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October 18, 2012

Mr. Greg Plucker
Deputy Director of Planning
Siskiyou County
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Mr. Rob Hayes-St. Clair
JH Ranch
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Mr. Carl Jones
JH Ranch
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RE: JH Ranch Planned Development Plan Amendment Application #Z-11-01 - PEER Review of Applicant Prepared Traffic Analysis (DRAFT)

Dear Mr. Plucker, Mr. Hayes-St. Clair & Mr. Jones:

The applicant's (JH Ranch) traffic impact analysis (TIA) for the JH Ranch Planned Development Plan Amendment Application (herein after referred to as "project"), prepared by SHN Consulting Engineer's and Geologists, Inc. (SHN), has been reviewed by Omni-Means. Omni-Means was retained by JH Ranch to provide an impartial technical PEER review to assist the County in its efforts to establish the adequacy of the TIA prepared by SHN. The outcome of this PEER review is an engineering opinion of the adequacy and/or deficiencies of the TIA and whether a California Environmental Quality Act (CEQA) negative declaration (ND) or mitigated negative declaration (MND) is appropriate as related to Transportation/Traffic.

PEER Review Professionals

Mr. Russell Wenham, Registered Civil Engineer, Registered Traffic Engineer & Professional Traffic Operations Engineer, was the lead reviewing professional. Mr. Wenham has over 28 years of experience in Transportation/Traffic Engineering and Operations and hold a Bachelor's degree in Civil Engineering.

Mr. Kamesh Vedula, Registered Civil Engineer & Registered Traffic Engineer, was a reviewing professional. Mr. Vedula has over 11 years of experience in Transportation/Traffic Engineering and Operations and holds a Master's degree in Civil Engineering.

Methodology/Approach

The PEER review consisted of:

1. Field review of French Creek Road and JH Ranch by Mr. Wenham on September 25, 2012. Mr. Scott Waite, Siskiyou County Engineering and Land Development Manager, joined Mr. Wenham on the field review.
2. Meetings with:
    a. Mr. Greg Plucker, Siskiyou County Deputy Planning Director
    b. Mr. Scott Sumner, Siskiyou County Public Works Director

c. Mr. Scott Waite, Siskiyou County Engineering and Land Development Manager
d. Mr. Mark Chaney, Redding Office Manager for SHN
e. Mr. Brian Freeman, Traffic Engineer for SHN

3. Review of the following documents:
   a. SHN August 30, 2010 JH Ranch Traffic Volume Study (SHN Report #1).
   b. SHN August 10, 2011 JH Ranch Revised Traffic Volume Study (SHN Report #2).
   c. SHN August 8, 2012 French Creek Road Traffic Analysis (SHN Report #3).
   d. JH Ranch Planned Development Plan Amendment, Revised July 2011 (PDPA).
   e. County's May 7, 2012 draft Initial Study/Mitigated Negative Declaration (IS/MND) Section XVI, "Transportation/Traffic" for the project.
   f. County's June 15, 2012 meeting notes regarding the TIS for the project.
   g. County's August 16, 2012 comments on the August 8, 2012 SHN TIS.
   h. County's May 13, 2008 Speed Zone Engineering and Traffic Surveys for French Creek Road.
   i. Highway Capacity Manual, Chapter 8, "Two Lane Highways", 1985.
   j. Highway Capacity Manual, Chapter 15, "Two Lane Highways", 2010.
   k. County's 1980 General Plan Circulation Element Minor Roads table on page 63.
   l. County's 1988 General Plan Circulation Element, Chapter 4.
   m. American Association of State Highway Transportation Officials (AASHTO) "Guidelines for Geometric Design of Very Low-Volume Local Roads, 1st Edition".
4. This written summary.

ANALYSIS

Project Description

The July 2011 PDPA describes the purpose of the project, whichis to bring all existing guest ranch property and uses into conformance with County codes and to provide guidelines for future development on the ranch project.

Project traffic is typically from three sources; 1) guests arriving and departing for their programs at the Ranch, 2) program traffic that leaves the Ranch during the week taking guests to various destinations, and 3) staff and related maintenance traffic.

The PDPA will be divided into four development areas, as described below:

1. Area A – Commercial Resort: The commercial resort consists of administrative offices, meeting rooms, guest services, recreation activities, food services, picnic areas, guest rooms, general meeting/assembly facilities, delivery areas, utility infrastructure and incidental uses. Anticipated changes include renovations of existing facilities, new indoor meeting room, additional staff offices, new guest house, new program clubhouse, expansion of ancillary structures and a new welcome center.
2. Area B – Housing: The housing area consists of Guest Housing overnight capacity for 380 persons and Staff Housing overnight capacity for 167 persons (for a total overnight capacity of 547 persons). Anticipated changes include replacement of single level duplex cabins with new single level guest housing, removal of some single staff housing, new husband/wife housing, new girl's staff dormitory, relocation of some housing and renovations.
3. Area C – Maintenance: The maintenance area consists of maintenance offices, storage rooms, maintenance service facilities, refuse collection facilities, sanitary sewer facilities, vehicle/machinery parking/storage facilities, off-site program and activity vehicle/equipment storage facilities, utility infrastructure and incidental facilities. Anticipated changes include construction of new maintenance and storage facilities as needed.

4. Area D – Program Activities: The program activities consist of ropes courses, hiking, orienteering, sports fields, water sports, skeet shooting, horseback riding, mountain bike riding, rodeo style activities, music programs, speaking programs, agricultural and livestock storage and feeding structures, utility infrastructure and ancillary uses. Anticipated changes include renovations of existing facilities, new equestrian facilities and additional program related storage facilities.

The JH Ranch calendar is divided into two main seasons (with program activities described in the PDPA):

- Summer Season (May – September)
  - Existing operations are described in detail in the PDPA
- Winter Season (October – April)
  - Existing operations are described in detail in the PDPA

While the PDPA includes detailed information about current operations there is insufficient information to determine the increases in traffic that may result from the anticipated changes in use. Typically, project descriptions, with clear descriptions of future uses/programs, would be documented and used as the basis to derive anticipated traffic increases. In the absence of this information, the approach taken to date is to attempt to quantify the maximum increase in project traffic that can be accommodated within the framework of the existing circulation system. If this increase in project traffic can be quantified, then the project description will need to be updated to match the derived traffic capacity.

Analysis Scenarios

The SHN reports analyze Winter and Summer conditions for Years 2010, 2015 and 2020. The Transportation Planning Handbook, 2nd Edition, Institute of Transportation Engineers (page 105) suggests using a traffic impact study horizon year of the anticipated opening year, assuming full project build out, for small developments. Anticipating a moderate pace for full build out of the project, OMNI-MEANS agrees that the Year 2020 horizon year is reasonable.

Study Locations

The SHN reports analyze the impact of traffic growth on French Creek Road. French Creek Road is further broken down into six different sections for analysis. OMNI-MEANS agrees with the identification of the sections along French Creek Road.

SHN Report #1 and #2 discuss the impact of traffic growth at the following intersections:

- French Creek Road at Highway 3
- JH Ranch Main Access Road at French Creek Road
- JH Ranch Bridge (2nd Access Road) at French Creek Road

Intersection capacity calculations were not conducted by SHN since the existing traffic volumes are low. Under existing conditions, the traffic volumes are sufficiently low that the SHN determination is supported by OMNI-MEANS. Since the project's anticipated traffic growth is not well defined, OMNI-MEANS cannot determine if there will be future impacts at these intersections. It is unlikely that there would be an impact at the JH Ranch access roads but there could be an impact at the French Creek Road/Highway 3 intersection.

Data Collection

SHN's data collection methods are described in SHN Report #1, #2 and #3. The traffic counts document conditions for both Summer and Winter operational seasons and for both Weekday and Weekend

conditions. Traffic counts were conducted at the following locations:

- 5/19/10 – 5/25/10: French Creek Road near Highway 3
- 7/27/10 – 8/9/10: French Creek Road near Highway 3
- 7/27/10 – 8/9/10: JH Ranch Main access road.
- 7/27/10 – 8/9/10: JH Ranch Bridge access road.

It appears that appropriate effort was put into collecting data for representative time periods and seasons.

Spot checks of the data summaries attached to the SHN Reports vs. the data used in the body of the report for analysis purposes found the following:

1. Weekend and Weekday peak hour data is accurate.
2. There was an anomaly in the JH Ranch Bridge data and SHN made an appropriate adjustment before using the data.
3. The ADT information presented in the SHN reports was not reviewed because this information is not used in the calculation of LOS per HCM 2010.

The County's Draft IS/MND contains a detailed discussion that identifies potential issues with SHN's derivation of ADT data. While there may be valid issues raised in the County's document, these issues were not evaluated by OMNI-MEANS since LOS and capacity issues only relate to the peak hour volumes.

Base Traffic Volumes and Project Trip Generation

Traffic data was collected by SHN for the dates and locations described in *"Data Collection"* above.

It appears that appropriate effort was put into collecting data for representative time periods and seasons. Since only peak hour data is used for analysis purposes, any anomalies in derivation of ADT aren't applicable to the analysis.

Future (Year 2020) background traffic growth is presented in SHN Report #3 as follows:

- 2 percent growth rate.
- 1 percent growth rate.
- Assumed development of 12 single family homes (out of approximately 66 available parcels). This development rate equates to approximately a 2% background growth rate on French Creek Road.

The County's Draft IS/MND addresses Year 2020 background traffic growth as follows:

- Assumed development of 33 single family homes (out of approximately 66 available parcels).

California Department of Finance statistics, obtained from the Siskiyou County internet site, lists county population growth as follows:

YEAR	POPULATION	GROWTH RATE
1950	30,733	
1960	32,885	+0.6%
1970	32,225	-0.2%
1980	39,732	+2.0%
1990	43,530	+0.9%
2000	44,200	+0.2%
2010	44,900	+0.2%

SHN Report #3 uses a 2% background growth rate for analysis purposes which is considered conservative by OMNI-MEANS.

Roadway Geometry Analysis

SHN Report #3 analyzes the character of French Creek Road. OMNI-MEANS finds that the geometry appears to be accurately described.

In accordance with American Association of State Highway Transportation Officials (AASHTO) guidelines, French Creek Road should not be considered a "Very Low Volume Local Road, ADT<400" because the ADT currently exceeds 400 with regularity.

Level of Service Analysis

The 1980 Siskiyou County General Plan Circulation Element Minor Roads table on page 63 identifies the capacity of French Creek Road as 200 ADT (Average Daily Traffic). According to County staff, there isn't any backup to support this capacity determination.

The 1988 Siskiyou County General Plan Circulation Element, Chapter 4, contains a level of service (LOS) and capacity discussion beginning on Page 5. The Circulation Element does not use modern General Plan language that would specifically enumerate the plan's policies. A review of the document suggests the following General Plan policies and guidance of significance to the project:

A. POLICY: *"… the developer shall make improvements to the county road providing direct access to his development. Improvements required shall be those necessary to improve the county road fronting the property (and the roadway off-site of the property if the development significantly increases traffic thereon) to provide for a service volume at level of service "C"."*

   This policy is clear and establishes LOS "C" as the threshold for off-site determination of project related significant traffic impact.

B. GUIDANCE: *"The critical elements requiring consideration for capacity on 2-lane rural highways are:*
   1. *Percent of passing sight distance*
   2. *Average highway speed*
   3. *Lane width*
   4. *Lateral clearance*
   5. *Grades*

   The traffic elements relate to the nature of traffic itself and can change or be changed at any time. Traffic elements include:
   1. *Percent of trucks or busses*
   2. *Peak hour traffic*
   3. *Traffic interruptions such as left turns, stop signs, etc.*
   4. *Livestock, wildlife, etc.*
   5. *Pedestrians, bicycles"*

   This guidance is clear but is based on outdated Highway Capacity Manual (HCM) guidance. The latest HCM was published in December 2010 by the Transportation Research Board (HCM 2010). HCM 2010 should be used for this project.

   SHN Report #1 and #2 include discussions of the French Creek Road/Highway 3, JH Ranch

Main/French Creek Road and JH Ranch Bridge/French Creek Road intersections but does not analyze the LOS due to the low volume of traffic. While this may be an appropriate approach, it cannot be validated by OMNI-MEANS because there isn't a project description sufficient to determine the anticipated project traffic.

The SHN Reports use HCM 2000 methodologies for French Creek Road. This was appropriate when SHN Report #1 was published but HCM 2010 should have been used for SHN Report #2 and #3. OMNI-MEANS did not perform a comparison of HCM 2000 and HCM 2010 to determine the impact, if any, on the LOS calculations in SHN Report #2 and #3.

SHN Report #3 breaks French Creek Road into six sections for HCM LOS determinations. HCM 2010 Chapter 15 methodologies assume a minimum of 18 feet of traveled way width and uninterrupted flow operation. Roadway Section #4 consists of sight-restricted curves and spot locations as narrow as 11.5 feet of traveled way. Roadway Section #4 cannot be analyzed via. the HCM 2010 Chapter 15 methodologies. In its current configuration, Roadway Section #4 will operate as a 1-lane stop-and-go roadway as traffic volumes grow. Micro-simulation computer modeling may be necessary to determine the LOS and associated traffic capacity for Roadway Section #4.

Roadway Sections #1, # 2, #3, #5 and #6 can accurately be analyzed using HCM 2010 Chapter 15 methodologies. The parameters used in SHN Report #3 are compared to OMNI-MEANS' findings below:

Parameter	SHN Report #3 Value	OMNI-MEANS Suggested Value	Comments
Roadway Class	Class II	Class II	French Creek Road conforms to HCM's definition of Class II Highways.
Lane Width	Per Table 2	Per Table 2	SHN used actual field measurements.
Shoulder Width	Per Table 2	Per Table 2	SHN used actual field measurements.
Access-Point Density	0	0	A review of the roadway shows very few existing access points and future access points will be very few.
Terrain	Rolling	Rolling	Grades are short and range from 0.4% to 4.5%
Percent No-Passing Zone	100%	100%	Assuming 100% no-passing is reasonable due to the rolling curvilinear alignment.
Speed Limit	40 MPH for Section #1 & #2; 30 MPH for Section #3 & #5	40 MPH for Section #1 & #2; 30 MPH for Section #3 & #5	Supported by the County's Speed Zone Studies.
Base Design Speed	Not directly addressed	Speed Limit + 10 mph (HCM	Will have a very minor impact on the

		Recommendation)	calculation of the Free Flow Speed.
Length of Passing Lane (if present)	N/A	N/A	There are not any passing lanes on French Creek Road.
Pavement Condition	Not directly addressed	Pavement is in good condition	Only applicable to bicycle transportation. Bike transportation is so light on this roadway that there is not a reason to perform an analysis.
Hourly Auto Volume	Per Table 3	See "Base Traffic Volumes & Project Trip Generation" Section above.	If the volumes change then the analysis will need to be updated.
Length of Analysis Period	1 hour	15 minute (HCM Recommendation)	This relates to the application of a Peak Hour Factor discussed below.
Peak Hour Factor	1.0	0.88 (HCM Default)	The use of a PHF of 0.88 would increase the volumes used for analysis by approximately 14%.
Directional Split	50:50	50:50	Supported by the actual vehicle counts.
Heavy Vehicle Percentage	2%	6% (HCM Default)	Since heavy vehicle data was not collected, the HCM default of 6% should be used.
Percent Occupied by On-Street Parking	0%	0% (HCM Default)	Any isolated on-street parking is negligible.

C. GUIDANCE: *"The generally accepted formula for computing capacities is taken from the Highway Capacity Manual published by the National Academy of Sciences in 1965."*

This guidance is clear but is based on outdated Highway Capacity Manual (HCM) guidance. The latest HCM was published in December 2010 by the Transportation Research Board (HCM 2010). HCM 2010 should be used for this project.

D. POLICY: *"A two-lane rural highway shall have a minimum of 18 feet of paved traveled way."*

This policy is clear and is applicable to new construction. In the case of the traffic impact analysis for the project, the question is whether there is a significant CEQA impact that necessitates improvements to Roadway Section #4. As previously stated, computer micro-simulation may be necessary to determine the traffic volumes that can be accommodated on Roadway Section #4 while maintaining a LOC "C".

E. GUIDANCE: *"The formula for two-lane PAVED rural highways considering adjustments for a*

given level of service: SV = 2000 V/C WL TL"

This guidance is clear but is based on outdated Highway Capacity Manual (HCM) guidance. The latest HCM was published in December 2010 by the Transportation Research Board (HCM 2010). HCM 2010 should be used for this project.

F. GUIDANCE*: "In Siskiyou County we have elected to compute service volumes for unpaved roads having a minimum of 18 feet of traveled way as follows: "The formula for 2-lane unpaved rural highways considering adjustments and for a given level of service: SV = 1000 V/C WL TL, where*

SV = service volume (total for both directions/hour)
V/C = volume to capacity ratio including percent of passing sight distance adjustment
WL = adjustment for lane width and lateral clearance
TL = truck factor at given level of service"

This guidance is clear but is based on outdated Highway Capacity Manual (HCM) guidance. The latest HCM was published in December 2010 by the Transportation Research Board (HCM 2010). HCM 2010 should be used for this project.

G. GUIDANCE: *"It is difficult to determine the capacity of roadways less than 18 feet in width. We can safely assume that the allowable volumes will be progressively less as the width decreases. ADTs should be limited to values between 25 and 400 vehicles per day depending on width, surface condition and sight distance."*

It is accurate that it is difficult to determine the capacity of roadways less than 18 feet in width. It is accurate that capacity will decrease as the width of the roadway decreases. The "25 – 400 vehicles per day" limit is not supported. The actual capacity for roadways less than 18 feet in width should be based on computerized micro-simulation.

Safety Analysis of French Creek Road

The SHN Reports did not address traffic safety.

Approximately 20 years of vehicle collision data (1974 to 1994) is included in the County's Speed Zone studies. A review of the collision data reveals the following:

- There were 10 reported collisions.
- The collisions appear somewhat random and scattered along the entire Roadway.
- The cause is listed as "unknown" for 8 collisions.
- The cause is listed as "speeding" for 1 collision.
- The cause is listed as "DUI" for 1 collision.
- 3 collisions were during summer months.
- 3 collisions were during fall months.
- 0 collisions were during winter months.
- 4 collisions were during spring months.

Collision data for the most recent 10-year period should be obtained and analyzed. The average ADT for the same 10-year period should be estimated, which along with the 4.7 mile road length, the collision rate per million vehicle mile (mvm) should be derived. This rate should be compared to appropriate state or federal data and conclusions reached regarding the safety impact of the project's traffic volume increases.

CONCLUSIONS

1. The project should be defined and trip generation derived from said defined project.
2. Section #4 of French Creek Road should be reanalyzed as a 1-way road.
3. The technical analysis parameters used for LOS determination on all other sections of French Creek Road should be updated along with the associated calculations.
4. Depending on the traffic growth anticipated from a defined project, Caltrans may request analysis of French Creek Road at Highway 3.
5. A safety analysis of French Creek Road should be performed.
6. Existing ADT volumes are such that French Creek Road should not be considered a "Very Low Volume Road, ADT<400" in accordance with AASHTO guidelines.
7. The number of additional daily trips that can be added to French Creek Road, while maintaining LOS "C", cannot be determined until the above-described issues are addressed.

Sincerely,

OMNI-MEANS, Ltd.
Engineers & Planners

Mr. Russell A. Wenham, PE, TE, PTOE
Associate

Cc: Mr. Scott Sumner, Public Works Director, Siskiyou County

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