only 8% rated their overall experience as poor.

- Visitors' rating for accessing the park also varied significantly by activity. Sightseers and climbers rated their experience accessing the park most positively (at 55% and 49% excellent, respectively). Only 34% of hikers and 24% of picnickers rated their accessing experience as excellent. Many climbers arrive early in the morning, before the park fills up and sightseers may be more patient around lines and parking as they have less of an agenda in the park.

➢ **Crowding:** Of weekend visitors, 5% said crowding at their activity was an issue, 24% said it was crowded but it did not detract from their experience, 47% called it moderate crowding, and 24% said it was uncrowded. Comparatively, on the weekday, 3% said crowding was an issue, 14% said it was crowded but it did detract from their experience, 32% said it was moderate, and 51% said it was uncrowded. Overall, a very small percentage of visitors said their activity was crowded. The following analysis only uses data collected on the weekend days.

- Between the different park activities, picnickers perceived the most crowding, by a large margin. Overall, 15% of picnickers said crowding was an issue, 46% said it was crowded but did not detract from their experience, and only 3% said it was uncrowded. Comparatively, 9% of climbers, 1% of hikers, and 3% of sightseers said crowding was an issue; 17% of climbers, 19% of hikers, and 20% of sightseers said it was crowded but not detracting from the experience; 43% of climbers, 52% of hikers, and 47% of sightseers said it was moderate; and 30% of climbers, 28% of hikers, and 27% of sightseers said it was uncrowded.

Crowding Rating by Activity

Legend: Crowding was an issue (blue), Crowded but didn't detract (orange), Moderate (gray), Uncrowded (yellow)

- On the park's main hiking trails, there was some difference in crowding ratings, likely related to the type of trail. Hikers rated the Eldorado Canyon trail and Rattlesnake Gulch trail similarly, but felt the wider, ADA accessible Fowler trail was less crowded. Of Fowler trail hikers, 4% said crowding was an issue, 13% said it was crowded but not detracting from their experience, 40% said moderate, and 42% said uncrowded. Comparatively, no Eldorado Canyon hikers and 2% of Rattlesnake Gulch hikers said crowding was an issue, 24% of Eldorado Canyon hikers and 25% of Rattlesnake Gulch trail hikers said it was crowded but didn't detract from their experience, 54% and 53% said it was moderate, and 22% and 20% said it was uncrowded. While fewer hikers on those trails said it was uncrowded/moderate compared to Fowler trail hikers, very few hikers on those trails felt it was an issue.

Hiking Trail Crowding

Legend: Crowding was an issue ■ Crowded but didn't detract ■ Moderate ■ Uncrowded
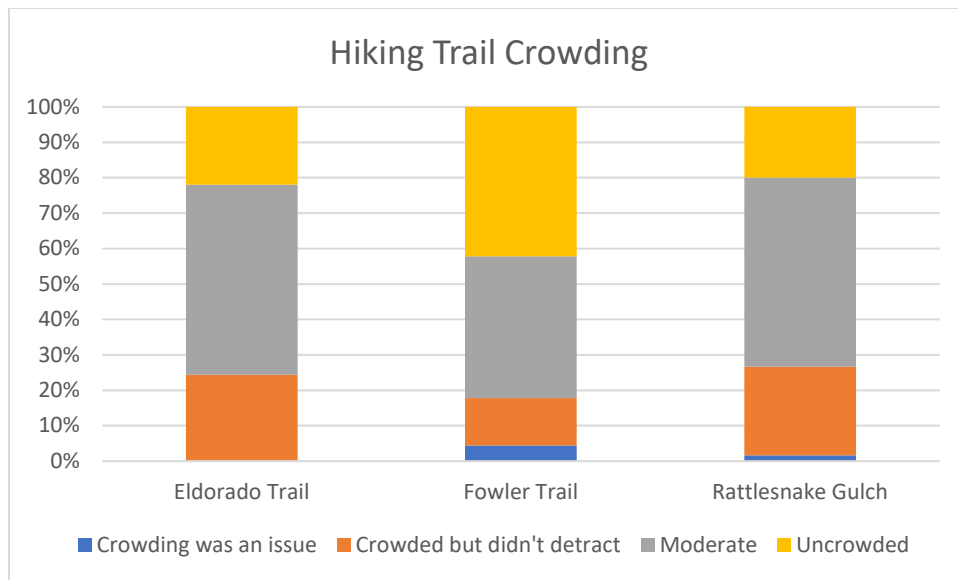
- o For climbing, climbers reported crowding as an issue on the Bastille, Redgarden Wall, and Wind Tower. Of all Bastille climbers, 14% said crowding was an issue; 20% of Redgarden wall climbers said crowding was an issue; and 6% of Wind Tower climbers said crowding was an issue. No one stated that crowding was an issue on other crags including Peanuts Wall, Kloof Alcove, Supremacy Rock, West Ridge, or Whale's Tail.

MAJOR TAKEAWAYS

➢ People rate their experience at the park very highly. First time visitors and weekday visitors tend to be slightly more enthusiastic, but overall, the park is providing a very positive visitor experience.

➢ Most visitors do not see crowding as an issue at the park, although picnickers do in the greatest numbers.

➢ Most visitors do have a positive experience (excellent or good) accessing the park. Those surveyed repeatedly remarked they got the last spot in the park and were very grateful. Climbers and sightseers rated their experience accessing the park higher than picnickers and hikers, likely due to expectations and arrival times. The traffic study will provide numbers on those turned away from the park.

➢ Vehicles entering the park tend to be relatively high occupancy vehicles, although there may be room for improvement.

➢ Visitors to the park are predominantly from Denver Metropolitan Area. Boulder County residents (including City of Boulder residents) are about 20% of park visitors.