



June 21, 2013

Project #: 12116

Christe White
Radler, White, Parks & Alexander, LLP
111 SW Columbia Street, Suite 1100
Portland, OR 97201

RE: Response to City of Tualatin June 3, 2013 letter (Preliminary Review Comments: Nyberg Rivers Master Plan)

Dear Christe,

This letter addresses the Transportation Impact Analysis comments included in the City of Tualatin's *June 3, 2013 Preliminary Review Comments: Nyberg Rivers Master Plan (MP-13-01)*. Our response focuses on the City's comments regarding Central Urban Renewal District Plan (CURD) Goal 5: Transportation and specifically the Traffic Impact Analysis (TIA) comments on pages 3-5 of the City's letter. The City's comment/request for additional information is included in italics followed by our response.

TIA Comment #1

ODOT reviewed the submitted information for their facilities (I-5 and Nyberg Street). Although, the underlying model artificially limits queues and the settings do not meet ODOT standards, ODOT reran the analysis using the correct settings. Based on this analysis the proposed improvements mitigate the impact of the development on ODOT facilities (see attached comments from ODOT). City staff provides comments below on the TIA, which will require the applicant to revise the TIA. ODOT will need to review the updated TIA to confirm whether the proposed improvements still mitigate the impact of the development on ODOT facilities. Final design may indicate the need for additional right-of-way.

Response to Comment #1:

The City is correct that the signalized intersection operational analysis model used to for the TIA deviated from ODOT's Analysis Procedures Manual (APM). The changes made to the model were needed to accurately model the adaptive signal control system that operates the traffic signals that were studied along SW Tualatin-Sherwood Road. The statement "the underlying model artificially limits queues" is incorrect. The changes made to the model were implemented to more reasonably reflect queues resulting from the adaptive signal control system (adaptive traffic signal control is a relatively new technology implementation and is not currently explicitly analyzed by the model or the ODOT APM procedures).

ODOT has completed their independent review of the TIA and also conducted their own sensitivity analysis by applying the standard method outlined in the ODOT APM. ODOT staff concurred with the TIA findings and recommendations as it relates to ODOT facilities.

We respectfully disagree with the statement “*City staff provides comments below on the TIA, which will require the applicant to revise the TIA. ODOT will need to review the updated TIA to confirm whether the proposed improvements still mitigate the impact of the development on ODOT facilities*”. The remainder of this letter addresses each of the City staff comments and provides additional information requested where appropriate. As will be evidenced by our responses herein, none of the comments provided by the City warrant revising the TIA. Further, none of the City comments warrant any change to the results presented relative to ODOT facilities reviewed in the original TIA. As such, no new comments from ODOT staff are anticipated.

TIA Comment #2

Washington County also reviewed the information and they have provided a list of conditions and measures to mitigate impacts on Nyberg Street and Tualatin Sherwood Road (please see attached comments from Washington County). City staff provided comments below on the TIA, which will require the applicant to revise the TIA. Washington County will need to review the updated TIA to confirm whether the proposed improvements still mitigate the impact of the development on Washington County facilities. Final design may indicate the need for additional right-of-way.

Response to TIA Comment #2

Similar to the response above relative to ODOT, Washington County staff conducted an independent review of the TIA and concurred with the key findings and recommendations. No changes to the TIA were requested by County staff.

Similar to our response to TIA Comment #1, none of the City comments warrant any change to the results presented relative to Washington County facilities reviewed in the original TIA. As such, no new comments from Washington County staff are anticipated.

TIA Comment #3a

The City reviewed the TIA to ensure that internal circulation is consistent with the TSP and that the new development improves traffic circulation on Martinazzi, the City’s portion of Nyberg, Boones Ferry and other nearby roadways. After the Master Plan was submitted, a list of questions and concerns was sent and a meeting was held with Kittelson & Associates to review the issues. Kittelson submitted information to address some of those concerns on May 16, 2013. Even with both submittals, the City still has the following concerns with the information provided:

- a) *On Page 44 of the TIA submitted with the Master Plan, the applicant provides queuing analysis for Nyberg Road and the freeway. This same level of analysis is needed for Martinazzi, Boones*

Ferry Road the proposed Seneca Street, Street A and the existing driveway easement from the driveway to Martinazzi. The submitted analysis should include:

- i. -Existing queue storage length*
- ii. -Proposed queue storage length that is required for new development; and*
- iii. -An analysis of whether additional queue space is needed.*

Response to TIA Comment #3a

The original TIA and supplemental analysis provided queuing information for key locations serving the proposed development where queuing impacts could be pronounced. Queuing data was not provided at other locations in the original TIA because it was clear from the operational evaluation conducted at these intersections that the project would have either have a negligible impact on queues or (in the case of new intersections such as the Seneca extension or Street A) the proposed design provided more than sufficient queue storage.

The intent of the information provided to City staff in our May 16, 2013 letter was to confirm for the City's benefit the project's impact to queuing at the identified intersections. The information provided in the May 16, 2013 letter confirmed the project would have either have a negligible impact on queues or (in the case of new intersections such as the Seneca extension or Street A) the proposed design provided more than sufficient queue storage.

Table 1 below presents the existing available storage at each of the study intersections along with the 95th percentile queues documented in Table 3 of our May 16, 2013 letter. As confirmed once again in Table 1 below, the added traffic from the Nyberg Rivers project results in a negligible change in queuing at the study intersections.

Table 1 – 95th Percentile Queue Projections at the Study Intersections

Intersection	Movement	Estimated 95 th Percentile Queue (ft)				Storage Length
		Weekday PM Peak Hour		Saturday Midday Peak Hour		
		Background Traffic	Total Traffic	Background Traffic	Total Traffic	
SW Martinazzi Avenue/ SW Boones Ferry Road	NB LT	325	325	125	150	275 ¹
	NB RT	250	275	150	175	275
	WB LT	350	375	150	200	150 ²
	EB RT	150	175	75	100	200
SW Martinazzi Avenue/ City Library Driveway (Driveway #4)	SB LT	75	100	25	50	275 ¹
	WB LT	75	100	25	50	200
	WB RT	50	50	25	50	200
SW Martinazzi Avenue/ City Library Driveway (Driveway #4) (Assuming Driveway #6 is Closed)	SB LT	75	100	25	50	75
	WB LT	75	100	25	50	200
	WB RT	50	50	25	50	200
SW Martinazzi Avenue/ SW Seneca Street/ Potential Site Access Driveway*	SB LT	-	50	-	50	150
	SB THRT	-	125	-	75	200
	WB RT	-	100	-	75	200
	WB THLT	-	50	-	50	200
	NB THRT	-	200	-	100	225
	NB LT	-	50	-	25	75
SW Martinazzi Avenue/ Nyberg Road	SB TH	100	100	75	75	225
	NB THRT	125	150	125	125	275
	WB LT	100	100	75	75	275
	WB RT	150	150	125	125	275
SW Martinazzi Avenue/ SW Tualatin-Sherwood Road	SB THRT	350	350	225	225	325
	SB LT	250	250	175	175	275
	NB THRT	350	350	250	250	400
	EB LT	100	100	125	125	150
SW Boones Ferry Road/ Proposed Street A	NB RT	-	25	-	25	150

NB = Northbound; SB = Southbound; EB = Eastbound; WB = Westbound

LT = Left-Turn; TH = Through; RT = Right-Turn

* - Under the scenario that includes a Seneca Street extension into the project site

¹Represents the distance of the two-way center left-turn lane along SW Martinazzi Avenue and Driveway #4.

²Represents the striped WB LT storage distance. An additional 175 feet of full width storage distance is available before the lane narrows over the Tualatin River.

As shown in Table 1, adequate storage length exists for all but the following movements:

- The northbound left-turn at the SW Boones Ferry Road/SW Martinazzi Avenue intersection and the southbound left-turn at the SW Martinazzi Avenue/City Library Driveway #4.
 - Both of these movements share the same 275 feet of center left-turn lane. Field observations noted that there are periods of vehicle queue overlap between these two intersections during peak time periods. This situation was described in more detail on pages 2 and 3 of the May 16, 2013 letter. The Nyberg Rivers project has a negligible impact on this existing condition.
- The westbound left-turn movement at the SW Boones Ferry Road/SW Martinazzi Avenue intersection.
 - The total available full width storage for this movement is approximately 325 feet whereas the background 95th percentile queue is 350 feet. With the proposed development, the 95th percentile queue is forecast to marginally increase by an additional 25 feet (one car length) beyond background traffic conditions. There is no opportunity to increase westbound left-turn storage at the intersection short of widening the SW Boones Ferry Road bridge. There does not appear to be any turn lane extensions [proposed in the recently adopted City Transportation System Plan.
- The 95th percentile queue on the southbound shared through/right-turn movement at the SW Martinazzi Avenue/SW Tualatin-Sherwood Road intersection is forecast to exceed the available storage by one vehicle length.
 - This condition occurs under background traffic conditions regardless of site development. The proposed development does not increase the southbound queue length.

TIA Comment #3b

b) The report assumes that very little traffic will use Martinazzi Avenue and Street A to access the development. Based on existing conditions, the City believes that is inaccurate. Most people coming from/going to the west and south will not access the site from Nyberg Street but will use Martinazzi Avenue or Boones Ferry Road. Additionally, the report does not assume truck traffic on those roadways which is inconsistent with the submitted Master Plan that shows those roadways being the main truck route. Please revise the TIA with assumptions that better match expected travel patterns.

Response to TIA Comment #3b

We disagree with the City's assertion that the assignment of trips to SW Martinazzi and Street A is inaccurate. In our professional opinion, the trips assigned to both facilities represent a reasonable estimate of travel patterns upon build-out of the proposed Nyberg Rivers project.

As documented in the August 2012 scoping memo and the April 2013 TIA, we estimated that approximately 20 percent of the new trips will come from the north via SW Boones Ferry Road or SW Upper Boones Ferry Road. All of this traffic was assigned to either SW Martinazzi or Street A. Only five percent of the new trips are estimated to come from SW Martinazzi (south of SW Tualatin Sherwood Road). Of that five percent approximately half were assumed to use SW Martinazzi south of SW Nyberg Street to enter or egress the site and approximately half would enter or egress use travel to and/from the site from SW Tualatin Sherwood Road/SW Nyberg Street.

All of the assumptions discussed above and documented in the TIA are reasonable based on existing and estimated future travel patterns and can be relied upon by the City staff as they develop their own transportation findings and recommendations for the Nyberg Rivers project.

With respect to truck traffic, truck vehicle percentages were assumed on each of the roadways based on existing truck traffic counts. Delivery vehicles to and from commercial sites typically occur outside the weekday a.m. and p.m. peak hours and thus are not expected to have any material impact on the peak hour analysis results presented in the TIA.

TIA Comment #3c

- c) The report utilizes conflicting assumptions of the driveway access on Martinazzi Avenue. Part of the evaluations assumes all three driveways remain open, yet another section assumes only one access connects to Martinazzi Avenue. The TIA needs to be consistent throughout the study. Any revisions may impact the queue length analysis listed above. Please make this change before completing the new queue length analysis.*

Response to TIA Comment #3c

As noted in the April 2013 TIA and reiterated in the supplemental information provided in the May 20, 2013 letter, the driveway assumptions for the two access scenarios on SW Martinazzi (with and without the SW Seneca Street extension) only differ relative to the treatment of the driveway immediately south of SW Seneca Street (indicated as driveway 6 in the April 2013 TIA).

With the SW Seneca Street extension it was assumed driveway 6 would be closed. Without the SW Seneca Street extension, driveway 6 was assumed to remain open because the project has would have no impact on this driveway (driveway 6 is not part of the proposed development site).

If the City desires to close driveway 6 regardless of the SW Seneca Street extension, the impact would be a small increase in traffic to the existing City Hall driveway (indicated as driveway 4 in the April 2013 TIA) on SW Martinazzi. Table 2 below shows the impact of the reassignment of traffic at driveway 4.

Table 2 - Detailed Operations of the Driveway #4 SW Martinazzi Avenue/City Library Driveway Assuming Driveway #6 is Closed (2014 Total Conditions)

	2014 Total Traffic Conditions SW Martinazzi Avenue/ City Library Driveway (Driveway #4)	2014 Total Traffic Conditions SW Martinazzi Avenue/ City Library Driveway (Driveway #4) (Assuming Driveway #6 is closed)
SB LT Movement	LOS = B	LOS = B
	Control Delay = 12.1 sec	Control Delay = 12.2 sec
	V/C = 0.26	V/C = 0.27
WB LT Movement	LOS = E	LOS = E
	Control Delay = 43.4 sec	Control Delay = 44.3 sec
	V/C = 0.35	V/C = 0.35
WB RT Movement	LOS = C	LOS = C
	Control Delay = 15.7	Control Delay = 16.4
	V/C = 0.30	V/C = 0.36

As indicated in Table 2, closure of driveway 6 will have a very small impact to driveway 4 and driveway 4 will continue to meet City standards for unsignalized intersection operations.

TIA Comment #3d

- d) More information is needed on the timing of the traffic studies. It is unclear if the studies were completed when Kmart was open or closed (or both) and which data set was used.*

Response to TIA Comment #3d

The traffic counts used in the April 2013 TIA were collected when Kmart was open. The majority of the information presented in the supplemental May 16, 2013 letter also relied on the traffic counts taken when Kmart was open.

The supplemental field observations and capacity estimates conducted for the City Hall driveway on SW Martinazzi (documented on pages 2 and 3 of the May 16, 2013 letter) were collected after the Kmart had closed. However, the capacity estimates presented in Tables 1 and 2 in the May 16, 2013 letter are considered reasonable as the northbound and southbound through traffic on SW Martinazzi has the most significant impact on the capacity of the turning movements at the driveway. The closure of Kmart has likely resulted in very little change to the northbound and southbound through traffic on Martinazzi (most Kmart customers using Martinazzi would have turned left in or right out of the City Hall driveway and that total demand is represented in the existing traffic counts (from the April 2013 TIA) and factored into the total traffic projections.

TIA Comment #3e

- e) *The applicant's traffic consultant does not draw any conclusions on the adequacy of the existing City driveway/easement taking into account the traffic generation from the proposed development, other driveway closures, and queuing issues on Martinazzi Avenue. The applicant needs to analyze this and make a conclusion about the adequacy of the existing driveway to serve this development.*

Response to TIA Comment #3e

We believe several conclusions have been presented to the City regarding the operation of the City driveway (driveway 4 in the TIA). The most substantive conclusions are as follows:

- The City driveway currently meets the City of Tualatin's Level of Service standard and will continue to meet the standard with the added traffic from Nyberg Rivers.
- There are some existing operational deficiencies that exist at the City driveway under existing conditions due to the presence of standing queues on SW Martinazzi that occasionally extend to and beyond the City Hall driveway. The analysis presented to date has demonstrated that the Nyberg Rivers development will have very little impact on this existing condition.
- An option that would eliminate the City driveway and replace it with the extension of SW Seneca Street has also been studied. Under this scenario the new SW Seneca/SW Martinazzi intersection would be signalized and would result in a significant operational improvement relative to the existing condition at the aforementioned City driveway.

None of the above conclusions suggest that the City hall driveway "must" be closed as a result of the Nyberg Rivers development as this conclusion is not supported by the traffic engineering evidence. Representatives from CenterCal remain very willing to work with the City to implement solutions that improve the operations at the driveway (including helping to implement the Seneca Street extension).

TIA Comment #3f

- f) *On Page 7 of the Master Plan, the applicant has indicated that the Primary Development Area will be redeveloped to support traditional shopping center related uses. The applicant has used a trip generation rate for Shopping Centers throughout the TIA. This is applied to all of the uses on the site. City staff questions if this results in a lower than expected trip generation. In informal discussions with the applicant, staff is aware that a specialty grocery tenant is proposed for Bldg. 1005, a stand-alone 45,000 fitness club is proposed for Building N-100 and a new drive-through restaurant use is proposed in Building H-100 – in addition to the applicant's proposal to retain drive-through uses on Buildings A, B, C, and a relocated F-100 (we believe that retaining drive-through uses on Bldg B is in error, as stated above). Staff believes it is inappropriate to apply a Shopping Center trip generation rate when so many of these proposed uses are auto-intensive and don't have traditional shopping center characteristics. In the revised submittal, please clarify the proposed uses for each building so that an accurate trip generation can be*

analyzed on the site. Based on our understanding of the proposed uses from informal conversations, staff believes that the following uses should analyzed separately from the Shopping Center trip generation rate:

- i. The two drive-through restaurants (Buildings F-100 and H-100);
- ii. The grocery store (Bldg 1005); and
- iii. The 45,000 square foot stand-alone health club (N-100)

Please apply the correct trip generation rates in the revised submittal.

Response to TIA Comment #3f

We strongly disagree with the premise that the above uses should be separated from the shopping center for the purposes of the TIA. As noted in *Trip Generation, 9th Edition (published by the Institute of Transportation Engineers)*, “A shopping center is an integrated group of commercial establishments that is planned, developed, owned and managed as a unit. Many shopping centers, in addition to the integrated unit of shops in one building or enclosed around a mall, include outparcels (peripheral buildings or pads located on the perimeter of the center adjacent to the streets and major access points.”

Separating the higher trip generating uses from the shopping center as the City suggests and continuing to apply the shopping center trip generation rate for the lower trip generating uses (which assumes a blend of higher and lower trip generating uses) would result in an unreasonably conservative estimate of trip generation. ITE practice would then dictate application of internal trip reductions between each of the site uses to account for internal trips that are inherently addressed in the shopping center trip data. To emphasize this point, a weekday p.m. peak hour trip generation calculation was performed where all of the major site uses were separated. A summary table of these calculations is shown in Table 3 below and the detailed breakout calculations are summarized in Appendix A.

Table 3 - Nyberg Rivers Trip Generation (with uses separated)

	ITE Code	Size (sq. ft.)	Weekday PM Peak Hour		
			Total	In	Out
Existing Site Driveways ¹	-	-	945	435	510
Less Existing Library ²	590	22,123	(160)	(75)	(85)
Less Existing Civic Uses ³	715	~10,000	(50)	(10)	(40)
Total Existing Retail			735	350	385
Proposed Site ⁵	820	307,000 ⁴	1,465	750	715
Less Existing Retail Driveway Counts			(735)	(350)	(385)
Sub Total			730	400	330
Less Internal Trips (20%)			(295)	(150)	(145)
Pass-by Trips (varies)			(310)	(155)	(155)
Net New Trips			125	95	30

Table 4 below compares Table 3 above with the original Trip Generation calculations in the *April 2013 Nyberg Rivers Traffic Impact Study*. The following key points can be taken from the comparison:

- Separating out the uses results in a total gross trip generation that is approximately nine percent higher during the weekday p.m. peak hour.
- However, the total driveway trips are approximately 15 percent lower when the uses are separated. The reason for the reduction is due to the assumption that 20 percent of the trips are captured internally when we separate the uses. There is no internal trip reduction for the shopping center because it is already incorporated in the trip generation rate.
- The total net new trips are substantially lower when separating out the uses. The reason for the substantial difference is related to the fact that the higher trip generating uses (banks and fast food restaurant) have a much higher pass-by rate than what is included in the shopping center rate.

Table 4 – Summary Comparison of Trip Generation Methodologies

	Trip Generation Summary from the Original April 2013 Traffic Impact Study (Weekday PM Peak Hour Trips)	Trip Generation Summary Separating All Proposed Site Uses (Weekday PM Peak Hour Trips)
Total Gross Trip Generation	1,350	1,465
Total Driveway Trips	1,350	1,170
Net New Trips	405	125

In summary, Table 4 clearly shows that separating out the site uses would result in a lower number of total driveway trips and a lower number of net new driveway trips. As such, the trip generation methodology used in the April 2013 is more conservative and provides a more robust estimate of the transportation related impacts associated with the proposed Nyberg Rivers development.

To provide further evidence that the using the ITE shopping center trip generation rate results in a reasonable yet conservative estimate of trip generation two local examples (Nyberg Woods and Bridgeport Village) were evaluated.

- In 2007 the total volume of driveway trips were counted for the three driveways serving Bridgeport Village. At the time Bridgeport Village had approximately 440,000 gross square feet of leasable retail floor area (GLA) which included a Wild Oats supermarket. The actual driveway counts revealed a total trip generation rate of 2.99 trips per thousand square feet of GLA during the weekday p.m. peak hour (4-6 p.m.). *Trip Generation, 9th Edition* suggests a 440,000 square foot shopping center would result in a trip generation rate of approximately 3.67 trips per thousand square feet of GLA evaluation, which is approximately 20 percent higher than the actual trip generation rate. On a Saturday peak hour the actual trip rate was found to be approximately 25 percent less than the ITE Shopping Center trip generation rate.

- Nyberg Woods (directly across the site from I-5) includes approximately 207,000 gross square feet of leasable floor area (GLA). Actual traffic counts were collected in 2012 which revealed a total trip generation rate of 3.74 trips per thousand square feet of GLA during the weekday p.m. peak hour (4-6 p.m.). *Trip Generation, 9th Edition* suggests a 207,000 square foot shopping center would result in a trip generation rate of approximately 4.71 trips per thousand square feet of GLA evaluation, which, similar to Bridgeport Village is approximately 20 percent higher than the actual trip generation rate. On a Saturday peak hour the actual trip rate was found to be approximately 7 percent lower than the ITE Shopping Center trip generation rate.

Based on these two local retail centers and the mix of uses they reflect, we remain confident that use of the ITE shopping center data is not only appropriate, but likely represents a conservative (overestimates) the impact of the proposed development.

We trust this local trip generation data helps City staff to confirm the reasonableness of applying the Shopping Center trip generation rate for the proposed Nyberg Rivers project.

Thank you for the opportunity to respond to staffs questions and comments. We would be happy to further discuss these or other issues as needed and look forward to finalizing the on- and off-site mitigation needs associated with the project.

If you have any questions, please contact us.

Sincerely,
KITTELSON & ASSOCIATES, INC.



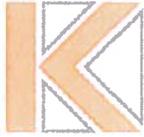
Mark Vandehey, P.E.

Appendix A Detailed Trip Generation
Calculations

Nyberg Rivers Calculated Trip Generation Values for Weekday PM Peak, Including Existing Development

Land Use	ITE Code	Size (SF)	Discount Rate	Total Trips	Trips In	Trips Out
Sporting Goods Superstore				185	89	96
Internal Trips			0.2	37	18	19
Pass-by Trips	861	110,093	0	0	0	0
Net New Trips				148	71	77
Furniture Store				10	5	5
Internal Trips			0.2	2	1	1
Pass-by Trips	890	21,750	0.53	4	2	2
Net New Trips				4	2	2
Specialty Retail				182	80	102
Internal Trips			0.2	36	16	20
Pass-by Trips	826	66,777	0	0	0	0
Net New Trips				145	64	81
Drive-in Bank				230	115	115
Internal Trips			0.2	46	23	23
Pass-by Trips	912	9,485	0.47	87	43	43
Net New Trips				98	49	49
Fast-Food Restaurant with Drive-Through Window				262	136	126
Internal Trips			0.2	52	27	25
Pass-by Trips	934	8,026	0.5	101	50	50
Net New Trips				109	59	50
High-Turnover Sit-Down Restaurant				121	73	48
Internal Trips			0.2	24	15	10
Pass-by Trips	932	12,297	0.43	33	17	17
Net New Trips				64	41	22
New Seasons Grocery Store				318	162	156
Internal Trips			0.2	64	32	31
Pass-by Trips	850	33,572	0.36	90	45	45
Net New Trips				165	85	80
Health/Fitness Club				159	91	68
Internal Trips			0.2	32	18	14
Pass-by Trips	492	45,000	0	0	0	0
Net New Trips				127	72	55
	Total SF	307,000	Total Net New Trips	859	443	416

Summary of Nyberg Rivers Calculated Trip Generation Values for Weekday PM Peak					
Land Use	ITE Code	Size (SF)	Total Trips	Trips In	Trips Out
Existing Site					
Existing Site Driveways	-	-	945	435	510
Less Existing Library	590	22,123	160	75	85
Less Existing Civic Uses	715	~10,000	50	10	40
Total Existing Retail			735	350	385
Future Site					
Future Site Driveways (sporting goods superstore, furniture store, specialty retail, drive-in bank, fast-food restaurant, sit-down restaurant, supermarket, health/fitness club)	861, 890, 826, 912, 934, 932, 850, 492	307,000	1467	750	717
Less Existing Driveway Counts			735	350	385
Sub-Total			732	400	332
Less Total Internal Trips			293	150	143
Less Total Pass-by Trips			314	157	157
Total Net New Trips			124	93	31



KITTELSON & ASSOCIATES, INC.

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July 22, 2013

Project #: 12116.0

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RE: Response to DKS Supplemental Traffic Analysis Included in City of Tualatin's Staff Report for the Nyberg Rivers Master Plan

As a follow-up to your correspondence with Fred Bruning, Centercal Properties, LLC, this letter addresses the July 11, 2013 *Nyberg Rivers Supplemental Traffic Analysis* prepared by DKS Associates (herein referred to as the *Supplemental Traffic Analysis Review*) for the Nyberg Rivers project in Tualatin, Oregon. An executive summary is presented below followed by additional details. Please include this as part of the formal record for the Nyberg Rivers Master Plan application.

EXECUTIVE SUMMARY

The *Supplemental Traffic Analysis Review* identifies two fundamental issues, trip generation and access.

Trip Generation:

The *Supplemental Traffic Analysis Review* opines that the April 2013 Transportation Impact Analysis (April 2013 TIA) underestimates site trip generation and should have individually accounted for a grocery store and fast-food restaurant.

- In our professional opinion, we conclude the April 2013 TIA trip generation offers the most reliable trip generation estimate. We base this conclusion on:
 - Comparison of the April 2013 TIA methodology to two other existing sites in Tualatin including Nyberg Woods to the east and Bridgeport Village to the north; and
 - Calculation errors and no traffic engineering basis for the approach taken by DKS in the *Supplemental Traffic Analysis Review* trip generation.

Access to SW Martinazzi Avenue:

The *Supplemental Traffic Analysis Review* compares the April 2013 TIA queuing with the probable gap acceptance of left-turn vehicles and queuing on SW Martinazzi Avenue at a theoretical level.

- The review assessment is based on outdated information. The Applicant provided a May 16, 2013 supplemental analysis relying on additional field-collected data on site at the existing City Hall/Library driveway that is specifically calibrated to the available gaps and capacity on SW Martinazzi Avenue. This is a far more accurate method than that used by DKS.
- The *Supplemental Traffic Analysis Review* methodology uses software-based simulation analysis that relies upon 1) unreasonably high site trip generation estimates and 2) an assumption that drivers won't use other available site driveways with less delay and queuing, which is clearly unreasonable.

The specific Comments/Conclusions made in the *Supplemental Traffic Analysis Review* are included in *italics* below followed by our response and any necessary supporting documentation.

ISSUE 1 - REFINED TRIP GENERATION

DKS Comment: *Based on our review of the Nyberg Rivers Master Plan, we recommend an alternative trip generation estimate be used for the proposed development. Rather than treating all uses the same (i.e., part of a single "shopping center" land use category), as was done in the April 2013 TIA, we recommend treating several uses separately since they are significantly different from typical shopping center use. When these uses are treated separately, the resulting net increase in peak hour traffic generation is 405 to 435 trips higher than the estimates in the applicant's TIA report.*

Response Refined Trip Generation Comment:

Kittelson & Associates, Inc. prepared and submitted a June 21, 2013 letter that provided a detailed summary of trip generation considerations in response to City staff questions regarding the April 2013 TIA. For reasons previously stated in our June 21, 2013 letter, we continue to strongly disagree with the premise that some uses should be separated from the shopping center for the purposes of the TIA.

In our professional opinion, there is no traffic engineering basis for separating the highest trip generating uses from the shopping center as the *Supplemental Traffic Analysis Review* suggested and then continuing to apply the shopping center trip generation rate for the lower trip generating uses (which assumes a blend of higher and lower trip generating uses). The result of the DKS approach is in an unreasonably high trip generation estimate. To support this opinion, two case studies of local shopping centers are presented for illustrative purposes.

Case Study 1) Bridgeport Village Trip Generation Comparison

To provide further evidence that the using the ITE shopping center trip generation rate results in a reasonable yet conservative estimate of trip generation, we reviewed the trip of Bridgeport Village as described below.

- Traffic counts were completed at all of the driveways serving Bridgeport Village in 2007.

- At the time Bridgeport Village had approximately 440,000 gross square feet of leasable retail floor area (GLA) which included a Wild Oats supermarket.

Table 1 compares the traffic count results with ITE *Trip Generation, 9th Edition* data.

Table 1 – Bridgeport Village Site Traffic Counts Compared ITE Shopping Center Trip Data

Data Source	PM Peak Hour Trip Rate (Trips/1,000 Square Feet of Gross Leasable Area)	Comments
On-site Field Traffic Counts	2.99	Actual Trip Generation
ITE Trip Generation <i>Shopping Center</i>	3.67	23% Higher Than Actual

As shown in Table 1, use of ITE Shopping Center data (*without breaking out the grocery store separately*) overestimates the actual site trip generation by over 20%. As detailed in our June 21, 2013 letter, similar comparison of Saturday peak hour data found the actual trip rate was approximately 25 percent lower than that forecast with the ITE Shopping Center trip generation rate.

Clearly, further increasing the site trip generation estimate by breaking out the grocery store and other individual pad buildings at Bridgeport Village would exacerbate the over-estimation of trips.

Case Study 2) Nyberg Woods Trip Generation Comparison

Similar to Case Study 1, we reviewed the trip of Nyberg Woods (located directly across I-5 to the east of the site) as described below.

- Traffic counts were completed at all of the Nyberg Woods driveways in 2012.
- At the time Nyberg Woods had approximately 207,000 gross square feet of leasable retail floor area (GLA).

Table 2 compares the traffic count results with ITE *Trip Generation, 9th Edition* data.

Table 2 – Nyberg Woods Site Traffic Counts Compared ITE Shopping Center Trip Data

Data Source	PM Peak Hour Trip Rate (Trips/1,000 Square Feet of GLA)	Comments
On-site Field Traffic Counts	3.74	Actual Trip Generation
ITE Trip Generation <i>Shopping Center</i>	4.71	26% Higher Than Actual

As shown in Table 2, the ITE Shopping Center trip generation rate was also over 20 percent higher than the actual trip generation rate during the weekday p.m. peak hour. The actual Saturday midday peak hour trip rate was found to be approximately 7 percent lower than the ITE Shopping Center trip generation rate.

Based on the three case studies above and the mix of uses they reflect, we remain confident that use of the ITE Shopping Center data as applied in the April 2013 TIA is not only appropriate, but likely *overestimates* the impact of the proposed development.

Other Considerations:

The *Supplemental Traffic Analysis Review* states that a separation of the grocery and fast food land uses would result in a net increase of 435 weekday p.m. peak hour trips and 405 Saturday midday peak hour trips compared the April 2013 TIA trip generation estimates.

In addition to the case study examples, we further note that is not possible to directly compare the trip estimates provided in the April 2013 TIA and the *Supplemental Traffic Analysis Review* for the following reasons:

- The two methodologies are fundamentally different in how they account for existing uses that are proposed to remain on the site after redevelopment occurs (the *Supplemental Traffic Analysis Review* is not reflective of the actual building area changes proposed).
 - The shopping center square footage is overestimated in the *Supplemental Traffic Analysis Review* methodology. The actual proposed shopping center square footage is approximately 190,931 square feet, not the 232,043 square feet used in the *Supplemental Traffic Analysis Review*.
- The *DKS Supplemental Traffic Analysis Review* assumed a 10% internalization reduction whereas the April 2013 TIA methodology assumed a 20% reduction. DKS offers no basis or research to support the 10% internalization assumption whereas there are multiple research studies supporting the 20% internalization reduction including the *ITE Trip Generation*. Further, their internal trip reduction did not account for the existing retail development on site.
- The *DKS Supplemental Traffic Analysis Review* assumed no trip reduction for the vacant K-mart and Jiggles uses. Data collected on-site when the original traffic counts were conducted (used in the April 2013 TIA) revealed these uses accounted for approximately 200 weekday p.m. peak hour trips (this oversight alone accounts for approximately half the difference they reported).

Because of the above discrepancies and the fundamental difference in structure of the two methodologies, a meaningful side-by-side comparison cannot be made.

ISSUE 2- SW MARTINAZZI AVENUE DRIVEWAY OPERATIONS

The *Supplemental Traffic Analysis Review* included the refined trip generation analysis and a Synchro-based operations assessment of the SW Martinazzi Avenue site driveways. Particular emphasis was made regarding the April 2013 TIA's use of two-stage gap acceptance and queuing analyses that didn't consider the interaction with adjacent upstream and downstream traffic signals.

Response #1 to the SW Martinazzi Avenue Driveway Operations Comment

Kittelson & Associates, Inc. provided a revised assessment of driveway operations along SW Martinazzi Avenue in the May 16, 2013 *Additional Nyberg Rivers Traffic Analysis* and the June 21, 2013 *Response to City of Tualatin June 3, 2013 letter (Preliminary Review Comments: Nyberg Rivers Master Plan)*. This revised assessment included a detailed calculation of SW Martinazzi Avenue driveway operations using field-calibrated capacity calculations. This field-calibrated data takes into consideration the two-stage gap acceptance concerns noted in the *Supplemental Traffic Analysis Review* and is a more reliable assessment of future conditions.

The comments provided in the *Supplemental Traffic Analysis Review* address the April 2013 TIA, not the subsequent detailed analyses prepared and presented responding to initial City staff-provided comments. The May and June 2013 materials cited above and provided by Kittelson & Associates, Inc. address the issues raised in the *Supplemental Traffic Analysis Review* and provide reliable site-specific data. Accordingly, we stand by our findings from the May and June 2013 supplemental letters and conclude that the SW Martinazzi Avenue/City Hall driveway can continue to operate within standards with the proposed project.

Response #2 to the SW Martinazzi Avenue Driveway Operations Comment

The *Supplemental Traffic Analysis Review* methodology relies upon SimTraffic simulation software to produce queuing results at the site driveways to SW Martinazzi Avenue. The reported findings indicate that the site will incur extreme vehicle queue lengths during the peak time periods; however, no technical documentation of the software analysis results is provided.

Notwithstanding the reported but undocumented simulation results in the *Supplemental Traffic Analysis Review*, the findings (including a reported queue of 2,000 feet (almost ½ mile) at one driveway) are clearly not reasonable and suggest no attempt was made to calibrate the simulation model to existing conditions (a significant modeling oversight) and/or conduct a more reasonable future conditions analysis. The proposed redevelopment site has multiple driveways that provide alternative egress routes. Given most drivers naturally identify and drive routes with the least delay/shortest path, it is unreasonable to suggest the extreme vehicle queue lengths being reported in the *Supplemental Traffic Analysis Review* will ever be realized. Furthermore, the *Supplemental Traffic Analysis Review* is predicated on site trip generation estimates that we believe are grossly over-estimated as documented in the response to Issue #1.

Thank you for the opportunity to respond to the *Supplemental Traffic Analysis Review* comments. Please contact us with any questions you may have.

Sincerely,
KITTELSON & ASSOCIATES, INC.



Mark Vandehey, P.E.



KITTELSON & ASSOCIATES, INC.

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July 30, 2013

Project #: 12116

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RE: Response to Mackenzie Nyberg Rivers Transportation Review Letter

This letter addresses the transportation issues identified in the July 22, 2013 letter from Brent Ahrend to Bob Durgan. Each of the Mackenzie comments are italicized followed by our response.

Comment: A corridor analysis should be provided to replicate the effects of adjacent intersections on delay and vehicle queues.

Response: We disagree. The Kittelson analysis conducted in the April 2013 TIA and supplemental material reasonably estimate the traffic impacts associated with the Nyberg Rivers proposed development plan. The operations analysis conducted at the study intersections was performed using Synchro and SimTraffic. For the SW Tualatin-Sherwood Road corridor which operates under an adaptive signal control, these programs are sufficient at capturing and assessing the effects of traffic interaction between adjacent intersections.

At the intersection where the project is anticipated to have the most significant impact (SW Nyberg Road/SW Tualatin-Sherwood/Fred Meyer/Site driveway), field observations confirmed that deterministic queuing estimates presented in the TIA are reasonable and can be relied upon for future operational and design considerations.

Comment: Effects of WES rail crossings should be addressed (it has been ignored in the analysis), notably for queue spillback to other intersections.

Response: We disagree. First, it should be noted that the Nyberg Rivers project is forecast to have an insignificant impact to the SW Boones Ferry/SW Tualatin-Sherwood Road intersection (less than two percent increase in traffic and less than one vehicle per signal cycle on any approach). Regardless, during the 4 to 5 times per peak hour WES pre-empts the eastbound and westbound movements, additional green time is allocated to the north-south through movements on SW Boones Ferry Road. Depending on when the pre-emption occurs, additional green time is then provided to the east-west through movements in the subsequent signal phase to attempt to compensate for lost green time in the previous phase. As a result of WES, the average control delay results shown at this intersection for all conditions (existing, background and total) may be slightly underestimated for some movements and slightly overestimated for others. Under any scenario, the intersection meets or exceeds Washington County's operating standards.

Comment: *Signal timing parameters need to be adjusted, specifically to address the longer travel times for eastbound traffic which must stop behind the rail crossing.*

Response: Detailed signal timing parameters may provide an added level of precision to the operational assessment of the SW Tualatin-Sherwood Road/SW Boones Ferry Road intersection. This level of additional analysis is clearly not warranted given the minimal impacts that the proposed Nyberg Rivers project is forecast to have. The project is projected to add approximately 20 vehicles to this eastbound through movement during the weekday p.m. peak hour which is less than one vehicle every signal cycle. Overall the project will result in less than a 2 percent increase in traffic at this intersection. This impact by any traffic engineering standard can be considered insignificant and is well below an impact level that would be perceived by anyone who regularly travels through the intersection.

Comment: *Trucks have been observed slowing at the rail crossing, which will impact available capacity. This should be accounted for in the analysis.*

Response: As noted previously, we believe this added level of precision in the analysis is unwarranted given the project's insignificant impact to the SW Tualatin-Sherwood Road/SW Boones Ferry Road intersection and the fact that the capacity impact of trucks is already reflected in the analysis methodology. No evidence has been offered to suggest that the "observed slowing" would result in a greater capacity impact than is already reflected in the analysis methodology.

Comment: *Traffic counts should include those vehicles arriving at the back of a queue, not just those making it through the intersection at peak times (HCM 2010 requires this in congested corridors).*

Response: The traffic count issue described above only applies to situations where demand exceeds capacity over the entire analysis period. There is no evidence to suggest that the demand exceeds capacity over the entire study period for the study intersections on SW Tualatin-Sherwood Road. Occasional cycle failures do occur as is common on high volume arterials similar to SW Tualatin-Sherwood Road. To the extent there is some residual demand from one peak 15 minute interval it will be captured in the next 15 minute interval. The volumes used in the TIA are an adequate representation of the demand for the peak hours that were studied.

Thank you for the opportunity to respond to the Mackenzie comments. Please contact us with any questions you may have.

Sincerely,
KITTELSON & ASSOCIATES, INC.



Mark Vandehey, P.E.