San Pablo Casino Traffic Analysis
Preliminary Findings

Prepared by: Katz, Okitsu & Associates

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Assumptions and Findings

With the potential introduction of a large number of slot machines at the San Pablo Casino, substantial effects could occur to circulation. Information that has been helpful in estimating the future number of trips is the "Proposition 68 Traffic Analysis" by Parsons Brinkerhoff, dated September 2, 2004. Below are a series of discussion points that can help focus one on the important issues. Following that, the technical study is presented.

The proposed introduction of between 2,500 and 5,000 slot machines at this location represents a very dramatic increase in the potential trip making concentrated in this already problematic area. For a sense of scale, the trip making associated with this project is equivalent of up to nearly 7,000 single-family homes or regional shopping center of 1.3 million square feet. It is also the amount of trip making that would normally be equivalent to the heavier volume carried by a 4-lane freeway (2 lanes each way) operating at an acceptable level of service.

Some of these points are as follows, and we shall begin by reviewing certain assumptions.

Assuming:

- Daily trip generation rate of 13.6 trips per gaming position/slot machine.
- Peak hour trip generation rates of 0.47 and 0.788 for AM and PM respectively for each gaming position/slot machine.
- Estimated average duration of visit of two hours per patron and an occupancy factor of approximately 1.18 persons per car.
- Each parked car required 350 square feet of space.

Points regarding the proposed slot machine expansion:

- Up to 2,500 slot machines are proposed, with the possibility of expansion in 2008 for the San Pablo Casino. The original plan called for 5,000 slot machines, so those numbers are analyzed as well.
- At 13.6 trips per weekday per machine, up to about 34,000 daily trips could result with 2,500 machines, and double that from 5,000 machines.
- A typical 4-lane roadway becomes congested above 30,000 vehicles per day.
- In the peak hour of the AM that could mean 1,175 trips and for the PM peak it could result in 1,970 trips with 2,500 machines. For 5,000 machines, those numbers would be doubled.
- Each lane of a roadway can typically handle up to 1,900 vehicles per hour if the signals were continuously indicating green and no red time.
- Parking for an estimated 1,687 extra vehicles would be needed for 2,500 machines, and double that number for 5,000 machines.
- The parked vehicles would consume 13.6 acres of space on one level or 3.4 acres of space on four levels at the 2,500-machine level.

Points regarding the circulation system accessing and the development patterns serving the existing San Pablo Casino:

- The nearest access point for regional traffic on the I-80 is at the San Pablo Dam Road interchange, which is an older, lower capacity diamond configuration.
- Peak hour traffic congestion measures at some of the intersections between the ramps and San Pablo Dam Road show it is presently failing.
- Even more intersections in the area are projected to be failing in the future without introducing any more traffic associated with the proposed new traffic to the Casino.

- The next interchange to the north on I-80 is out-of-direction and the next one to the south is approximately a mile away.
- I-80 is carrying approximately 187,000 daily vehicles currently at San Pablo Dam Road, and the volume can be expected to grow in the future.
- Traffic congestion on the I-80 is substantial.
- The portion of San Pablo Dam Road leading from the Casino to I-80 is a four lane, urban roadway with intervening traffic signals serving local commercial development that constrains the ability to widen it.
- The City and Caltrans have been working on preparing a Project Study Report to make improvements to the San Pablo Dam interchange with I-80, but the funding and timing are not completely known nor committed yet.
- The Brookside Hospital/Doctors Medical Center is adjacent to the Casino and depends on the same roadway system for access for emergency vehicles and patients.

Therefore, the implication of these points is:

- The slot machines alone create enough new daily traffic to demand the capacity of up to two completely brand new 4-lane major roads.
- Even using all available roadways in the area, the congestion that will be introduced by the additional slot machines will overwhelm the capacity of the existing roadway system, and there is very limited opportunity to do anything to increase the capacity without tearing out existing development.
- Congestion will be extreme on the portion of San Pablo Dam Road leading to I-80 and will potentially cause this area to completely fail operationally.
- The impacts will not only occur in the worst commuting peak hours, but the impact will also be spread over the whole day and night as typically occurs with casino operations.
- Operations on I-80 itself will be dramatically affected by this substantial increase in traffic since it represents a potential increase to freeway traffic of over 25% above existing I-80 traffic. There is little, if anything, that can alleviate it short of building an additional lane along I-80 and creating a new interchange just for the extra casino traffic.
- Air quality and fuel consumption will degrade and increase respectively at the nearby surface intersections. There will be an estimated annual additional 53 thousand gallons of fuel consumed and 1.8 tons of CO released into the air just due to congestion at the nearby intersections.

The costs associated with mitigation of the Casino impacts include the following:

- Arterial Widening: $3 million per lane per mile, including land acquisition costs. Assume one lane mile of widening would be required for a total cost of $3 million.
- Freeway Widening: $6 million per lane per mile, not including land acquisition costs. Assume ten lane miles of widening would be required for a total cost of $60 million, plus additional land acquisition costs.
- Bridge Overcrossing Widening: $500,000 per overcrossing. Assume five bridge overcrossings for a total cost of $2.5 million.
- Interchange Reconstruction: $25 million per interchange. Assume one interchange reconstruction for a total cost of $25 million.

The total costs for roadway improvements associated with the Casino would be $90 million, plus additional land acquisition costs for freeway improvements.

Technical Information

This section contains the results of the limited technical study we prepared to arrive at these conclusions.

Introduction

Casino San Pablo is currently operating at 13255 San Pablo Avenue in the City of San Pablo. The main entrance of the casino is the west leg of the intersection of San Pablo Avenue and San Pablo Dam Road. Casino San Pablo was established in 1995, and in 1999 the Lytton Band of Pomo Indians and the City negotiated the Municipal Services Agreement outlining details of taxation, facility expansion, security levels, and other operating and development procedures. The Casino is currently licensed to operate 100 gaming tables; it also has a live entertainment showroom, a full-service restaurant, a cocktail lounge, and entertainment facilities.

Casino San Pablo is considering expanding its operations. Because the magnitude of the expansion is unknown at this time, this study analyzes two scenarios: a) 2,500 additional gaming machines, and b) 5,000 additional gaming machines. This study examines the potential traffic impacts of the anticipated expansion. Existing and future analyses are performed to compare traffic conditions with and without the gaming expansion for both scenarios. The exact date of project completion is unknown at this time; however, Contra Costa County's long range traffic forecast model uses Year 2025 as its horizon year; therefore this study uses Year 2025 as the future year of analysis.

Trip Generation

Trip generation for the expansion of Casino San Pablo is based upon rates published in an article of the May 2002 issue of the ITE Journal. The article provides a trip generation rate for casinos based upon its number of gaming positions. A study prepared by Parsons Brinckerhoff titled, *Proposition 68 Traffic Impact Analysis*, also uses these published rates. Table 1 below outlines the trip generation rate as specified by ITE, and the trips for the expansion of Casino San Pablo for both scenarios.

Table 1 – Trip Generation

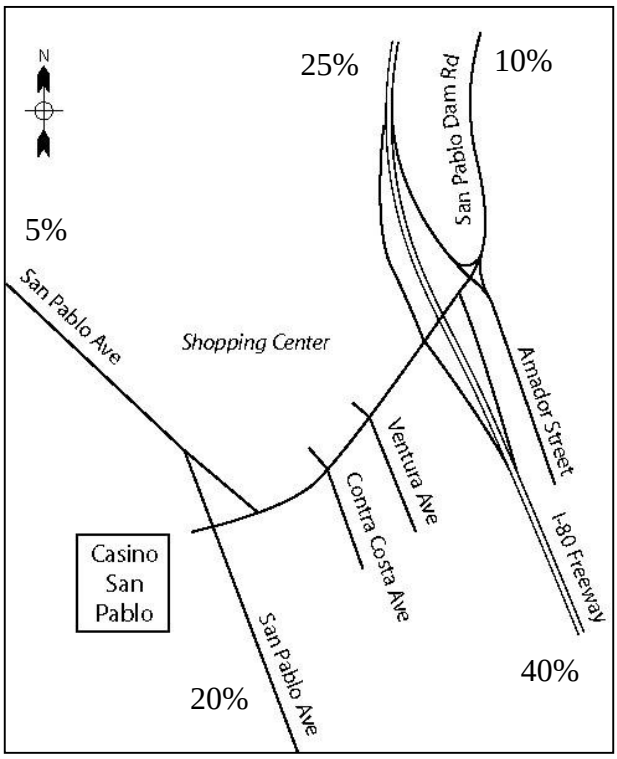
Land Use	**AM Peak Hour**			**PM Peak Hour**		
Casino	Total	In (57%)	Out (43%)	Total	In (52%)	Out (48%)
Trips/Gaming Position	0.470	0.2679	0.2021	0.788	0.40976	0.37824
2,500 Gaming Positions	**1175**	**670**	**505**	**1970**	**1024**	**946**
5,000 Gaming Positions	**2350**	**1340**	**1011**	**3940**	**2049**	**1891**

An expansion of 2,500 new gaming machines at Casino San Pablo is forecast to generate 1,175 trips in the AM peak hour, and 1,970 trips in the PM peak hour. The expansion of 5,000 additional gaming machines is forecast to generate 2,350 trips in the AM peak hour and 3,940 trips in the PM peak hour.

Trip Distribution

Casino San Pablo is anticipated to attract customers from the entire East Bay region and beyond. Therefore, a significant percentage of patrons are forecast to arrive on-site via the I-80 Freeway. Most are anticipated to use the San Pablo Dam Road ramps, while a portion might use San Pablo Avenue ramps, approximately one mile south of the project site. The Casino expansion will result in a considerable amount of traffic on I-80. However, the focus of this study is not traffic impacts on freeway segments. A small number of local customers currently access the Casino from San Pablo Avenue. It is assumed that this number will not increase significantly. An estimated 10% of project traffic will come from the Orinda/ Walnut Creek area via San Pablo Dam Road. Trip distribution forecasted for this study is shown in Figure 1.

Figure 1 – Trip Distribution



Existing Conditions

Existing turning movement volumes were collected in the AM and PM peak periods at all signalized intersections along San Pablo Dam Road between the main entrance of the Casino and I-80 Freeway ramps. Existing volumes were collected on Wednesday, October 27, 2004, by Baymetrics Traffic Resources, of El Cerrito, CA. These volumes were used for the existing conditions analyses.

Future Conditions (Year 2025)

Future traffic turning movement volumes were derived from model forecasts provided by the Contra Costa Transportation Authority. Existing traffic volumes were compared with Year 2000 Validation Model Runs to derive Model Calibration Correction (MCC) Volumes. Year 2000 volumes were used without adjustment to 2004 because regional land use and economic character have remained relatively unchanged since 2000. The MCC Volumes were added to

2025 Model Output Volumes to generate Adjusted Model Output volumes. Adjusted output link volumes and existing turning movement volumes were used to calculate 2025 turning movement volumes by the Furness Method, as described in Contra Costa Transportation Authority's Technical Procedures manual. Where necessary, further manual adjustment and volume balancing were applied to ensure a reasonable forecast.

Three scenarios were analyzed in the Future Year (2025) condition: Without Project, and With 5,000 additional machines, and With 2,500 additional machines. A comparison between the analyses results of these scenarios would forecast the potential impact of the proposed casino expansion.

Analyses Results

Traffic performance was analyzed at six signalized locations. The analyzed locations represent the most probable ingress and egress route future and current casino patron use to the casino. The intersection of I-80 Eastbound off-ramp, San Pablo Dam Road, and Amador Street functions as one elongated intersection controlled by a single traffic signal controller in real life; the complex operation was simulated using Synchro signal timing analysis software to reflect the special signal phasing required to serve traffic movements. This intersection complex has been reported as separate intersections.

Tables 2 and 3 present the results of the 2,500 additional machine scenario analyzed. Tables 4 and 5 present forecast intersection performance for the 5,000 additional machine scenario.

Table 2 – Intersection Performance (2,500 Machines)
(AM Peak Period)

Intersection	Existing (2004)		2025 Without Project		2025 WITH Project		Increase	
	Delay/LOS	ICU/LOS	Delay/LOS	ICU/LOS	Delay/LOS	ICU/LOS	Delay	ICU
San Pablo Dam Road & San Pablo Ave	15.6/B	0.577/A	129.0/F	1.171/G	172.4/F	1.412/H	43.4	0.214
Contra Costa Ave & San Pablo Dam Road	8.9/A	0.472/A	110.5/F	1.106/G	143.3/F	1.257/H	32.8	0.151
Town Center/Ventura & San Pablo Dam Road	10.1/B	0.524/A	113.6/F	1.178/G	133.1/F	1.296/H	19.5	0.118
I-80 WB Ramps & San Pablo Dam Road	17.6/B	1.104/F	207.4/F	2.906/H	213.1/F	2.984/H	5.7	0.078
I-80 EB Off Ramp & San Pablo Dam Road	27.0/C	0.544/A	221.6/F	1.063/F	229.0/F	1.166/G	7.4	0.103
Amador Street & I-80 EB On Ramp	37.1/D	0.937/E	249.3/F	1.824/H	251.2/F	1.899/H	1.9	0.075

Note: ICU= Intersection Capacity Utilization (a method of determining congestion at intersections.) LOS= Level of Service. Delay is seconds per vehicle.

In the existing AM peak hour, both ramps at San Pablo Dam Road currently operate at physical capacity limits of Level of Service E or F. Delays are within barely tolerable limits, and the ICU is approximately equal to 1.0, the physical limit to capacity. By 2025, all intersections are forecast to operate at Level of Service F. With the additional traffic anticipated from the expansion of the casino, all study intersections are forecast to experience severe congestion.

Table 3 – Intersection Performance (2,500 Machines)
(PM Peak Period)

Intersection	Existing (2004)		2025 Without Project		2025 WITH Project		Increase	
	Delay/LOS	ICU/LOS	Delay/LOS	ICU/LOS	Delay/LOS	ICU/LOS	Delay	ICU
San Pablo Dam Road & San Pablo Ave	37.1/D	0.827/D	136.4/F	1.191/G	198.6/F	1.595/H	62.2	0.404
Contra Costa Ave & San Pablo Dam Road	13.3/B	0.602/B	26.9/C	0.890/D	103.4/F	1.121/G	76.5	0.231
Town Center/Ventura & San Pablo Dam Road	14.4/B	0.726/C	36.5/D	0.965/E	131.2/F	1.195/G	94.7	0.23
I-80 WB Ramps & San Pablo Dam Road	19.7/B	0.988/E	119.4/F	1.942/H	156.9/F	2.116/H	37.5	0.174
I-80 EB Off Ramp & San Pablo Dam Road	22.0/C	0.688/B	116.9/F	0.735/C	175.1/F	0.834/D	58.2	0.099
Amador Street & I-80 EB On Ramp	21.6/C	0.955/E	166.4/F	1.526/H	198.4/F	1.659/H	32.0	0.133

Note: ICU= Intersection Capacity Utilization (a method of determining congestion at intersections.) LOS= Level of Service. Delay is seconds per vehicle.

In the 2,500-machine scenario, both AM and PM peak hours are forecast to experience severe congestion; although delay increases are not forecasted to be as substantial as the 5,000-machine scenario seen below. The intersection of San Pablo Dam Road and Town Center Avenue is forecast to experience to most significant increase in vehicle delay.

The ICU levels forecast are well above 1.0 and are as high as 3.2. A value of 3.2 can be interpreted to suggest that 3.2 intersections will be required where only one intersection is currently present. Delay values of 200 seconds or higher suggest that motorist will queue up excessively and wait for 4-6 green lights before finally getting through the intersection.

Table 4 – Intersection Performance (5,000 Machines)
(AM Peak Period)

Intersection	Existing (2004)		2025 Without Project		2025 WITH Project		Increase	
	Delay/LOS	ICU/LOS	Delay/LOS	ICU/LOS	Delay/LOS	ICU/LOS	Delay	ICU
San Pablo Dam Road & San Pablo Ave	15.6/B	0.577/A	129.0/F	1.171/G	225.7/F	1.747/H	96.7	0.576
Contra Costa Ave & San Pablo Dam Road	8.9/A	0.472/A	110.5/F	1.106/G	170.6/F	1.408/H	60.1	0.302
Town Center/Ventura & San Pablo Dam Road	10.1/B	0.524/A	113.6/F	1.178/G	163.5/F	1.447/H	49.9	0.269
I-80 WB Ramps & San Pablo Dam Road	17.6/B	1.104/F	207.4/F	2.906/H	218.8/F	3.248/H	11.4	0.342
I-80 EB Off Ramp & San Pablo Dam Road	27.0/C	0.544/A	221.6/F	1.063/F	240.2/F	1.269/H	18.6	0.206
Amador Street & I-80 EB On Ramp	37.1/D	0.937/E	249.3/F	1.824/H	253.1/F	1.974/H	3.8	0.150

Note: ICU= Intersection Capacity Utilization (a method of determining congestion at intersections.) LOS= Level of Service. Delay is seconds per vehicle.

Table 5 – Intersection Performance (5,000 Machines)
(PM Peak Period)

Intersection	Existing (2004)		2025 Without Project		2025 WITH Project		Increase	
	Delay/LOS	ICU/LOS	Delay/LOS	ICU/LOS	Delay/LOS	ICU/LOS	Delay	ICU
San Pablo Dam Road & San Pablo Ave	37.1/D	0.827/D	136.4/F	1.191/G	262.2/F	2.043/H	125.8	0.852
Contra Costa Ave & San Pablo Dam Road	13.3/B	0.602/B	26.9/C	0.890/D	187.5/F	1.352/H	160.6	0.462
Town Center/Ventura & San Pablo Dam Road	14.4/B	0.726/C	36.5/D	0.965/E	214.4/F	1.426/H	177.9	0.461
I-80 WB Ramps & San Pablo Dam Road	19.7/B	0.988/E	119.4/F	1.942/H	189.6/F	2.541/H	70.2	0.599
I-80 EB Off Ramp & San Pablo Dam Road	22.0/C	0.688/B	116.9/F	0.735/C	211.1/F	0.963/E	94.2	0.228
Amador Street & I-80 EB On Ramp	21.6/C	0.955/E	166.4/F	1.526/H	215.4/F	1.793/H	49.0	0.267

Note: ICU= Intersection Capacity Utilization (a method of determining congestion at intersections.) LOS= Level of Service. Delay is seconds per vehicle.

The two freeway ramp intersections are operating at Level of Service E in the existing PM peak hour scenario. By 2025, the intersections of San Pablo Dam Road at San Pablo Avenue, and San Pablo Dam Road at Ventura Avenue are also forecast to operate at deficient levels. In the 2025 5000-machine scenario, all study intersections are forecast to experience extreme congestion.

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J. Arnold Torma, PE
Principal Engineer