Planning Commission
Staff Report

Subject: Park City Heights MPD
Author: Kirsten A. Whetstone, AICP
Date: October 13, 2010
Project Number: PL-10- 01028
Type of Item: Work Session and Public Hearing

PARK CITY 1884

PLANNING DEPARTMENT

Recommendation

Staff recommends the Planning Commission discuss the revised site plan and updated traffic and trails information, conduct a public hearing, and provide to staff any input regarding these items. Staff requests the Commission provide any additional direction regarding the revised plan and continue the public hearing to November 10, 2010.

Description

Project Name:	Park City Heights Master Planned Development
Applicants:	The Boyer Company and Park City Municipal Corporation
Location:	Southwest corner of the intersection of SR248 and US40
Zoning:	Community Transition (CT)
Adjacent Land Uses:	Municipal open space; single family residential; vacant parcel to the north zoned County- RR; vacant parcel to the south zoned County- MR; Park City Medical Center (IHC) and the Park City Ice Arena/Quinn's Fields Complex northwest of the intersection.
Reason for Review:	Applications for Master Planned Developments require Planning Commission review and approval
Owner:	Park City Municipal Corporation is 50% owner with The Boyer Co. of the larger parcel to the south and 24 acres of the front open space. Park City owns approximately 40 acres, 20 within the open space on north and 20 at the north end of the development parcel, outright.

I. Background

During the Planning Commission's review of the annexation (approved on April 9, 2008), prior to the Council approval, the Commission requested the following items be addressed with the MPD application:

- overall density in terms of number of single family/market rate lots,
- location of units on the site in consideration of sensitive lands (ridgelines, etc),
- better integration of the affordable units within the overall project,
- entry area needed to be redesigned to provide a neighborhood gathering location and better sense of arrival,
- sustainability and water conservation, and
- greater overall design/appearance as a residential community that relates to Park City's resort identity rather than as a "cookie cutter" suburban subdivision.

On May 27, 2010, the Park City Council voted to adopt an ordinance approving the Park City Heights Annexation agreement, including an associated water agreement. The Council also voted to approve Community Transition (CT) zoning for the entire 286 acres (see Annexation Agreement in the binder/tool kit).

On June 17, 2010, the applicant submitted a pre-MPD application based on the annexation approval and agreement, including a revised conceptual site plan for a mixed residential development on 239 acres of the total 286 acres annexed. The remaining annexed area is owned by separate parties and is not subject to this MPD. The pre-MPD conceptual plan consists of 239 residential dwelling units, including:

- 160 market rate units in a mix of cottage units on smaller (6,000 to 8,000 sf lots) and single family detached units on 9,000 to 10,000 sf lots,
- 44.78 Affordable Unit Equivalents configured in approximately 28 deed restricted affordable units to satisfy the IHC MPD affordable housing requirement,
- 32 Affordable Unit Equivalents configured as approximately 16 deed restricted affordable units to meet the CT zone affordable housing requirement, and
- 35 deed restricted affordable units that Park City Municipal proposes to build consistent with one of its stated public purposes in the acquisition of an ownership interest in the land.

The plan includes approximately 175 acres of open space (73% open space), a community park with a splash pad play feature and active and passive park uses, neighborhood club house, bus shelters on both sides of Richardson's Flat Road, and trails throughout the development with connections to the city-wide trail system, including connections to the Rail Trail.

The Planning Commission reviewed the pre-MPD application at two (2) meeting (July 14 and August 11, 2010) and found the application to be in initial compliance with applicable elements of the Park City General Plan. The Commission provided direction to the applicants (see Minutes in Binder) to consider the following items in the development of the detailed Master Planned Development site plan and supporting documents:

- Affordable housing needs in the community;
- Traffic mitigation, transit options, trails and connections for alternative modes of transportation;
- Support commercial elements;
- Environmental, wildlife and sensitive lands considerations- preserving more of the meadow lands balanced with keeping development off of ridgelines and steeper slopes and understanding wildlife issues; and
- Site planning details that are not typical of suburban development.
- Creation of a neighborhood that reflects Park City's natural environment and resort character and that creates a sense of place as a neighborhood while at the same time provides community amenities or attractions that connect it to other Park City neighborhoods.

II. <u>Review Process</u>

A. Overall Review Process

The overall review process was described in greater detail in the August 11, 2010 staff report (see binder/tool kit).

A simplified review process flow chart is as follows:

- Annexation and Zoning (PC and CC) (completed May 27, 2010)

▼

- Pre-Master Planned Development meeting (PC) (completed August 11, 2010)

▼

- Master Planned Development submittal and review (PC) (initial work session conducted on September 22, 2010, initial public hearing October 13, 2010)

▼

- Preliminary plat/site plan submittal and review (PC and CC)

▼

- Final plat/utility plan submittal and review (PC and CC)

▼

- Conditional Use Permit (CUP) review for certain uses/buildings, as conditioned by the MPD and/or CT zoning (PC or Staff)

▼

- Building permits (Staff)

▼

- Occupancy permits (Staff)

B. MPD Review Process

The MPD review process allows the Commission to take a detailed look at the specific site plan including lot layout, building site location, street layout, utility systems, locations of trails and trail connections, type and location of open space, location of bus stops, relationships between buildings and parking, architectural theme or character, building materials, requirements for specific building practices such as green/sustainable building, water efficient landscaping, types and occupancy of units, affordable housing units and configuration, location and amount of support commercial uses, and other items. The MPD is also required to comply with the terms of the annexation agreement.

The Land Management Code (Chapter 6) specifies the following steps:

- Pre-application public meeting and determination of initial compliance.
- Application submittal and reviewed for completeness.
- Planning Commission is the primary review body.
- At least one work session is required prior to a public hearing.

- At least one formal public hearing with notice provided per the LMC Notice Matrix (LMC Section 15-1-21).
- Planning Commission review per the underlying zoning district (CT) and the MPD requirements of LMC Section 15-6-5
    - Density
    - Setbacks
    - Open Space
    - Off-street parking
    - Building Height
    - Site Planning
    - Landscape and Streetscape
    - Sensitive Lands Compliance
    - Employee/Affordable housing
    - Child Care
- Planning Commission must make required findings and conclusions of law as listed in LMC Section 15-6-6.
- Development Agreement drafted according to requirements of LMC Section 15-6-4 (G) within six (6) months of MPD approval.
- Development Agreement formally ratified by Planning Commission, signed by the City Council and Applicant, and recorded with Summit County Recorder.
- Construction, as defined by the Building Code, is required to commence within two (2) years of the date of the execution of the Development Agreement.

Staff reviewed the revised site plan for compliance with the Community Transition (CT) zone as shown in the following Table:

Requirement	**A. LMC Requirement**	**Proposed**
Lot Size	No minimum lot size	239 acres, various lot sizes, <u>Complies.</u>
Building Footprint	No maximum footprint	Various footprints, will be identified further in final site plan and development agreement <u>Complies.</u>
Uses	Single family lots, detached cottage units, attached town house multi-family units as allowed within an MPD.	160 market rate single family lots and cottage units (6,000 sf to 10,000 sf lots) 16 deed restricted CT required detached units, 28 deed restricted IHC townhouse units, 35 deed restricted PCMC units as a mix of cottage units and townhouse units. <u>Complies.</u> City Park, Community Clubhouse and associated uses, Trails, etc. are proposed. <u>Complies.</u>
Density	CT District Base Density is 1 unit per 20 acres MPD within CT zone	Density of 1 unit per acre (239 units) was approved with the PC Heights Annexation Agreement.

	allows PC to approve a Density of up to 1 unit per acre, excluding required affordable housing units.	0.81 du/acre excluding required affordable units and 1.0 du/acre including all dwelling units. Complies.
All Yard setbacks	25', minimum around perimeter of MPD. Within MPD setbacks may be reduced by the Planning Commission. 200' Frontage Protection Zone no-build Setback	25' or greater around the perimeter (150' to 270'). Setbacks within the MPD will be identified on the final site plan for the different units/lot types. Greater than 200' from all Frontage Protection zone boundaries. Complies.
Height	28 feet above existing grade, with 5' exception for pitched roof elements, maximum,	Final building height will be presented with the final site plan. No height exceptions are requested for the single family lots and cottage units. Complies.
Parking	Two (2) spaces per dwelling unit for single family lots, cottage style dwelling units, and multi-family dwelling units greater than 1,000 sf. One (1) space per 650 sf unit and 1.5 spaces per unit greater than 650 sf but less than 1,000 sf unit. LMC (CT zone) also requires 40% of parking to be in structured or tiered parking configuration.	Two (2) garage spaces per dwelling unit (for single family, cottage style, and townhouse units) are proposed. Complies.
Open Space	LMC (CT zone) requires 70% open space for density of one unit per acre.	Approximately 175 acres of open space (73%) is proposed. Final site plan to identify all open space areas and proposed uses within open spaces. Complies.

III. Binder (Exhibit A- handed out at the September 22, 2010 work session and also available on the City's website as a pdf)

The following items are included in the Park City Heights MPD binder:

- The Park City General Plan (not included in the binder)
- Quinn's Planning Principles
- Park City Heights Task Force Recommendations
- Park City Heights Annexation Agreement and Ordinance
- Land Management Code- Master Planned Development Chapter 6
- Land Management Code- Community Transition (CT) zone Chapter 2.23
- Staff reports and minutes of the July 14th, August 11th, and September 22nd Planning Commission meetings.

IV. Timeline

The following is a preliminary timeline for the MPD review:

- September 22, 2010- work session- overview of process and applicants' response to Commission comments on the Pre-MPD concept plan.
- October 13, 2010- work session/public hearing- transportation/traffic, trails, recreation amenities, and preliminary utility layout.
- November 10, 2010- work session/public hearing – overall site plan, sensitive lands analysis of overall site plan, "sense of place"/neighborhood character and architectural design elements (e.g. design guidelines), affordable sustainable building elements, including water conservation/landscaping details and housing issues.
- December 8, 2010- work session/public hearing- finalize site plan and begin draft development agreement discussion.
- January 2011- final action.

At the work session the applicants will present the following information:

- Updated traffic information and mitigation of impacts on SR 248.
- Overall trails and pedestrian circulation/neighborhood connectivity plan
- A revised MPD site plan incorporating Commissioner comments from the September 22nd work session.

Notice

This item is scheduled as a work session and public hearing. Notice of the public hearing was published in the Park Record and posted according to requirements of the LMC. Courtesy notice letters were sent to affected property owners according to requirements of the LMC.

Public Input

At the time of writing this report, no public input has been received.

Recommendation

Staff recommends the Planning Commission discuss the revised site plan and updated traffic and trails information, conduct a public hearing, and provide to staff any input regarding these items. Staff requests the Commission provide any additional direction regarding the revised plan and continue the public hearing to November 10, 2010.

Exhibits

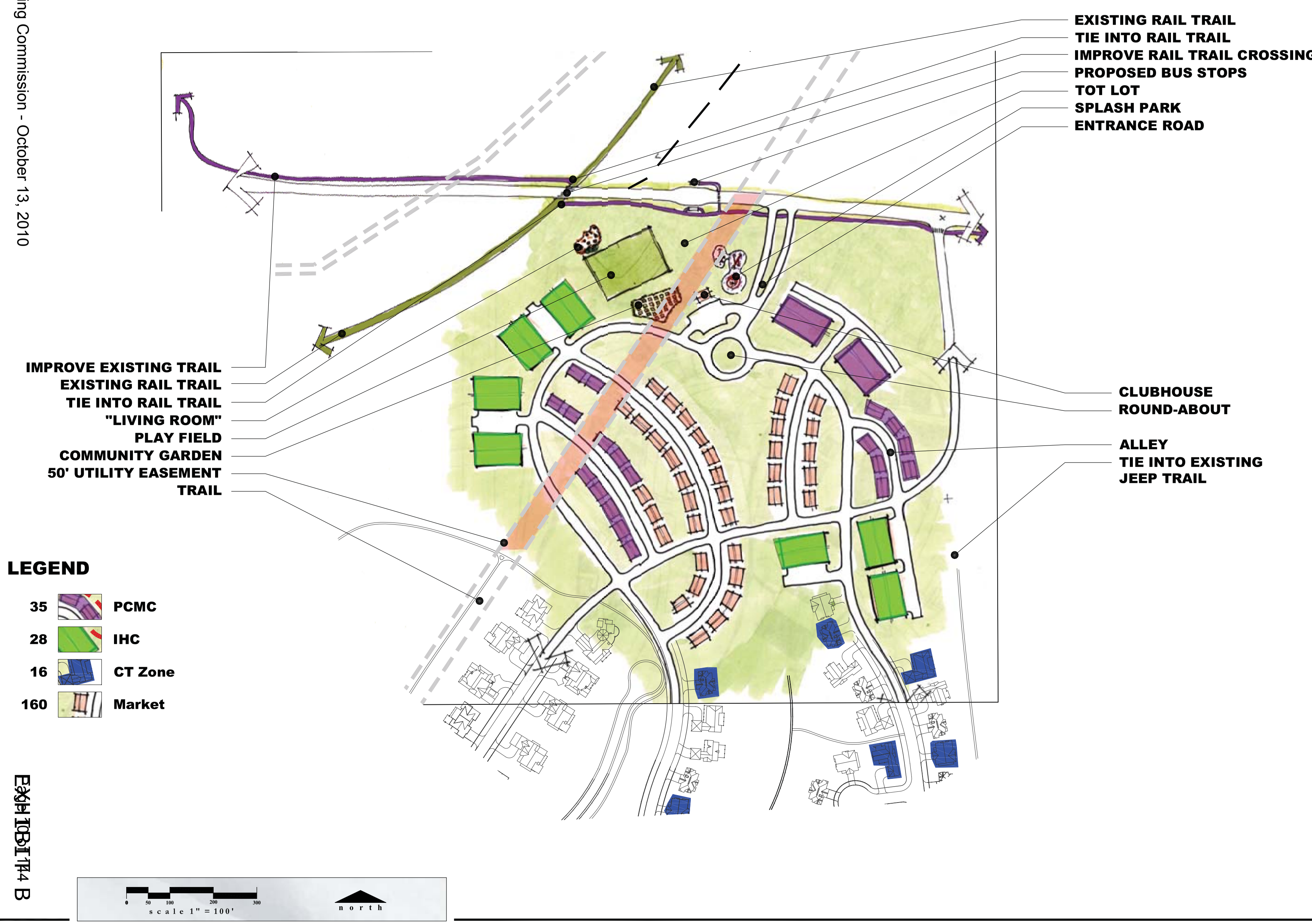
Exhibit A- Park City Heights Binder/Tool Kit (handed out at the September 22nd work session and posted on the City's web site as a pdf)
Exhibit B- Revised MPD site plan and trails plan
Exhibit C- Park City Heights Traffic Study update letter
Exhibit D- Park City Heights Traffic Study pages 1-35

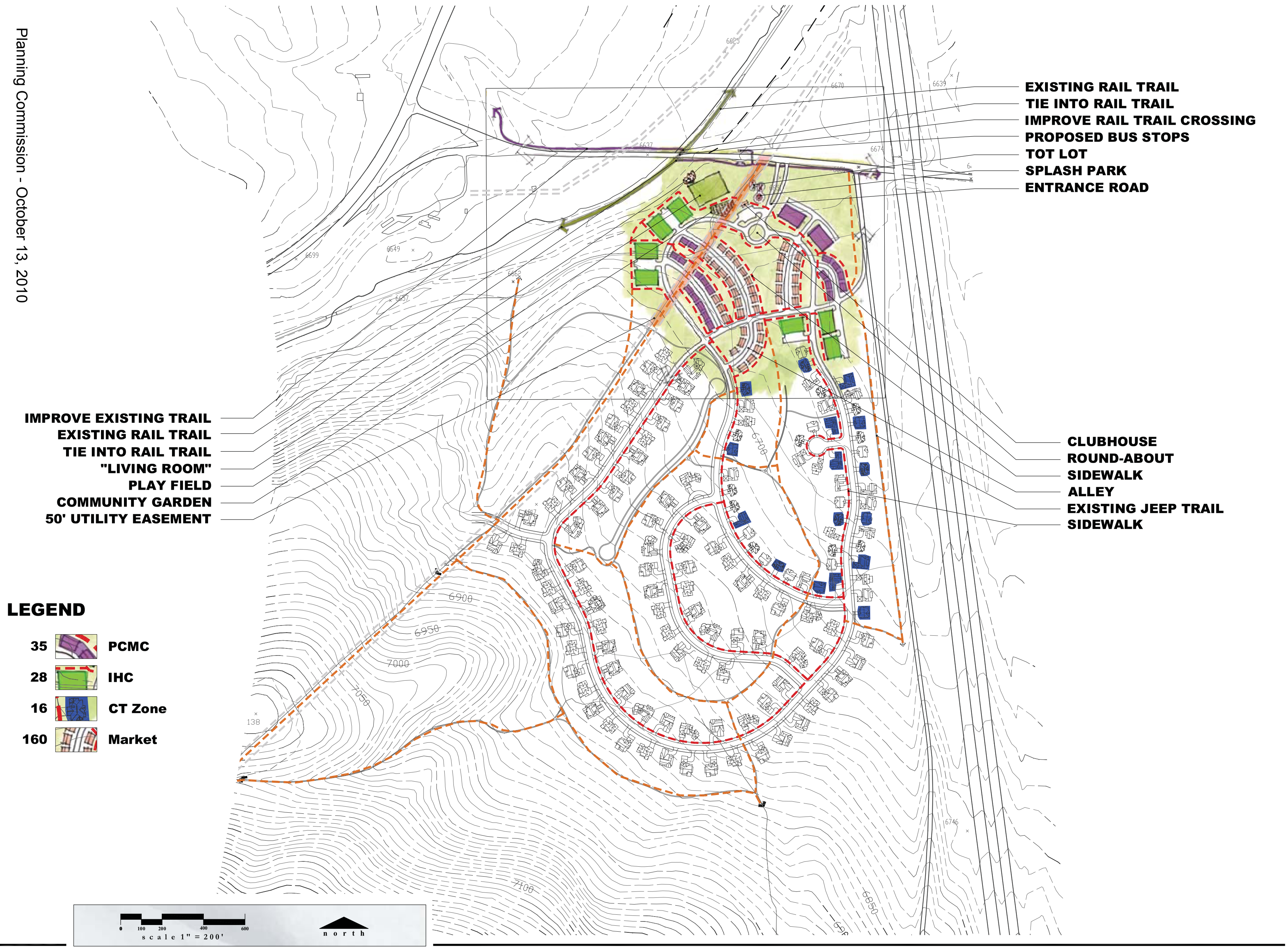
concept plan

park city heights

park city, utah & summit county, utah

september 2010





concept plan

park city heights

park city, utah & summit county, utah

september 2010

HALES ENGINEERING
innovative transportation solutions

Park City Heights

Traffic Impact Study

June 7, 2007

UT06-002

2364 North 1450 East **Lehi, Utah 84043** **801/ 766.4343 phone/fax** **www.halesengineering.com**

LIST OF TABLES

I. INTRODUCTION

A. Purpose

This study addresses the traffic impacts associated with the proposed development of approximately 200 acres of land contiguous to the current Park City municipal boundary. The project is located east of SR 248, west of US-40 and both north and south of the old Landfill Road. The property to the north of the old landfill road (approximately 24 acres) is proposed to remain as open space and the property south of the old landfill road (approximately 176 acres) is proposed to become 110 acres of Open Space, 55 acres of residential development, and 10 acres of roads, etc. see the Conceptual Master Plan located in the Appendix A.

This study analyzed the traffic operations for existing conditions and plus project conditions (conditions after development of the proposed project) at key intersections and roadways in the vicinity of the site.

B. Scope

The study area was defined based on conversations with Park City staff. This study was scoped to evaluate the traffic operation performance impacts of the project on the following intersections:

- SR-248 / IHC intersection
- SR-248 / old landfill road
- old landfill road / West US-40 Frontage Road
- West US-40 Frontage Road / proposed North project access
- West US-40 Frontage Road / proposed South project access

At a Park City Heights task force meeting on September 26, 2006, a combined development review committee consisting of elected officials, appointed officials and staff members had been convened to review the traffic analysis for the proposed project, and recommended that an expanded scope should be evaluated to consider the following items:

1. Evaluate the need for a new signal at the Old Landfill Road intersection with SR-248 vs. a single traffic signal at the IHC intersection with SR-248
2. Evaluate the impacts of a future park and ride lot to be located at Richardson Flats
3. Identify the cut through traffic impacts on the Old Landfill Road (future analyses)
4. Look at the need for additional trail connections
5. Consider the impact of school buses

A follow up meeting was scheduled and held on October 4, 2006, between the Park City Heights development Team and Park City Staff members to discuss the expanded evaluation. It was determined at this meeting that Hales Engineering would address the first three issues and that Park City Staff would evaluate the last two items. The original report has been modified to include discussion on the three topics previously identified.

C. Analysis Methodology

Level of service (LOS) is a term that describes the operating performance of an intersection or roadway. LOS is measured quantitatively and reported on a scale from A to F, with A representing the best performance and F the worst. Table 1 provides a brief description of each LOS letter designation and an accompanying average delay per vehicle for both signalized and unsignalized intersections.

The Highway Capacity Manual 2000 (HCM 2000) methodology was used in this study to remain consistent with “state-of-the-practice” professional standards. This methodology has different quantitative evaluations for signalized and unsignalized intersections. For signalized intersections, the LOS is provided for the overall intersection (weighted average of all approach delays). For unsignalized intersections LOS is reported based on the worst approach. Hales Engineering has also calculated overall delay values for unsignalized intersections, which provides additional information and represents the overall intersection conditions rather than just the worst approach.

D. Level of Service Standards

For the purposes of this study, a minimum overall intersection performance for each of the study intersections was set at LOS D. However, if LOS E or F for an individual approach at an intersection exists, explanation and / or mitigation measures will be presented.

An LOS D threshold is consistent with “state-of-the-practice” traffic engineering principles for suburban and non-CBD urbanized intersections.

Table 1 Level of Service Descriptions		
Level of Service	**Description of Traffic Conditions**	**Average Delay (seconds / vehicle)**
SIGNALIZED INTERSECTIONS[1]		
A	Extremely favorable progression and a very low level of control delay. Individual users are virtually unaffected by others in the traffic stream.	$0 \leq 10.0$
B	Good progression and a low level of control delay. The presence of other users in the traffic stream becomes noticeable.	> 10.0 and ≤ 20.0
C	Fair progression and a moderate level of control delay. The operation of individual users becomes somewhat affected by interactions with others in the traffic stream.	>20.0 and ≤ 35.0
D	Marginal progression with relatively high levels of control delay. Operating conditions are noticeably more constrained.	> 35.0 and ≤ 55.0
E	Poor progression with unacceptably high levels of control delay. Operating conditions are at or near capacity.	> 55.0 and ≤ 80.0
F	Unacceptable progression with forced or breakdown operating conditions.	> 80.0
UNSIGNALIZED INTERSECTIONS[2]		**Worst Approach Delay (seconds / vehicle)**
A	Free Flow / Insignificant Delay	$0 \leq 10.0$
B	Stable Operations / Minimum Delays	>10.0 and ≤ 15.0
C	Stable Operations / Acceptable Delays	>15.0 and ≤ 25.0
D	Approaching Unstable Flows / Tolerable Delays	>25.0 and ≤ 35.0
E	Unstable Operations / Significant Delays Can Occur	>35.0 and ≤ 50.0
F	Forced Flows / Unpredictable Flows / Excessive Delays Occur	> 50.0

Source:

1. Hales Engineering Descriptions, based on *Highway Capacity Manual, 2000 Methodology* (Transportation Research Board, 2000).
2. Hales Engineering Descriptions, based on *Highway Capacity Manual, 2000 Methodology* (Transportation Research Board, 2000).

II. EXISTING (2006) BACKGROUND CONDITIONS

A. Purpose

The purpose of the existing (2006) background analysis is to study the intersections and roadways during the peak travel periods of the day under background traffic and geometric conditions. Through this analysis, background traffic operational deficiencies can be identified and potential mitigation measures recommended.

B. Roadway System

The primary roadways that will provide access to the project site are described below:

- SR-248 – is a state-operated roadway (classified as an, "other Principal Arterial") that provides direct access to Park City from US-40. This roadway is currently composed of a three-lane cross section with one travel lane in each direction and a center two-way left turn lane in the vicinity of the project. UDOT has classified SR-248 in the vicinity of the project as a Category 4, Regional Rural Corridor, which identifies minimum signalized intersection spacing at 1/2-mile (2,640 feet), minimum street spacing at 1/8-mile (660 feet) spacing, and minimum access spacing at 500 feet. In the vicinity of the project, SR-248 has a posted speed limit of 50 mph.

- old landfill road – is a county-operated roadway that will provide indirect access to the proposed Park City Heights project. This street currently has a two-lane cross section with one travel lane in each direction, and little to no shoulders. This road does not have a posted speed limit, but due to the current pavement conditions vehicles are traveling at relatively low speeds (20-25 mph). This road is paved near SR-248 and intermittently to the proposed project site.

- West Frontage Road – is a county-operated gravel roadway that will provide direct access to the proposed Park City Heights project. On the north end of this road near the old landfill road, the gravel cross-section is approximately 20 feet wide, however, as you go south this road narrows to approximately 12-14 feet in width. This road does not have a posted speed limit.

C. Traffic Volumes

Hales Engineering performed weekday a.m. (7:00 to 9:00) and p.m. (4:00 to 6:00) peak period traffic counts at the following intersection(s):

- SR-248 / old landfill road

These counts were performed on Tuesday, August 22, 2006. Based on the combination of current (2006) intersection volumes and traffic generated by the site, the weekday p.m. peak hour was the critical time period identified for analysis. Detailed count data is included in Appendix B.

The traffic counts were adjusted to represent volumes for an average day of the year using UDOT's permanent count station information on SR-248 (Station 606). The traffic volume adjustments were based on monthly adjustment factors published by Utah Department of Transportation (UDOT). As requested by Park City staff, Hales Engineering incorporated the IHC information (e.g. projected site related traffic, projected signalization, etc.). The combination of the 2006 adjusted traffic counts collected by Hales Engineering, balanced with the IHC data created a cumulative background condition for analyses. See supporting information in Appendix C.

D. Level of Service Analysis

Using Synchro and the Highway Capacity Software (HCS) which follow the Highway Capacity Manual (HCM) 2000 methodology introduced in Chapter I, the p.m. peak hour LOS was computed for each study intersection as well as the proposed relocation of the intersection to the north servicing the proposed IHC Hospital, the Quinn's Recreation Center and several existing land uses. The results of this analysis are reported in Table 2 (see Appendix D for the detailed LOS reports). Synchro was used for the signalized SR-248 intersections to provide a direct correlation between the previous work completed in the vicinity of the interchange / IHC access. HCS was used for the stop controlled intersections on the old landfill road since each of these study intersections function as isolated intersections under current and plus project conditions. These results serve as a baseline condition for the impact analysis of the proposed development. As shown in Table 2, based on overall intersection averages, all of the study intersections experience acceptable levels of delay.

E. Mitigation Measures

Although the overall SR-248 / old landfill road intersection performs acceptably, the westbound left turn movement experiences high levels of delay during the peak hours. A Quinn's Junction / SR-248 Access Study dated December 6, 2006 prepared by Horrocks Engineers, stated that the SR-248 / old landfill road should be signalized in the future.

Hales Engineering recommends that although this intersection does not meet the peak hour traffic volume signal warrant located in the Manual on Uniform Traffic Control Devices (MUTCD), it could qualify for a systems warrant provided that this location has been identified for signal controlled access in a signed and executed Corridor Agreement between UDOT, Park City and/or Summit County. If signalized, this intersection could function at an overall LOS C or better, a detailed analysis is included in Appendix D.

Table 2 Existing (2006) p.m. Peak Hour Level of Service							
Intersection			**Worst Approach**			**Overall Intersection**	
ID	**Description**	**Control**	**Approach[1]**	**Aver. Delay (Sec / Veh)[1]**	**LOS[1]**	**Aver. Delay (Sec / Veh)[2]**	**LOS**
1	SR-248 / IHC Access Road	Proposed Signal[3]	N/A	N/A	N/A	17.7	B
2	SR-248 / old landfill road	Unsignalized	WB Left	31.2	D	<1.0	A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. All intersections were evaluated using Synchro software.

Source: Hales Engineering, August 2006

III. PROJECT CONDITIONS

A. Purpose

The project conditions analysis explains the type and intensity of development. This provides the basis for trip generation, distribution, and assignment of project trips to the surrounding study intersections defined in the Introduction.

B. Project Description

This study addresses the traffic impacts associated with the proposed development of approximately 200 acres of land contiguous to the current Park City municipal boundary. The project is located east of SR 248, west of US-40 and both north and south of the old Landfill Road. The property to the north of the old landfill road (approximately 24 acres) is proposed to remain as open space and the property south of the old landfill road (approximately 176 acres) is proposed to become 110 acres of Open Space, 55 acres of residential development, and 10 acres of roads, etc. see the Conceptual Master Plan located in the Appendix A.

The proposed cumulative land use for Park City Heights (including the Talisker and IHC affordable housing) will be as follows:

- Residential: **317 Units**
  - 207 single family dwelling units
  - 110 townhomes / condominiums

At a meeting on September 26, 2006, it was requested that Hales Engineering include:

- An evaluation of the need for a new signal at the Old Landfill Road intersection with SR-248 vs a single traffic signal at the IHC intersection with SR-248
- An evaluation of the impacts of a future park and ride lot to be located at Richardson Flats
  - It was determined that 100 stalls would be added to the existing 2006 analyses and that an additional 650 stalls (750 total stalls) would be added to the future 2020 conditions analyses
- Identify the cut through traffic impacts on the Old Landfill Road
  - This will be completed for the future 2020 analyses

C. Trip Generation

Trip generation for the project was computed using trip generation rates published in the Institute of Transportation Engineers (ITE) *Trip Generation, 7th Edition*, 2003. Trips were generated using the land use intensity previously described and are summarized in Table 3 for the cumulative Park City Heights development at full build-out conditions.

Table 3
Park City Heights
Trip Generation

Land Use[1]	Number of Units	Unit Type	Daily Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total Daily Trips**
Condominium (230)	110	Dwelling Unit	696	50%	50%	348	348	**696**
Single Family Detached (210)	207	Dwelling Unit	2,031	50%	50%	1,015	1,015	**2,030**
Project Total Daily Trips						**1,363**	**1,363**	**2,726**
Land Use[1]	Number of Units	Unit Type	a.m. Peak Hour Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total a.m. Trips**
Condominium (230)	110	Dwelling Unit	56	17%	83%	9	46	**55**
Single Family Detached (210)	207	Dwelling Unit	154	25%	75%	39	116	**155**
Project Total Daily Trips						**48**	**162**	**210**
Land Use[1]	Number of Units	Unit Type	p.m. Peak Hour Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total p.m. Trips**
Condominium (230)	110	Dwelling Unit	65	67%	33%	44	21	**65**
Single Family Detached (210)	207	Dwelling Unit	206	63%	37%	130	76	**206**
Project Total Daily Trips						**174**	**97**	**271**
Land Use[1]	Number of Units	Unit Type	Sat. Daily Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total Sat. Daily Trips**
Condominium (230)	110	Dwelling Unit	826	50%	50%	413	413	**826**
Single Family Detached (210)	207	Dwelling Unit	2,085	50%	50%	1,043	1,043	**2,086**
Project Total Daily Trips						**1,456**	**1,456**	**2,912**
Land Use[1]	Number of Units	Unit Type	Sat. Peak Hour Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total Sat. Peak Hour Trips**
Condominium (230)	110	Dwelling Unit	75	54%	46%	40	34	**74**
Single Family Detached (210)	207	Dwelling Unit	195	54%	46%	105	90	**195**
Project Total Daily Trips						**145**	**124**	**269**

1. Land Use Code from the *Institute of Transportation Engineers - 7th Edition Trip Generation Manual (ITE Manual)*

SOURCE: Hales Engineering, June 2007

The ITE trip generation rates identify gross trips to and from a facility as if it were a stand-alone activity. Gross ITE trip generation rates do not account for trips already on adjacent roadways or for internal capture. Hales Engineering did not adjust the gross trip generation to account for pass-by or internal capture trips that are already on the adjacent roadway and trips that are internal to the project site because this site functions as an independent land use.

D. Trip Distribution and Assignment

Project traffic was assigned to the roadway network based on the proximity of project access points to major streets, high population densities, and regional trip attractions. Existing travel patterns observed during data collection also provided helpful guidance to establishing these distribution percentages, especially in close proximity to the site. The resulting overall distribution of project generated trips is as follows:

From the project site:

- 70% North on West US-40 Frontage Road
- 30% North on west project access

From the West US-40 Frontage Road:

- 95% West on the old landfill road
- 5% East on the old landfill road

From the old landfill road:

- 52% South on SR-248
- 43% North on SR-248

These trip distribution assumptions were distributed to the study intersections to estimate the p.m. peak hour project generated trips.

E. Access Spacing

SR-248

As proposed in the Quinn's Junction / SR-248 Access Study dated December 6, 2006 and prepared by Horrocks Engineers, the access spacing selected for implementation was Option 3, see figure in Appendix E. Option 3 identifies the relocated IHC access located 0.32 miles (1,700 feet) south of the US-40 southbound ramps. The next intersection to the south, old landfill road, is located 0.36 miles (1,900 feet) south of the relocated IHC intersection. UDOT has classified SR-248 in the vicinity of the project as a Category 4, Regional Rural Corridor, which identifies minimum signalized intersection spacing at 1/2-mile (2,640 feet), minimum street spacing at 1/8-mile (660 feet) spacing, and minimum access spacing at 500 feet. This information was obtained from UDOT's web site in their publication titled, "State Highway Access Category Inventory" and dated May 2006.

EXECUTIVE SUMMARY

This study addresses the traffic impacts associated with the proposed development of approximately 200 acres of land contiguous to the current Park City municipal boundary. The project is located east of SR 248, west of US-40 and both north and south of the old Landfill Road. The property to the north of the old landfill road (approximately 24 acres) is proposed to remain as open space and the property south of the old landfill road (approximately 176 acres) is proposed to become 110 acres of Open Space, 55 acres of residential development, and 10 acres of roads, etc. see the Conceptual Master Plan located in the Appendix A.

At a Park City Heights task force meeting on September 26, 2006, a combined development review committee consisting of elected officials, appointed officials and staff members had been convened to review the traffic analysis for the proposed project, and recommended that an expanded scope should be evaluated to consider the following items:

1. Evaluate the need for a new signal at the Old Landfill Road intersection with SR-248 vs a single traffic signal at the IHC intersection with SR-248
2. Evaluate the impacts of a future park and ride lot to be located at Richardson Flats
3. Identify the cut through traffic impacts on the Old Landfill Road (future analyses)
4. Look at the need for additional trail connections
5. Consider the impact of school buses

A follow up meeting was scheduled and held on October 4, 2006, between the Park City Heights development Team and Park City Staff members to discuss the expanded evaluation. It was determined at this meeting that Hales Engineering would address the first three issues and that Park City Staff would evaluate the last two items. The original report has been modified to include discussion on the three topics previously identified.

This study analyzed the traffic operations for existing conditions and plus project conditions (conditions after development of the proposed project) at key intersections and roadways in the vicinity of the site. In addition, future 2020 conditions were also evaluated for background and plus project scenarios.

TRAFFIC ANALYSIS

The following is an outline of the traffic analysis performed by Hales Engineering for the respective traffic conditions of this project.

Existing (2006) Background Conditions Analysis

- Hales Engineering collected a.m. and p.m. peak period counts at the following intersection(s):

In locations where existing roads intersect state highways, it is not always feasible to comply with the new access management standards retroactively, therefore, a variance process exists that will allow deviation from the new standards. The relocated IHC access will not meet the current UDOT access management standards (½ mile), however, in urbanizing areas signalized access spacing at ¼ mile (1,320 feet) intervals is acceptable. Since the old landfill road will not be relocated, it is not likely that a variance request will be necessary, however, the relocated IHC access will need to apply for a variance from the currently published UDOT access management standards.

Access management standards should not be a problem on either the West US-40 Frontage Road or the old landfill road in the vicinity of the proposed Park City Heights project.

IV. EXISTING (2006) PLUS PROJECT CONDITIONS

A. Purpose

This section of the report examines the traffic impacts of the proposed project at each of the study intersections. The trips generated by the proposed cumulative Park City Heights development, and the proposed park and ride lot with 100 stalls were combined with the existing background traffic volumes to create the existing plus project conditions. The existing plus project scenario evaluates the impacts of the project traffic on the existing roadway network assuming full build out of each project. This scenario provides valuable insight into the potential impacts of the proposed project on background traffic conditions.

As requested by the Park City Heights Task Force committee, Hales Engineering evaluated two scenarios, the one previously identified and another assuming realignment of the old landfill road into the IHC access creating a single signalized intersection.

B. Traffic Volumes

Project trips were assigned to the study intersections based on the trip distribution percentages discussed in Chapter III and permitted intersection turning movements. Generally, project trips are layered directly onto existing background traffic conditions and this traffic study will not be an exception. The accesses, parking, and internal circulation of this project will be reviewed and discussed in more detail following annexation.

The existing (2006) plus project p.m. peak hour volumes were generated for the study intersections and are shown in Appendix C and were large enough to meet Warrant 3 – Peak Hour Volume as identified in the Manual on Uniform Traffic Control Devices (MUTCD), therefore, it was assumed that the old landfill road was signalized for the two signal scenario. Also included in Appendix C are the Park City Heights, UPCM and IHC attainable housing combined trip assignments.

C. Level of Service Analysis

Using Synchro which follows the Highway Capacity Manual (HCM) 2000 methodology introduced in Chapter I, the p.m. peak hour LOS was computed for each study intersection as well as the proposed relocation of the intersection to the north servicing the proposed IHC Hospital, the Quinn's Recreation Center and several existing land uses. The results of this analysis are reported in Table 4 (see Appendix D for the detailed LOS reports).

As shown in Table 4, based on overall intersection averages, all of the study intersections experience acceptable levels of delay.

Table 4

Existing (2006) Plus Project – Two Traffic Signals p.m. Peak Hour Level of Service

Intersection			Worst Approach			Overall Intersection	
ID	**Description**	**Control**	**Approach[1]**	**Aver. Delay (Sec / Veh)[1]**	**LOS[1]**	**Aver. Delay (Sec / Veh)[2]**	**LOS[2]**
1	SR-248 / IHC Access Road	Proposed Signal[3]	N/A	N/A	N/A	16.0	B
2	SR-248 / old landfill road	Proposed Signal[3]	N/A	N/A	N/A	21.0	C
3	old landfill road / West Project Access	Unsignalized	NB Left	11.1	B	1.0	A
4	old landfill road / West US-40 Frontage Road	Unsignalized	NB Left	10.2	B	2.6	A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. All intersections were evaluated using Synchro software.

Source: Hales Engineering, June 2007

The results of the single signalized intersection analysis are reported in Table 5 (see Appendix D for the detailed LOS reports). Synchro / SimTraffic were used for the signalized SR-248 intersections to provide a statistical evaluation of the interaction between the intersections. HCS was used for the stop controlled intersections on the old landfill road since each of these study intersections function as isolated intersections under current and plus project conditions. As shown in Table 5, based on overall intersection averages, all of the study intersections experience acceptable levels of delay. However, it should be noted that the reserve capacity of the single signalized intersection is not large and will quickly be overwhelmed with background traffic growth.

D. Mitigation Measures

Old landfill road traffic signal

- The existing (2006) plus project p.m. peak hour volumes were generated for the study intersections were large enough to meet Warrant 3 – Peak Hour Volume as identified in the Manual on Uniform Traffic Control Devices (MUTCD), therefore, it was assumed that the old landfill road was signalized for two signal scenario.

- The westbound movements should be separated into a shared left / through lane and a right turn pocket of 150-feet in length.
- The north and southbound left turn lanes should be on a permissive / protected phase.
- A northbound right turn pocket should be added (150-feet).

Table 5

Existing (2006) Plus Project – One Traffic Signal
p.m. Peak Hour Level of Service

Intersection			Worst Approach			Overall Intersection	
ID	Description	Control	Approach[1]	Aver. Delay (Sec / Veh)[1]	LOS[1]	Aver. Delay (Sec / Veh)[2]	LOS[2]
1	SR-248 / IHC Access Road	Proposed Signal[3]	N/A	N/A	N/A	34.9	C
2	SR-248 / old landfill road	N/A	N/A	N/A	N/A	N/A	N/A
3	old landfill road / West Project Access.	Unsignalized	NB Left	11.1	B	1.0	A
4	old landfill road / West US-40 Frontage Road	Unsignalized	NB Left	10.2	B	2.6	A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. All signalized intersections were evaluated using Synchro / SimTraffic stochastic software.
4. All unsignalized intersections were evaluated using HCS deterministic software.

Source: Hales Engineering, June 2007

According to UDOT's *Administrative Rule 930-6, Accommodation of Utilities and the Control and Protection of State Highway Rights of Way,* a Category 4 classified roadway, SR-248 at its intersection with old landfill road requires:

1. a southbound left turn lane, deceleration lane and taper to accommodate more than 10 vehicles per hour making this movement
2. a northbound right turn pocket, deceleration lane and taper to accommodate more than 25 vehicles per hour making this movement
3. a westbound to northbound right turn acceleration lane and taper to accommodate more than 50 vehicles per hour on roadways with speed limits greater than 40 mph

V. Future (2020) BACKGROUND CONDITIONS

A. Purpose

The purpose of the future 2020 background analysis is to study the intersections and roadways during the peak travel periods of the day during future background traffic and geometric conditions. Through this analysis, background traffic operational deficiencies can be identified and potential mitigation measures recommended.

B. Traffic Volumes

In order to project the future traffic conditions on SR-248 a review of the 20-year historical growth patterns was completed. This review shows that there have been fluctuations in the growth over the last twenty years but the most recent trend (2001 – 2005) has been an upward growth of approximately 6.7%. Projecting this same trend line from 2005 to year 2020 (the planning horizon chosen by Park City Staff), the future traffic volumes would be approximately 24,800 vehicles a day. The future 2020 analyses were completed using the 24,800 vehicles a day as a base line condition.

C. Level of Service Analysis

Using Synchro and the Highway Capacity Software (HCS) which follow the Highway Capacity Manual (HCM) 2000 methodology introduced in Chapter I, the p.m. peak hour LOS was computed for each study intersection as well as the proposed relocation of the intersection to the north servicing the proposed IHC Hospital, the Quinn's Recreation Center and several existing land uses. The results of this analysis are reported in Table 6 (see Appendix D for the detailed LOS reports). Synchro was used for the signalized SR-248 intersections to remain consistent with the methodologies from previous studies completed on the corridor. These results serve as a baseline condition for the impact analysis of the proposed development. As shown in Table 6, based on overall intersection averages, each of the study intersections experience unacceptable levels of delay.

D. Mitigation Measures

Although the overall SR-248 / old landfill road intersection performs acceptably, the east and westbound left turn movements experience high levels of delay during the peak hours. A Quinn's Junction / SR-248 Access Study dated December 6, 2006 prepared by Horrocks Engineers, stated that the SR-248 / old landfill road should be signalized in the future.

Hales Engineering recommends that although this intersection does not meet the peak hour traffic volume signal warrant located in the Manual on Uniform Traffic Control Devices (MUTCD), it could qualify for a systems warrant provided that this location has been identified for signal controlled access in a signed and executed Corridor Agreement between UDOT, Park City and/or Summit County. If signalized, this intersection could function at an overall LOS C or better, a detailed analysis is included in Appendix D.

Table 6 Future (2020) p.m. Peak Hour Level of Service							
Intersection			Worst Approach			Overall Intersection	
ID	Description	Control	Approach[1]	Aver. Delay (Sec / Veh)[1]	LOS[1]	Aver. Delay (Sec / Veh)[2]	LOS
1	SR-248 / IHC Access Road	Proposed Signal[3]	N/A	N/A	N/A	76.1	E
2	SR-248 / old landfill road	Unsignalized	E&WB Left	>50.0	F	8.8	A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. All intersections were evaluated using Synchro software.

Source: Hales Engineering, November 2006

The future 2020 traffic volumes are projected to increase to the point that two north and southbound through lanes will be necessary in order to maintain reasonable levels of service along SR-248. Table 7 shows the anticipated LOS for the study intersections with the mitigated cross section.

Table 7 Future (2020) - Mitigated p.m. Peak Hour Level of Service							
Intersection			Worst Approach			Overall Intersection	
ID	Description	Control	Approach[1]	Aver. Delay (Sec / Veh)[1]	LOS[1]	Aver. Delay (Sec / Veh)[2]	LOS
1	SR-248 / IHC Access Road	Proposed Signal[3]	N/A	N/A	N/A	21.5	C
2	SR-248 / old landfill road	Unsignalized	E&WB Left	>50.0	F	1.6	A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. All intersections were evaluated using Synchro software.

Source: Hales Engineering, November 2006

E. Park City Heights Task Force Analyses

This section of the report examines the traffic impacts created by layering known potential projects on top of the future 2020 background traffic conditions. The known projects are as follows:

- the proposed park and ride lot with 750 total stalls (build-out conditions)
- the potential Brown's Park cut through traffic on the old landfill road

Each potential project will be discussed briefly:

The proposed park and ride lot with 750 total stalls will generate approximately 270 vehicle trips during the peak hour (36%), plus the busses needed to move people back and forth. Current headways on the Kimball Junction route are 30 minutes with two buses per hour. In order to service this lot and the 270 person peak hour demand, approximately 8 buses will be needed which means a 7 to 8 minute headway during this peak hour. The total vehicular demand will be 270 passenger cars and 8 buses or 278 vehicles.

The potential Brown's Park cut through traffic was evaluated based on existing travel demands and future roadway connectivity. Currently, 41% of the traffic on SR-248 east of US-40 is either going to or coming from Park City during the p.m. peak period of the day. Growth projections on east SR-248 show that the future (2020) average daily traffic will be approximately 26,570 daily trips including the development of Iroquois and Tuhaye projects. With 2,660 trips occurring during the p.m. peak hour and 41% of those trips headed to/from Park City, the demand will be approximately 1,090 vehicles. If 50% of these vehicles use the back door route into Park City, there would be an additional 545 new vehicles on the old landfill road during the peak hour. See Table 8 for Iroquois and Tuhaye trip generation totals.

This scenario evaluates the impacts of each of these potential neighboring projects on the mitigated roadway network assuming full build out and 100% occupancy of each project. This scenario provides valuable insight into the potential impacts of the proposed projects on future 2020 background mitigated traffic conditions.

As requested by the Park City Heights Task Force committee, Hales Engineering evaluated two scenarios; one with new traffic signals at the IHC entrance and on the old landfill road and the other scenario assumes realignment of the old landfill road into the IHC access creating a single signalized intersection.

Table 9 shows that when the traffic from the various developments is dispersed through two traffic signals, each intersection will maintain a lower overall delay per vehicle value and associated level of service. In contrast, Table 10 shows that when the traffic is concentrated at a single intersection, the results are a higher delay per vehicle value and associated level of service.

Table 8
Wasatch County Projects
Trip Generation

Land Use[1]	Number of Units	Unit Type	Daily Trip Generation	Internal Capture	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total Daily Trips**
SFDU (210) - Iroquois North	300	Dwelling Unit	2,857	0%	50%	50%	1,428	1,428	**2,857**
SFDU (210) - Iroquois South	225	Dwelling Unit	2,193	10%	50%	50%	987	987	**1,973**
Village Center (820)	100	1,000 Sq. Ft. GLA	6,791	10%	50%	50%	3,056	3,056	**6,112**
SFDU (210) - Tuhaye	900	Dwelling Unit	7,849	0%	50%	50%	3,925	3,925	**7,849**
Project Total Daily Trips							9,396	9,396	18,792
Passby Trips (25% of commercial)							764	764	1,528
Net Project Total Daily Trips							**8,632**	**8,632**	**17,264**
Land Use[1]	Units	Type	a.m. Peak Hour Trip Generation	Internal Capture	Entering	Exiting	Entering	Exiting	**Trips**
SFDU (210) - Iroquois North	300	Dwelling Unit	219	0%	25%	75%	55	165	**219**
SFDU (210) - Iroquois South	225	Dwelling Unit	167	10%	25%	75%	38	113	**150**
Village Center (820)	100	1,000 Sq. Ft. GLA	103	10%	61%	39%	57	36	**93**
SFDU (210) - Tuhaye	900	Dwelling Unit	639	0%	25%	75%	160	480	**639**
Project Total Daily Trips							309	793	1,102
Passby Trips (25% of commercial)							14	9	23
Net Project Total Daily Trips							**295**	**784**	**1,079**
Land Use[1]	Number of Units	Unit Type	p.m. Peak Hour Trip Generation	Internal Capture	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total p.m. Trips**
SFDU (210) - Iroquois North	300	Dwelling Unit	288	0%	63%	37%	182	107	**288**
SFDU (210) - Iroquois South	225	Dwelling Unit	222	10%	63%	37%	126	74	**200**
Village Center (820)	100	1,000 Sq. Ft. GLA	626	10%	48%	52%	270	293	**563**
SFDU (210) - Tuhaye	900	Dwelling Unit	774	0%	63%	37%	488	287	**774**
Project Total Daily Trips							1,066	760	1,826
Passby Trips (25% of commercial)							68	73	141
Net Project Total Daily Trips							**998**	**687**	**1,685**
Land Use[1]	Number of Units	Unit Type	Sat. Daily Trip Generation	Internal Capture	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total Sat. Daily Trips**
SFDU (210) - Iroquois North	300	Dwelling Unit	2,956	0%	50%	50%	1,478	1,478	**2,956**
SFDU (210) - Iroquois South	225	Dwelling Unit	2,256	10%	50%	50%	1,015	1,015	**2,030**
Village Center (820)	100	1,000 Sq. Ft. GLA	9,240	10%	50%	50%	4,158	4,158	**8,316**
SFDU (210) - Tuhaye	900	Dwelling Unit	8,302	0%	50%	50%	4,151	4,151	**8,302**
Project Total Daily Trips							10,802	10,802	21,604
Passby Trips (25% of commercial)							1039	1,039	2,079
Net Project Total Daily Trips							**9,762**	**9,762**	**19,525**
Land Use[1]	Number of Units	Unit Type	Sat. Peak Hour Trip Generation	Internal Capture	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total Sat. Peak Hour Trips**
SFDU (210) - Iroquois North	300	Dwelling Unit	275	0%	54%	46%	148	126	**275**
SFDU (210) - Iroquois South	225	Dwelling Unit	209	10%	54%	46%	102	86	**188**
Village Center (820)	100	1,000 Sq. Ft. GLA	866	10%	52%	48%	405	374	**779**
SFDU (210) - Tuhaye	900	Dwelling Unit	803	0%	54%	46%	434	369	**803**
Project Total Daily Trips							1,089	956	2,045
Passby Trips (25% of commercial)							101	93	195
Net Project Total Daily Trips							**987**	**863**	**1,850**

1. Land Use Code from the *Institute of Transportation Engineers - 7th Edition Trip Generation Manual (ITE Manual)*

SOURCE: Hales Engineering, November 2006

Table 9 Future (2020) – Two Traffic Signals p.m. Peak Hour Cumulative Conditions Level of Service							
Intersection			**Worst Approach**			**Overall Intersection**	
ID	**Description**	**Control**	**Approach[1]**	**Aver. Delay (Sec / Veh)[1]**	**LOS[1]**	**Aver. Delay (Sec / Veh)[2]**	**LOS**
1	SR-248 / IHC Access Road	Proposed Signal[3]	N/A	N/A	N/A	18.1	B
2	SR-248 / old landfill road	Proposed Signal[3]	N/A	N/A	N/A	16.5	B

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. All intersections were evaluated using Synchro software.

Source: Hales Engineering, June 2007

Table 10 Future (2020) – One Traffic Signal p.m. Peak Hour Cumulative Level of Service							
Intersection			**Worst Approach**			**Overall Intersection**	
ID	**Description**	**Control**	**Approach[1]**	**Aver. Delay (Sec / Veh)[1]**	**LOS[1]**	**Aver. Delay (Sec / Veh)[2]**	**LOS**
1	SR-248 / IHC Access Road	Proposed Signal[3]	N/A	N/A	N/A	36.5	D
2	SR-248 / old landfill road	Unsignalized	N/A	N/A	N/A	N/A	N/A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. All intersections were evaluated using Synchro software.

Source: Hales Engineering, June 2007

VI. Future (2020) PLUS PROJECT CONDITIONS

A. Purpose

This section of the report examines the traffic impacts of the proposed project at each of the study intersections. The trips generated by the proposed cumulative Park City Heights development were combined with the future 2020 background cumulative traffic volumes to create the future 2020 plus project conditions. This scenario provides valuable insight into the potential impacts of the proposed project on future 2020 background traffic conditions.

As requested by the Park City Heights Task Force committee, Hales Engineering evaluated two scenarios, one with two intersections and another assuming realignment of the old landfill road into the IHC access creating a single signalized intersection.

B. Traffic Volumes

Project trips were assigned to the study intersections based on the trip distribution percentages discussed in Chapter III and permitted intersection turning movements. Generally, project trips are layered directly onto future background traffic conditions and this traffic study will not be an exception. The accesses, parking, and internal circulation of this project will be reviewed and discussed in more detail following annexation.

C. Level of Service Analysis

Using Synchro which follows the Highway Capacity Manual (HCM) 2000 methodology introduced in Chapter I, the future 2020 p.m. peak hour LOS was computed for each study intersection as well as the proposed relocation of the intersection to the north servicing the proposed IHC Hospital, the Quinn's Recreation Center and several existing land uses. The results of this analysis are reported in Table 11 (see Appendix D for the detailed LOS reports). Synchro was used to remain consistent with previous SR-248 corridor analyses. As shown in Table 11, based on overall intersection averages, all of the study intersections experience acceptable levels of delay.

The results of the single signalized intersection analysis are reported in Table 12 (see Appendix D for the detailed LOS reports). Synchro was used to remain consistent with previous SR-248 corridor analyses. As shown in Table 12, based on overall intersection averages, all of the study intersections experience acceptable levels of delay. However, it should be noted that the reserve capacity of the single signalized intersection is not large and will quickly be overwhelmed with background traffic growth. The LOS category changes from LOS D to E at 55.0 seconds of delay per vehicle.

- SR-248 / old landfill road

- All of the intersections are expected to perform adequately under p.m. peak hour traffic conditions. Table ES-1 reports the overall intersection delay and LOS for the existing cumulative (assuming completion of the IHC hospital and surrounding development) background conditions analysis.

Project Conditions Analysis

The proposed cumulative land use for Park City Heights (including the Talisker and IHC affordable housing) will be as follows:

- Residential: **317 Units**
    - 207 single family dwelling units
    - 110 townhomes / condominiums

At a meeting on September 26, 2006, it was requested that Hales Engineering include:

- An evaluation of the impacts of a future park and ride lot to be located at Richardson Flats
    - It was determined that 100 stalls would be added to the existing 2006 analyses and that an additional 650 stalls (750 total stalls) would be added to the future 2020 conditions analyses
- Identify the cut through traffic impacts on the Old Landfill Road
    - This will be completed for the future 2020 analyses
- Trip generation for the project was computed using rates published in the Institute of Transportation Engineers (ITE), Trip *Generation, 7th Edition, 2003.* The projected net trip generation for the development is as follows:

    - Daily Trips: **2,726 vehicles per day**
    - Morning Peak Hour Trips: **210 vehicles per hour**
    - Evening Peak Hour Trips: **271 vehicles per hour**
    - Saturday Daily Trips: **2,912 vehicles per day**
    - Saturday Peak Hour Trips: **269 vehicles per hour**

Weekday evening peak hour project generated trips were assigned to study intersections to assess impacts of the project.

Existing (2006) Plus Project Conditions Analysis

- The project-generated trips for the cumulative Park City Heights project and 100 stalls at the proposed Richardson Flats park and ride lot were combined with cumulative (assuming completion of the IHC hospital and surrounding development) background traffic volumes to create an existing (2006) plus project scenario.

Table 11 Future (2020) Plus Project – Two Traffic Signals p.m. Peak Hour Level of Service							
Intersection			Worst Approach			Overall Intersection	
ID	Description	Control	Approach[1]	Aver. Delay (Sec / Veh)[1]	LOS[1]	Aver. Delay (Sec / Veh)[2]	LOS[2]
1	SR-248 / IHC Access Road	Proposed Signal[3]	N/A	N/A	N/A	20.1	C
2	SR-248 / old landfill road	Proposed Signal[3]	N/A	N/A	N/A	20.7	C
3	old landfill road / West Project Access	Unsignalized[4]	NB	24.9	C	1.0	A
4	old landfill road / West US-40 Frontage Road	Unsignalized[4]	NB	23.0	C	1.7	A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. All intersections were evaluated using Synchro software.

Source: Hales Engineering, June 2007

D. Mitigation Measures

Old landfill road traffic signal

The future (2020) plus project p.m. peak hour volumes were generated for the study intersections and were large enough to meet Warrant 3 – Peak Hour Volume as identified in the Manual on Uniform Traffic Control Devices (MUTCD), therefore, it was assumed that the old landfill road was signalized for two signal scenario.

Independent of the one versus two signal scenarios, the old landfill road in its current location or realigned to the IHC access, will need to have both the westbound left (250-feet) and right turn (250-feet) pockets developed at either location to allow sufficient storage capacity and queuing.

Table 12 Future (2020) Plus Project – One Traffic Signal p.m. Peak Hour Level of Service							
Intersection			Worst Approach			Overall Intersection	
ID	Description	Control	Approach[1]	Aver. Delay (Sec / Veh)[1]	LOS[1]	Aver. Delay (Sec / Veh)[2]	LOS[2]
1	SR-248 / IHC Access Road	Proposed Signal[3]	N/A	N/A	N/A	41.4	D
2	SR-248 / old landfill road	Proposed Signal[3]	N/A	N/A	N/A	N/A	N/A
3	old landfill road / West Project Access	Unsignalized[4]	NB	24.9	C	1.0	A
4	old landfill road / West US-40 Frontage Road	Unsignalized[4]	NB	23.0	C	1.7	A

1. This represents the worst approach LOS and delay (seconds / vehicle) and is only reported for unsignalized intersections.
2. This represents the overall intersection LOS and delay (seconds / vehicle).
3. All intersections were evaluated using Synchro software.

Source: Hales Engineering, June 2007

According to UDOT's *Administrative Rule 930-6, Accommodation of Utilities and the Control and Protection of State Highway Rights of Way,* a Category 4 classified roadway, SR-248 at its intersection with old landfill road requires:

1. a southbound left turn lane, deceleration lane and taper to accommodate more than 10 vehicles per hour making this movement
2. a northbound right turn pocket, deceleration lane and taper to accommodate more than 25 vehicles per hour making this movement
3. a westbound to northbound right turn acceleration lane and taper to accommodate more than 50 vehicles per hour on roadways with speed limits greater than 40 mph

VII. ADDITIONAL INFORMATION REQUESTED BY STAFF

A. Average Daily Traffic Volumes

SR-248

The most recent count information published by UDOT indicates that as of 2005, SR-248 is carrying approximately 13,830 vehicles on an average day. A typically 3-lane roadway has a capacity of approximately 15,000 – 17,000 ADT at LOS C conditions. Based on turning movement counts collected by Traffic Counts on Tuesday, August 22, 2006, and using a typical non-CBD k-factor, the current and unofficial ADT on SR-248 could be approximately 14,300. With the addition of the IHC, etc., Park City Heights and the UPC Mines project, ADT's could increase to approximately 17,900 vehicles.

Future 2020 traffic projections for SR-248 are for 24,800 vehicles per day, based on historical trends. When the cumulative traffic volumes are added on top of the projected ADT's (Park & Ride lot, cut through traffic, and the cumulative Park City Heights) the ADT could surpass 32,000 ADT.

old landfill road

Based on turning movement counts collected by Traffic Counts on Tuesday, August 22, 2006, and using a typical non-CBD k-factor, the current and unofficial ADT on old landfill road could be approximately 520. A typical 2-lane roadway with low speeds can handle up to 5,000-7,000 ADT comfortably at LOS C. With the addition of the Park City Heights and the UPC Mines project, ADT's could increase to approximately 2,570 vehicles.

Future 2020 traffic projects for this road could be as high as 10,000 trips per day, which can be handled on a moderate speed two lane road with an improved cross section. This higher functioning road would need turn pockets at the intersections to minimize disruptions to the through traffic movements.

West US-40 Frontage Road

Current traffic volumes on this road are negligible and therefore, it was not counted during the peak study hour, however, with development being planned along this road, ADT's could be approximately 2,000 vehicles. A typical 2-lane minor collector road with low speeds can handle up to 4,000-6,000 ADT comfortably at LOS C.

B. Necessary Roadway Geometry (Park City Roads)

old landfill road

Based on the projected ADT's for this road and the type of traffic that is currently using old landfill road (heavy vehicles and shuttle buses), 12-foot traffic lanes should be constructed. Although there were many pedestrians and bicyclists crossing old landfill road on the Rail Trail alignment, none were observed using old landfill road, therefore, shoulder size should be determined by Park City's ordinances. The development of the full roadway cross section will be determined by Park City ordinances for shoulder widths, curb and gutter sizes, park strips and sidewalk and/or trail widths. Due to the additional traffic from the proposed park and ride lot and the cut through traffic from the Browns Park development, this road should be posted for 30-35 mph.

West US-40 Frontage Road
Based on projected ADT's for this road and in the absence of future development plans south of the Park City Heights project, this roadway could be constructed with 11-foot traffic lanes and minimal shoulders as pedestrians and bicyclists are encouraged by the interconnectedness of the projects internal trail system to not use the West US-40 Frontage Road. It should be noted that the internal trail system is connected to the Rail Trail north and west of the Park City Heights project.

C. Acquisition of Right-of-way

This will be addressed by the development team at some point in this process and is beyond the scope of this traffic impact study.

D. Impact of Construction Traffic

As is the case with every development project, construction traffic will impact the surrounding roadway network. The typical impacts that are felt by adjacent land owners will be minimized due to the location of this project and the absence of residential neighbors. The impact of the construction traffic will be manifest at the SR-248 / old landfill road intersection where long side street delays will be incurred by vehicles waiting to enter the SR-248 traffic stream during peak hours of the day. In order to minimize the impacts of construction related traffic, it is suggested that:

1. On site storage of construction materials occur as much as is feasible
2. Off peak period deliveries should be encouraged
3. During mass grading and construction, minimize the off-site removal of excavated material as much as is possible
4. Provide adequate on-site parking for construction vehicles (e.g. staging areas for delivery vehicles, parking for construction workers, etc.
5. Encourage construction workers to carpool to the site as much as is possible

E. Traffic Calming

Traffic calming has been passively addressed throughout these suggestions. Reviewing for convenience and discussing additional traffic calming measures will help identify potential solutions for a safer roadway:

1. old landfill road: Due to the number of heavy vehicles using this road, 12-foot lanes are necessary, however, minimal to no shoulders will discourage bicyclists from riding on this road or parking along this road for convenient trail access. Park City should look for opportunities to construct a park and ride lot if this is a problematic

area for trail access. A field visit did not identify this as a problem. However, the Rail Trail crossing does have a few issues that could be solved quickly. See photograph on the following page.

a. Vegetation approaching the Rail Trail crossing from the west has overgrown and almost occluded the crosswalk signs. **Solution:** cut back the vegetation surrounding the signing and the Rail Trail Crossing
b. Visibility of the crossing is difficult. **Solution:** provide textured crosswalk for the width of the crossing and add crosswalk pavement makings
c. Exposure of bicyclists and pedestrians to vehicular traffic is not minimized due to the relatively large shoulder areas on both sides of the crossing. **Solution:** provide bulbouts/chokers at the crossing to minimize bicycle and

pedestrian exposure time in the crosswalk, which will force traffic to travel closer together and therefore calm the traffic while drawing attention to the crossing by the vehicle operators. See photograph of Winter Park, FL (left) and from the FHWA guide (right) which shows a bulbout condition.

d. Trail connectivity from the project to the Rail Trail should minimize the number of mid-block crosswalks on the old landfill road. **Solution:** if possible, when the trail out of the Park City Heights project intersects the old landfill road, it should bend toward the west and parallel old landfill road on the south side of the road until it connects to the Rail Trail west of the development. By consolidating and concentrating the bicycle and pedestrian crossings to one location, at the Rail Trail crossing, it will be safer and more efficient for trail users and vehicle operators.

2. West US-40 Frontage Road: By constructing this road with lane widths smaller than the HCM 12-foot standard lane width will move the vehicles physically closer together and therefore encourage slower speeds as vehicles are less comfortable driving in confined spaces. Minimizing the shoulder width because an interconnected trail system is in place limiting the need for pedestrian or bicycle access to the Frontage Road will draw the curb line or pavement edge closer to the vehicles, again reinforcing to the drives that they are traveling on a narrow roadway and that they should slow down.

- Based on overall intersection averages, all of the study intersections experience acceptable levels of delay (see Table ES-1).

Future (2020) Background Conditions Analysis

- The project-generated trips for the Talisker project, the IHC attainable housing, 750 stalls at the proposed Richardson Flats park and ride lot, and cut through traffic from Browns Park were combined with cumulative (assuming completion of the IHC hospital and surrounding development) and future background traffic volumes to create a future (2020) scenario.

- As shown in Table ES-1, based on overall intersection averages, each of the study intersections experience unacceptable levels of delay.

Future (2020) Plus Project Conditions Analysis

- The project-generated trips for the cumulative Park City Heights project was combined with cumulative 2020 background traffic volumes to create a future (2020) plus project scenario.

- As shown in Table ES-1, based on overall intersection averages, each of the study intersections experience unacceptable levels of delay.

RECOMMENDATIONS

Hales Engineering recommends the following mitigations:

Existing (2006) Cumulative Background Conditions

- Although the overall SR-248 / old landfill road intersection performs acceptably, the westbound left turn movement experiences high levels of delay during the peak hours. A Quinn's Junction / SR-248 Access Study dated December 6, 2006 prepared by Horrocks Engineers, stated that the SR-248 / old landfill road should be signalized in the future.

  Hales Engineering recommends that although this intersection does not meet the peak hour traffic volume signal warrant located in the Manual on Uniform Traffic Control Devices (MUTCD), it could qualify for a systems warrant provided that this location has been identified for signal controlled access in a signed and executed Corridor Agreement between UDOT, Park City and/or Summit County. If signalized, this intersection could function at an overall LOS C or better.

Existing (2006) Cumulative Plus Project Conditions

- The existing (2006) plus project p.m. peak hour volumes were generated for the study intersections were large enough to meet Warrant 3 – Peak Hour Volume as identified in the Manual on Uniform Traffic Control Devices (MUTCD), therefore, it was assumed that the old landfill road was signalized for two signal scenario.

- The westbound movements should be separated into a shared left / through lane and a right turn pocket of 150-feet in length.

- A northbound right turn pocket should be added (150-feet).

According to UDOT's *Administrative Rule 930-6, Accommodation of Utilities and the Control and Protection of State Highway Rights of Way,* a Category 4 classified roadway, SR-248 at its intersection with old landfill road requires:

1. a southbound left turn lane, deceleration lane and taper to accommodate more than 10 vehicles per hour making this movement
2. a northbound right turn pocket, deceleration lane and taper to accommodate more than 25 vehicles per hour making this movement
3. a westbound to northbound right turn acceleration lane and taper to accommodate more than 50 vehicles per hour on roadways with speed limits greater than 40 mph

Future (2020) Background Conditions Analysis

Although the overall SR-248 / old landfill road intersection performs acceptably, the east and westbound left turn movements experience high levels of delay during the peak hours. A Quinn's Junction / SR-248 Access Study dated December 6, 2006 prepared by Horrocks Engineers, stated that the SR-248 / old landfill road should be signalized in the future.

Hales Engineering recommends that although this intersection does not meet the peak hour traffic volume signal warrant located in the Manual on Uniform Traffic Control Devices (MUTCD), it could qualify for a systems warrant provided that this location has been identified for signal controlled access in a signed and executed Corridor Agreement between UDOT, Park City and/or Summit County. If signalized, this intersection could function at an overall LOS C or better, a detailed analysis is included in Appendix D.

The future 2020 traffic volumes are projected to increase to the point that two north and southbound through lanes will be necessary in order to maintain reasonable levels of service along SR-248. Table ES-1 shows the anticipated LOS for the study intersections with the mitigated cross section.

As requested by the Park City Heights Task Force committee, Hales Engineering evaluated two scenarios, one with new traffic signals at the IHC entrance and on the old landfill road and the other scenario assumes realignment of the old landfill road into the IHC access creating a single signalized intersection.

Table ES-1 shows that when the traffic from the various developments is dispersed through two traffic signals, each intersection will maintain a lower overall delay per vehicle value and associated level of service. In contrast, Table ES-1 shows that when the traffic is concentrated at a single intersection, the results are a higher delay per vehicle value and associated level of service.

Future (2020) Plus Project Conditions Analysis

The future (2020) plus project p.m. peak hour volumes were generated for the study intersections and were large enough to meet Warrant 3 – Peak Hour Volume as identified in the Manual on Uniform Traffic Control Devices (MUTCD), therefore, it was assumed that the old landfill road was signalized for two signal scenario.

Independent of the one versus two signal scenarios, the old landfill road in its current location or realigned to the IHC access, will need to have both the westbound left (250-feet) and right turn (250-feet) pockets developed at either location to allow sufficient storage capacity and queuing.

According to UDOT's *Administrative Rule 930-6, Accommodation of Utilities and the Control and Protection of State Highway Rights of Way,* a Category 4 classified roadway, SR-248 at its intersection with old landfill road requires:

1. a southbound left turn lane, deceleration lane and taper to accommodate more than 10 vehicles per hour making this movement
2. a northbound right turn pocket, deceleration lane and taper to accommodate more than 25 vehicles per hour making this movement
3. a westbound to northbound right turn acceleration lane and taper to accommodate more than 50 vehicles per hour on roadways with speed limits greater than 40 mph

TABLE-1
Mode Split
PC Heights TIS

Intersection		Existing 2006 Background	Existing 2006 plus Project - 2 Signals	Existing 2006 Plus Project - 1 Signal	Future 2020 Background	Future 2020 Background Mitigated	Future 2020 Background - 2 Signals	Future 2020 Background - 1 Signal	Future 2020 plus Project - 2 Signals	Future 2020 plus Project - 1 Signal
ID	Description	LOS (Sec/Veh[1])	LOS (Sec/Veh[1])	LOS (Sec/Veh[1])	LOS (Sec/Veh[1])	LOS (Sec/Veh[1])	LOS (Sec/Veh[1])	LOS (Sec/Veh[1])	LOS (Sec/Veh[1])	LOS (Sec/Veh[1])
1	SR-248 / IHC Access Road	B (17.7)	B (16.0)	C (34.9)	E (76.1)	C (21.5)	B (18.1)	D (36.5)	C (20.1)	D (41.4)
2	SR-248 / old landfill road	A (1.0)	C (21.0)	N/A	A (8.8)	A (1.6)	B (16.5)	N/A	C (20.7)	N/A
3	old landfill road / West Project Access	N/A	A (1.0)	A (1.0)	N/A	N/A	N/A	N/A	A (1.0)	A (1.0)
4	old landfill road / West US-40 Frontage Road[2]	N/A	A (2.6)	A (2.6)	N/A	N/A	N/A	N/A	A (1.7)	A (1.7)

1. Intersection LOS and delay (seconds/vehicle) values represent the overall intersection average. LOS and Delay details for the worst movement of unsignalized intersections are reported in the main body of the report.
2. This intersection is a project access and was only analyzed in "plus project" scenarios.

HALES ENGINEERING
innovative transportation solutions

TABLE OF CONTENTS

MEMORANDUM

Date: September 27, 2010

To: Patrick Moffat - The Boyer Company

From: Ryan Hales, PE, PTOE, AICP - Hales Engineering

Subject: Park City Heights – Traffic Volume and Trip Generation Update

UT06-002

This memo summarizes the differences between the original traffic impact study completed for the Park City Heights Traffic Impact Study completed in June 2007 and the proposed updates to the development as of September 2010. The proposed project is located near the intersection of SR-248 and the old haul road. See updated concept plan located in the Appendix.

In order to determine whether or not an update to the traffic impact study would be required this memo compares 2007 traffic volumes with current traffic volumes, and original trip generation with updated trip generation.

Background Traffic Volumes

2006 Traffic Volumes

Traffic counts were collected for the a.m. and p.m. peak period in August 2006.

The p.m. peak hour traffic volume on the southern leg of SR-248 / old haul road was 1,690 vehicles per hour (vph). The p.m. peak hour traffic volume to the north of the intersection was 1,714 vph. The total entering vehicles was 1,734 vph.

Based on historical traffic data from UDOT, the AADT between the US-40 interchange and Wyatt Earp Way was approximately 8,920 vehicles per day (vpd) during 2006.

See appendix for detailed count data.

2009 Traffic Volumes

Hales Engineering obtained the 2009 AADT data which was the most current data available for SR-248 from UDOT.

The AADT between the US-40 interchange and Wyatt Earp Way was approximately 9,230 vpd. The difference between the 2006 and the 2009 volumes is 310 vehicles or an increase of 103 vehicles per year or 1.15%/yr.

Project Related Traffic Volumes

2006 Trip Generation

The land use estimated for the original June 2007 TIS was as follows:

- Condominium: 96 units
- Single Family Detached 207 units

The original TIS used the ITE *Trip Generation*, 7th Edition (2003), as this was the most up-to-date edition at the time.

Total trip generation for the project was estimated to be as follows:

- Daily: 2,650 vpd
- a.m. Peak: 204 vph
- p.m. Peak: 264 vph
- Saturday Daily: 2,862 vpd
- Saturday Peak: 265 vph

The net overall p.m. peak hour trip generation was 264 vph.

See Appendix for detailed Trip Generation calculations.

Updated Trip Generation

The land use estimated for the original TIS was as follows:

- Condominium: 79 units
- Single Family Detached 160 units

Comparing the two land use plans, there is significantly less residential land uses than the previous plan, approximately 64 fewer housing units.

The ITE *Trip Generation*, 8th Edition (2008), as this was the most up-to-date edition at the time.

Total trip generation for the project was estimated to be as follows:

- Daily: 2,126 vpd
- a.m. Peak: 164 vph
- p.m. Peak: 210 vph
- Saturday Daily: 2,369 vpd
- Saturday Peak: 218 vph

The net overall p.m. peak hour trip generation has been updated / reduced to 210 vph. This represents a net decrease of approximately 54 vph.

See Appendix for detailed Trip Generation calculations.

Conclusions/Recommendations

Hales Engineering has concluded the following:

1. Background traffic volumes have remained relatively constant between 2006 and 2009 and have only grown by approximately 1.15%/yr. Overall traffic volumes grew by approximately 310 vph from 2006 to 2009 during the p.m. peak hour.
2. The updated land use contains significantly less residential units (64 less housing units), which equates to 54 less vehicles per hour than the 2006 trip generation.

Hales Engineering recommends the following:

1. The TIS does not need to be updated based on the combination of low background traffic growth and new lower number of housing units / project related trip generation.

If you have any questions about this memo, please feel free to contact us.

APPENDIX

20 Year AADT HISTORY
2009 - 1990

Route	Bmp	Emp	Description	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990
0240	0.000	1.217	I 15 Bear River - SR 38 Honeyville	2,340	2,300	2,360	2,345	2,165	2,095	2,045	2,080	1,980	4,840	4,895	4,725	4,600	4,425	4,280	4,035	3,695	1,425	1,625	1,610
0241	0.000	0.415	SR 114 - I 15 via 1600 North Orem	16,265	16,365	17,210	16,970	16,250	16,300	16,200	16,200	15,175	15,020	15,585	14,405	14,235	13,905	13,765	13,100	12,565	12,860	12,320	11,805
0243	0.000	1.397	SR 89 - Beaver Mountain Ski Area	790	775	805	760	745	740	754	770	750	735	735	685	650	625	605	570	520	515	475	470
0244	0.000	0.189	SR 6 Helper	2,505	2,460	2,685	2,670	2,465	2,385	2,600	2,645	3,530	3,495	3,535	3,410	2,840	2,730	3,415	4,690	4,295	4,225	4,120	4,090
0244	0.189	0.910	SR 157 via Poplar Street - SR 6 via Main Street	1,765	1,735	1,780	1,770	1,635	2,080	1,990	2,025	1,930	2,150	2,175	2,100	1,910	1,835	3,000	3,975	3,640	3,580	3,440	3,415
0248	0.000	1.071	SR 224 Park City	20,545	21,315	22,320	21,055	19,375	18,690	16,365	16,235	14,434	15,690	14,102	12,820	9,990	9,610	9,090	8,615	7,990	7,265	6,950	6,760
0248	1.071	1.398	Comstock Drive Park City	17,875	18,545	19,420	18,320	16,860	17,670	16,360	16,235	14,434	15,690	14,102	12,820	9,990	9,610	9,090	8,615	7,990	7,265	6,950	6,760
0248	1.398	3.120	Wyatt Earp Way	14,655	15,210	15,920	15,025	13,830	13,340	12,350	12,255	10,900	11,878	10,701	9,729	8,460	8,140	4,500	4,445	4,125	3,400	3,250	3,160
0248	3.120	4.640	SR 40 Interchange	9,230	9,575	9,120	8,920	8,210	7,920	7,330	10,175	9,045	8,790	7,898	7,180	6,930	6,665	3,550	3,510	3,255	2,370	2,265	2,200
0248	4.640	9.326	Browns Canyon Road Route 2586	6,855	5,825	6,100	5,755	5,635	5,435	4,625	4,585	4,075	3,960	3,558	3,235	3,120	3,000	2,295	2,265	2,100	1,545	1,475	1,435
0248	9.326	12.015	Long View Drive	5,495	5,700	5,970	5,630	5,180	4,995	4,625	4,585	4,075	3,960	3,558	3,235	3,120	3,000	2,295	2,265	2,100	1,545	1,475	1,435
0248	12.015	14.481	Road Left to Garff Ranches - SR 32 Kamas	5,120	5,310	5,560	5,245	4,825	4,135	3,825	4,585	4,075	3,960	3,558	3,235	3,120	3,000	2,295	2,265	2,100	1,545	1,475	1,435
0252	0.000	1.591	SR 91 at 1000 West	10,070	10,135	10,655	15,135	14,495	14,540														
0252	1.591	2.606	600 South via 1000 West	12,235	12,310	12,940	14,410	13,800	13,840														
0252	2.606	4.138	SR 30 (200 North) via 1000 West	14,620	14,705	15,465	17,480	16,740	16,790														
0252	4.138	5.516	1400 North via 1000 West	6,905	6,945	7,305	17,480	1,670	16,790														
0252	5.516	6.755	1000 West via 2500 North - SR 91 North Logan	9,625	9,680	10,180	11,515	11,025	11,060														
0256	0.000	1.817	SR 89 Salina	2,315	2,275	2,335	2,320	2,140	2,070	2,240	2,280	2,040	2,020	2,040	1,970	2,115	2,035	1,965	1,995	1,825	1,795	1,775	1,760
0256	1.817	2.259	500 South Redmond	745	730	750	745	685	660	630	640	610	600	535	515	500	480	460	455	415	405	400	395
0256	2.259	2.374	Main Street Redmond	580	570	585	580	535	515	440	640	610	600	535	515	500	480	460	455	415	405	400	395
0256	2.374	5.595	100 North Redmond - SR 89 Axtell	515	505	685	680	625	705	675	685	650	640	645	620	600	575	510	480	440	320	295	290
0257	0.000	0.506	SR 21 Center Street Milford	465	455	470	615	565	515	490	825	785	775	780	750	730	530	510	500	555	535	400	370
0257	0.506	4.415	600 North Milford	620	610	625	620	570	550	525	725	690	680	685	660	640	405	390	390	420	405	405	355
0257	4.415	53.589	Road to Hot Spring	830	815	840	855	790	765	490	495	470	745	750	720	700	505	485	490	545	525	500	195
0257	53.589	66.215	Clear Lake	405	400	1,210	1,205	1,110	1,075	1,025	1,345	1,280	1,265	1,275	1,230	1,065	1,025	990	1,000	1,050	1,010	1,145	845
0257	66.215	69.246	4500 South Deseret - SR 6 East of Hinckley	1,330	1,310	1,345	1,335	1,230	1,190	1,135	1,540	1,465	1,450	1,465	1,415	1,375	1,320	1,275	1,300	1,350	1,300	1,415	1,105
0258	0.000	0.469	I 70 Elsinore	1,330	1,305	1,825	1,815	1,675	990	935	950	905	735	741	715	695	665	560	505	460	520	1,035	1,025
0258	0.469	0.792	Center Street Elsinore	2,340	2,300	2,360	2,345	2,165	2,095	2,005	2,040	2,135	2,115	2,135	2,060	2,005	1,925	1,735	1,390	1,270	1,330	1,355	1,345
0258	0.792	2.022	300 East Elsinore - SR 118 Austin	2,645	2,595	2,665	2,650	2,445	2,365	2,135	2,170	2,070	2,050	2,070	1,995	1,940	1,865	1,630	1,455	1,330	1,390	1,160	1,150
0259	0.000	0.345	SR 24 - I 70 Sigurd	2,940	2,885	2,965	2,945	2,720	2,635	2,521	2,560	2,440	2,415	2,440	2,355	2,290	2,200	2,125	2,000	1,830	1,800		
0260	0.000	1.083	SR 24	2,760	2,710	2,780	2,765	2,550	2,475	2,365	2,405	2,290	2,265	2,290	2,210	2,150	2,065	1,995	1,880				
0260	1.083	1.388	300 South Aurora	2,015	1,980	2,030	2,020	1,865	1,495	1,430	1,455	1,385	1,370	1,385	1,335	1,300	1,250	1,205	1,135				
0260	1.388	1.763	Center Street Aurora	1,385	1,360	1,400	1,390	1,545	1,495	1,430	1,455	1,385	1,370	1,385	1,335	1,300	1,250	1,205	1,135				
0260	1.763	4.179	Salina Old Road - SR 50	1,660	1,630	1,675	1,665	1,535	1,485	795	805	1,455	1,440	1,455	1,405	1,365	1,310	1,265	1,190				
0261	0.000	0.874	SR 163 North of Mexican Hat	130	125	130	150	145	145	105	105	100	160	160	150	83	80	75	100	90	85	100	125
0261	0.874	9.656	SR 316 Goosenecks State Park	115	110	115	110	105	105	105	105	100	160	160	150	83	80	75	70	60	55	50	110
0261	9.656	22.641	Road to Muley Point	90	90	95	90	90	90	90	105	100	160	160	150	83	80	75	70	60	55	50	110
0261	22.641	32.691	Local Road - SR 95	100	100	105	120	115	115	110	105	100	160	160	150	83	80	75	70	60	55	50	110
0262	0.000	8.433	SR 191	325	320	330	345	315	1,000	955	970	924	915	925	890	865	665	640	630	585	570	570	565
0262	8.433	22.605	Road Left to Hovenweep - SR 162 Montezuma Creek	285	280	290	290	265	1,000	955	970	924	915	925	890	865	665	640	630	585	570	570	565
0264	0.000	5.312	SR 31 Fairview Canyon	465	460	475	605	555	535	860	870	830	820	825	440	425	405	505	475	435	300	275	415
0264	5.312	12.719	Road Right to Electric Lake	320	315	325	325	555	535	860	870	830	820	825	440	425	405	505	475	435	300	275	415
0264	12.719	15.373	Skyline Mine - SR 96	400	395	410	325	555	535	860	870	830	820	825	440	425	405	505	475	435	300	275	415
0265	0.000	0.440	SR 114 Orem	21,020	21,145	22,235	17,265	16,535	16,585	9,105	9,105	8,530	9,620	9,695	9,695	7,160	6,990	6,920	5,025	4,820	4,775	4,050	3,780
0265	0.440	0.725	I 15 via 1200 South Orem	45,565	45,245	47,035	46,385	39,180	39,235	36,735	37,400	35,040	34,810	35,085	40,200	39,725	38,800	37,850	36,965	35,220	35,090	34,035	24,780
0265	0.725	1.713	Sand Hill Road	45,090	45,245	47,035	46,385	39,180	39,235	36,735	37,400	35,040	34,810	35,085	40,200	39,725	38,800	37,850	36,965	35,220	35,090	35,670	34,430
0265	1.713	2.276	Main Street Orem	52,175	51,810	53,860	39,765	39,180	39,235	36,735	37,400	35,040	34,810	35,085	40,200	39,725	38,800	37,850	36,965	35,220	35,090	35,670	34,430
0265	2.276	2.727	SR 89 Orem	33,765	33,530	35,505	35,015	45,885	45,930	46,550	47,396	44,420	44,125	44,475	41,107	40,700	39,755	39,340	38,610	36,790	36,790	35,670	34,430
0265	2.727	3.647	800 East Orem via BYU Diagonal	36,080	35,330	38,800	38,265	37,645	37,700	38,210	45,415	42,550	42,270	42,605	39,380	38,915	38,010	37,610	36,915	35,175	35,280	34,205	33,005
0265	3.647	4.118	550 West Orem	37,445	37,185	38,655	38,210	37,645	37,700	38,210	45,415	42,550	42,270	42,605	39,380	38,915	38,010	37,610	36,915	35,175	35,280	34,205	33,005
0265	4.118	4.336	200 West (Freedom Blvd) - SR 189 University Avenue	37,535	37,275	38,745	38,210	37,645	37,700	38,210	45,415	42,550	42,270	42,605	39,380	38,915	38,010	37,610	36,915	35,175	35,280	34,205	33,005
0266	0.000	0.777	I 215	39,885	39,610	41,175	40,605	40,005	40,060	38,315	39,010	42,030	33,995	34,265	34,980	34,980	40,455	40,030	39,290	37,780	36,910	35,785	35,085
0266	0.777	1.703	SR 68 Redwood Road via 4700 South	25,015	24,960	25,945	24,300	23,850	25,235	23,490	23,955	24,712	18,490	28,475	29,917	30,396	35,550	35,175	34,525	32,895	32,135	31,155	30,790
0266	1.703	2.179	Atherton Drive	26,300	26,120	24,915	24,570	24,205	27,685	28,055	23,955	24,712	18,490	28,475	29,917	30,396	35,550	35,175	34,525	32,895	32,135	31,155	30,790
0266	2.179	2.844	815 West Murray	28,875	28,675	29,805	29,395	23,060	23,090	23,400	23,826	24,563	18,341	28,217	28,217	28,793	33,875	33,520	32,900	31,350	30,625	27,020	26,705
0266	2.844	3.380	I 15 via 4500 South	39,665	39,390	40,945	40,380	33,840	33,505	33,955	34,570	35,640	21,719	33,415	31,159	31,795	33,750	33,420	32,800	31,925	30,930	30,565	29,905
0266	3.380	3.536	Main Street Murray	32,785	32,555	33,840	33,375	32,880	32,355	32,790	33,385	34,780	22,038	33,906	30,824	31,454	33,110	32,780	32,180	31,320	30,345	29,975	29,260
0266	3.536	4.131	SR 89 State Street	34,175	33,935	35,275	34,790	34,275	34,325	34,785	35,415	33,180	32,961	34,335	33,133	33,810	36,125	35,745	35,745	34,205	33,415	32,400	30,855
0266	4.131	4.422	500 East	34,175	33,935	35,275	34,790	34,275	34,325	34,785	35,415	33,180	32,961	34,335	29,796	30,405	30,405	33,100	34,835	33,195	31,385	30,430	28,980
0266	4.422	4.732	SR 71 700 East	23,045	22,885	23,790	23,460	23,115	23,145	23,450	23,875	27,625	27,442	28,586	25,524	26,045	25,720	25,450	26,790	25,630	25,040	24,275	22,545

ROUTE NAME	BEG. ACCUM. MILEAGE	END ACCUM. MILEAGE	LOCATION DESCRIPTION	2009 AADT	2008 AADT	2007 AADT
0228	0.000	1.821	I 15 South Leeds - I 15 North Leeds	2,385	2,340	2,404
0232	0.000	0.130	SR 126	26,115	26,270	27,626
0232	0.130	0.272	I 15 North Layton	40,385	40,625	42,720
0232	0.272	1.268	Gordon Avenue Layton	18,700	18,815	19,783
0232	1.268	2.263	Antelope Drive via Hillfield Road	23,435	23,575	24,792
0232	2.263	2.401	SR 193 - Hillfield Air Force Base South Gate	22,835	22,975	24,159
0235	0.000	0.505	SR 89 turns Northwest	24,865	25,015	26,303
0235	0.505	1.088	400 North via Washington Boulevard	25,745	25,900	27,236
0235	1.088	1.233	Larsen Lane	26,215	28,110	29,558
0235	1.233	2.045	1100 North North Ogden	24,065	24,210	27,672
0235	2.045	3.071	1700 North via Washington Boulevard North Ogden	21,300	24,500	25,761
0235	3.071	3.202	2550 North via Washington Boulevard - SR 134	20,600	20,725	21,793
0240	0.000	1.217	I 15 Bear River - SR 38 Honeyville	2,340	2,300	2,359
0241	0.000	0.415	SR 114 - I 15 via 1600 North Orem	16,265	16,365	17,208
0243	0.000	1.397	SR 89 - Beaver Mountain Ski Area	790	775	804
0244	0.000	0.189	SR 6 Helper	2,505	2,460	2,686
0244	0.189	0.910	SR 157 via Poplar Street - SR 6 via Main Street	1,765	1,735	1,781
0248	0.000	1.071	SR 224 Park City	20,545	21,315	22,318
0248	1.071	1.398	Comstock Drive Park City	17,875	18,545	19,419
0248	1.398	3.120	Wyatt Earp Way	14,655	15,210	15,920
0248	3.120	4.640	SR 40 Interchange	9,230	9,575	9,119
0248	4.640	9.326	Browns Canyon Road Route 2586	6,855	5,825	6,100
0248	9.326	12.015	Long View Drive	5,495	5,700	5,968
0248	12.015	14.481	Road Left to Garff Ranches - SR 32 Kamas	5,120	5,310	5,560
0252	0.000	1.591	SR 91 at 1000 West	10,070	10,135	10,655
0252	1.591	2.606	600 South via 1000 West	12,235	12,310	12,942
0252	2.606	4.138	SR 30 (200 North) via 1000 West	14,620	14,705	15,465
0252	4.138	5.516	1400 North via 1000 West	6,905	6,945	7,304
0252	5.516	6.755	1000 West via 2500 North - SR 91 North Logan	9,625	9,680	10,181
0256	0.000	1.817	SR 89 Salina	2,315	2,275	2,334
0256	1.817	2.259	500 South Redmond	745	730	749
0256	2.259	2.374	Main Street Redmond	580	570	583
0256	2.374	5.595	100 North Redmond - SR 89 Axtell	515	505	684
0257	0.000	0.506	SR 21 Center Street Milford	465	455	469
0257	0.506	4.415	600 North Milford	620	610	624
0257	4.415	53.589	Road to Hot Spring	830	815	839
0257	53.589	66.215	Clear Lake	405	400	1,212
0257	66.215	69.246	4500 South Deseret - SR 6 East of Hinckley	1,330	1,310	1,343
0258	0.000	0.469	I 70 Elsinore	1,330	1,305	1,826
0258	0.469	0.792	Center Street Elsinore	2,340	2,300	2,359
0258	0.792	2.022	300 East Elsinore - SR 118 Austin	2,645	2,595	2,666
0259	0.000	0.345	SR 24 - I 70 Sigurd	2,940	2,885	2,963
0260	0.000	1.083	SR 24	2,760	2,710	2,782
0260	1.083	1.388	300 South Aurora	2,015	1,980	2,032
0260	1.388	1.763	Center Street Aurora	1,385	1,360	1,398
0260	1.763	4.179	Salina Old Road - SR 50	1,660	1,630	1,675

Table 2
Park City Heights
Trip Generation

Land Use[1]	Number of Units	Unit Type	Daily Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total Daily Trips**
Condominium (230)	96	Dwelling Unit	620	50%	50%	310	310	**620**
Single Family Detached (210)	207	Dwelling Unit	2,031	50%	50%	1,015	1,015	**2,030**
Project Total Daily Trips						**1,325**	**1,325**	**2,650**
Land Use[1]	Number of Units	Unit Type	a.m. Peak Hour Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total a.m. Trips**
Condominium (230)	96	Dwelling Unit	50	17%	83%	8	41	**49**
Single Family Detached (210)	207	Dwelling Unit	154	25%	75%	39	116	**155**
Project Total Daily Trips						**47**	**157**	**204**
Land Use[1]	Number of Units	Unit Type	p.m. Peak Hour Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total p.m. Trips**
Condominium (230)	96	Dwelling Unit	58	67%	33%	39	19	**58**
Single Family Detached (210)	207	Dwelling Unit	206	63%	37%	130	76	**206**
Project Total Daily Trips						**169**	**95**	**264**
Land Use[1]	Number of Units	Unit Type	Sat. Daily Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total Sat. Daily Trips**
Condominium (230)	96	Dwelling Unit	775	50%	50%	388	388	**776**
Single Family Detached (210)	207	Dwelling Unit	2,085	50%	50%	1,043	1,043	**2,086**
Project Total Daily Trips						**1,431**	**1,431**	**2,862**
Land Use[1]	Number of Units	Unit Type	Sat. Peak Hour Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	**Total Sat. Peak Hour Trips**
Condominium (230)	96	Dwelling Unit	70	54%	46%	38	32	**70**
Single Family Detached (210)	207	Dwelling Unit	195	54%	46%	105	90	**195**
Project Total Daily Trips						**143**	**122**	**265**

1. Land Use Code from the *Institute of Transportation Engineers - 7th Edition Trip Generation Manual (ITE Manual)*

SOURCE: Hales Engineering, June 2007

Table 1
Park City Heights
Trip Generation

#	Land Use[1]	Number of Units	Unit Type	Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	Mixed-Use Internal Capture	Transit Reduction	Pass-by Reduction	Net Trips Entering	Net Trips Exiting	Total Daily Trips
Daily														
1	Single-Family Detached Housing (210)	160	Dwelling Units	1,602	50%	50%	801	801	0%	0%	0%	801	801	**1,602**
2	Residential Condominium/Townhouse (230)	79	Dwelling Units	524	50%	50%	262	262	0%	0%	0%	262	262	**524**
	Project Total Daily Trips						**1,063**	**1,063**				**1,063**	**1,063**	**2,126**
a.m. Peak Hour	Land Use[1]	Number of Units	Unit Type	Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	Mixed-Use Internal Capture	Transit Reduction	Pass-by Reduction	Net Trips Entering	Net Trips Exiting	**Total a.m. Trips**
1	Single-Family Detached Housing (210)	160	Dwelling Units	121	25%	75%	30	91	0%	0%	0%	30	91	**121**
2	Residential Condominium/Townhouse (230)	79	Dwelling Units	43	17%	83%	7	35	0%	0%	0%	7	35	**43**
	Project Total a.m. Peak Hour Trips						**38**	**127**				**38**	**127**	**164**
p.m. Peak Hour	Land Use[1]	Number of Units	Unit Type	Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	Mixed-Use Internal Capture	Transit Reduction	Pass-by Reduction	Net Trips Entering	Net Trips Exiting	**Total p.m. Trips**
1	Single-Family Detached Housing (210)	160	Dwelling Units	160	63%	37%	101	59	0%	0%	0%	101	59	**160**
2	Residential Condominium/Townhouse (230)	79	Dwelling Units	50	67%	33%	33	16	0%	0%	0%	33	16	**50**
	Project Total p.m. Peak Hour Trips						**134**	**76**				**134**	**76**	**210**
Saturday Daily	Land Use[1]	Number of Units	Unit Type	Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	Mixed-Use Internal Capture	Transit Reduction	Pass-by Reduction	Net Trips Entering	Net Trips Exiting	**Total Sat. Daily Trips**
1	Single-Family Detached Housing (210)	160	Dwelling Units	1,655	50%	50%	827	827	0%	0%	0%	827	827	**1,655**
2	Residential Condominium/Townhouse (230)	79	Dwelling Units	714	50%	50%	357	357	0%	0%	0%	357	357	**714**
	Project Total Saturday Trips						**1,184**	**1,184**				**1,184**	**1,184**	**2,369**
Saturday Peak Hour	Land Use[1]	Number of Units	Unit Type	Trip Generation	% Entering	% Exiting	Trips Entering	Trips Exiting	Mixed-Use Internal Capture	Transit Reduction	Pass-by Reduction	Net Trips Entering	Net Trips Exiting	**Total Sat Pk Hr Trips**
1	Single-Family Detached Housing (210)	160	Dwelling Units	152	54%	46%	82	70	0%	0%	0%	82	70	**152**
2	Residential Condominium/Townhouse (230)	79	Dwelling Units	66	54%	46%	35	30	0%	0%	0%	35	30	**66**
	Project Total Saturday Peak Hour Trips						**117**	**100**				**117**	**100**	**218**

1. Land Use Code from the Institute of Transportation Engineers - 8th Edition Trip Generation Manual (ITE Manual)

SOURCE: Hales Engineering, September 2010