MEMORANDUM

Date: August 27, 2014

To: Weber County

From: Kordel Braley, PE, PTOE
Jeremy Searle, PE

Subject: Powder Mountain Resort Transportation Master Plan Review
UT14-635

Purpose

Hales Engineering was asked to review the Powder Mountain Resort Transportation Master Plan, prepared by Project Engineering Consultants (PEC), dated June 6, 2014. Hales Engineering has the following comments / observations regarding the study:

Summary

The traffic study for the Powder Mountain Resort studies the traffic impacts that are anticipated to result from the proposed development at Powder Mountain. Three intersections were identified for analysis: SR-39 / Valley Drive, SR-39 / SR-158, and SR-158 / Route 3460 (Highway 162). The analysis shows that all three intersections will fail by 2025 if no improvements are made. The report recommends that a traffic signal be installed at the SR-39 / SR-158 and SR-158 / Route 3460 intersection with an option for a roundabout at the SR-158 / Route 3460 intersection. The report also recommends installing a left-turn median channelization on SR-39 for the left-turning movement from Valley Drive (similar to an un-signalized High-T intersection). The report also discusses parking and sustainability.

Hales Engineering's primary concern with the analysis is the methodology used for trip generation as well as reductions (and the potential need for commitments from the developer to justify these reductions). It is possible that the traffic impacts of this development are being understated. Hales Engineering recommends that the following items be addressed/discussed:

General

1. Is there a concept or site plan available for the Powder Mountain Area? This would help us to understand the traffic impacts better.

2. The report mentions numerous times that the proposed development will provide "food, drink, lodging, sports, entertainment, recreational activities, and shopping" for their guests. However, only the lodging and recreational activities are identified. Will there be restaurants, commercial areas, entertainment venues, etc? If so, it seems likely that these would generate some amount of traffic from the valley (although most would likely be internal trips).
3. Most people will not know what Route 3460 refers to. It should be clarified that this is Highway 162.

Executive Summary

4. The executive summary states that background traffic is anticipated to grow approximately one percent. This should be clarified to say one percent per year (or updated if the background growth assumptions change).

Existing Conditions

5. Hales Engineering agrees with the existing conditions analysis.

Data Collection

6. Hales Engineering agrees with the data collection locations and time of year.
7. Identify the weekday and Saturday peak hour in the text. Move the traffic counts section before the level of service (LOS) for the study intersections is outlined. This helps to explain how the LOS was calculated.

Traffic Projections

8. An assumption that 100% of the resort guests and skiers that come as part of the new development will stay approximately one week seems unreasonable. Although the development is meant to accommodate people for longer stays, it seems likely that many people will come up for one or two nights or even a day trip.
9. Hales Engineering doesn't have a way to confirm the assumed occupancy rates in the report. Does the county agree with these? The occupancy rates also contradict the assumption of a weeklong stay because the weekday rates are so much lower than the weekend.
10. The report states that Powder Mountain will provide transportation for all of their employees to/from the ski resort. How are they going to enforce this? Where will the shuttle go to/from? If it's from the Eden area, then employee vehicles will still go through the study intersections. If it is the lot on Valley Drive, the number of trips at that intersection still need to be accounted for.
11. Powder Mountain has committed to reducing the number of skier single vehicle trips by 50% by teaming with UTA. How is this going to be done? It is recommended that the county get commitments from the resort on how this will be accomplished.

Trip Generation

12. As mentioned above, many of the assumptions used to calculate the trip generation should be reexamined. The table should be updated to include all of the reductions taken so that it is easy to follow the trip generation calculations.
13. The internal capture methodology does not appear to be calculated correctly. The percentages identified in the report should be used in a worksheet shown in the ITE Trip Generation Handbook using the methodology outlined there. This will also require having more detail on the retail components of the project. It is expected that the number of trips reduced by internal capture will be lower than what is shown in the report.
14. The trip generation for the Recreational Homes appears incorrect. Table 8 shows 105 homes. Assuming a weekday occupancy of 25%, this would be 26.25. According to ITE the daily rate is 3.16 trips / home so 26.25 * 3.16 = 83 trips (not 38 as shown in Table 8). Sat, am and pm trip gen also appear to be incorrect. In addition, the Recreational Homes land use in the ITE Trip Generation Manual already accounts for a lower occupancy. Taking an occupancy reduction on top of the ITE rate is double-counting that reduction.
15. The trip generation for the Resort Hotel appears incorrect. Table 8 shows 258 rooms. Assuming a weekday occupancy of 50%, this would be 129 rooms. According to ITE, the trip gen rate for the am peak hour is 0.37. So this would be 129 * 0.37 = 48 trips. Table 8 shows 28. PM is also incorrect. 129 * 0.49 = 63 trips (not 34). It is unclear how the daily rates were calculated.
16. The Snow Ski Area calculation appears incorrect. The report states that a trip generation rate of 67 trips / ski lift on a weekday and 112 trips / lift on a Saturday. Table 8 shows 6 lifts so the weekday trip generation should be 6 * 67 = 402 trips, and the Saturday should be 6 * 112 = 672 trips. If the report meant to say that there were 67 tickets sold per lift on a weekday (as opposed to trips generated) then the occupancy rate of 2.7 skiers / vehicle could be used, which drops the daily trip generation to 149 trips, which is much higher than the 55 trips shown in Table 8 (same applies to Saturday trips). It is also unclear how peak hour trip generation numbers were calculated, since the report only identified a daily rate. The calculated 91 Saturday Daily trips doesn't make sense when considering the 72 Saturday peak hour trips.
17. Similar problems exist with Table 9. The entirety of Table 8 and 9 should be recalculated and checked to make sure that it is correct.

Trip Distribution

18. Hales Engineering agrees that the trip distribution used in the study is reasonable.
19. Figure 2, study intersection A shows 100% on the northeast leg – this should be 10%.

Plus Project Traffic Impacts

20. The Ogden Valley Transportation Master Plan assumes a 5% to 6% background growth per year (without the development at Powder Mountain). This is much higher than the 1% assumed in the report. (To their credit, PEC did not have that information available to them at the time the report was completed). The county could consider

having PEC revise their report using a higher background growth. It would also be interesting to look at intermediate AADT values (~2005) to see if the low traffic volumes in 2012 were a result of the recession.

Mitigation Measures

21. What is the projected LOS at SR-39 / Valley Drive with the addition of a left-turn acceleration lane (un-signalized high-T)?
22. Hales Engineering agrees with the proposed mitigation measures. However, if some of the trip generation assumptions change, the mitigation measures will need to be reevaluated.

Parking

23. The number of available stalls shown in Table 16 does not match those shown in Figure 7.
24. The report makes the assumption that the Rainbow Gardens Park-n-Ride lot will be expanded by 8.5 acres. It is recommended that the County follow up with the resort on this commitment.
25. What about additional parking at the resort? Are there any plans to expand parking there with the additional lift expansion?

Travel Demand Management

26. It is unclear how the reduction in trips from the Shuttle was calculated.

Sustainability

27. Are all of the methods identified in this section going to be utilized by the resort? If so, it is recommended that the county get commitments from the developer on these items.

Safety

28. Hales Engineering agrees with the safety analysis methods used in the report. However, it would be good to provide additional detail. The SR-39 section states that three were 9 severe crashes that occurred on this route, 3 of which were at a study intersection. However the study does not identify the crash type of any of the severe crashes or note if there were less severe crashes that were similar. The other routes (SR-158, 3460, & 3464) safety explanation also lacks detail.

If you have any questions with this review please feel free to call us.