April 3, 2013

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Riverfront EVA Modification Traffic Analysis

Dear Mr. Smith;

As requested, Whitlock & Weinberger Transportation, Inc. (W-Trans) has conducted a review of the potential impacts associated with modifying a portion of Old Lakeville Street near its intersection with East D Street in the City of Petaluma. Old Lakeville Street may require relocation in order to comply with changes to the rail alignment currently being planned by Sonoma Marin Area Rail Transit (SMART).

The subject segment of Old Lakeville Street is currently open and provides one-way access to the Riverfront development and the small commercial development just south of East D Street. Traffic counts obtained during the p.m. peak hour on March 27, 2012, totaled 16 vehicles on Old Lakeville Street to the south of the existing commercial buildings (near the rail spur crossing), confirming that the street is a currently a very low volume roadway.

The *Traffic Impact Study for the Petaluma Riverfront Project* (Riverfront TIS), prepared by W-Trans and dated March 5, 2012, was based on the assumption that Old Lakeville Street would remain in its current configuration, and that a new supplemental gated Emergency Vehicle Access (EVA) connection to East D Street would be added for use by emergency vehicles only. The focus of this analysis is to determine the potential shifts in traffic patterns and resulting impacts that could occur if the existing Old Lakeville Street connection to East D Street is closed and relocated to the alignment of the EVA approximately 100 feet to the west. The resulting roadway connection to Old Lakeville Street would then either 1) be retained as a one-way southbound street, or 2) be converted to a two-way street with right turns in and out allowed at East D Street.

Conditions Common to Both Alternatives

Old Lakeville Street currently connects to East D Street immediately to the west of the Lakeville Street/East D Street intersection, with the street paralleling the railroad tracks and Lakeville Street. This creates a potentially confusing situation for drivers destined for Old Lakeville Street, as well as a safety concern given the number of conflict points. Relocation of Old Lakeville Street 100 feet to the west would eliminate this condition and would be expected to improve safety at the Lakeville Street/East D Street intersection.

Old Lakeville Street connects to the northern terminus of Hopper Street, providing connectivity to the Caulfield Lane SMART rail crossing one-half mile to the south. This connection allows Old Lakeville Street to operate as a one-way southbound street with connectivity to the Riverfront development. The current physical condition of the northernmost portion of Hopper Street requires drivers to travel at low speeds. As a result, the attractiveness of using Hopper Street and Old Lakeville Street as a through street is quite low, and would be expected to remain low until the road is reconstructed, which may not occur for many years into the future.

The new intersection created at East D Street and the relocated segment of Old Lakeville Street could safely and effectively accommodate additional right turn movements. Given the proximity of the intersection to Lakeville Street and the SMART corridor, however, westbound left turns from East D Street onto Old Lakeville Street should be prohibited through the use of "NO LEFT TURN" signs (excluding emergency vehicles) regardless of whether Scenario 1 or Scenario 2 is implemented.

Scenario 1 – Retain New Roadway as One-Way Southbound

As discussed above, implementation of Scenario 1 would result in a safety improvement compared to the current configuration. From a traffic operations perspective Scenario 1 would be unlikely to result in changes to area-wide circulation in the near-term since the current one-way traffic flow would be maintained. Use of the corridor would likely remain associated with drivers destined for the small commercial complex on Old Lakeville Street and industrial uses on the northern extents of Hopper Street. In the long-term with redevelopment and associated reconstruction of Hopper Street, some drivers on eastbound East D Street who are destined to the southern end of Hopper Street, including Riverfront, may choose to use the street. Based on the "Future plus Project" traffic volumes and trip distribution assumptions contained in the Riverfront TIS, it is estimated that up to 27 vehicle trips could divert to this improved connection. These trips would be diverted from Lakeville Street and Caulfield Lane, potentially resulting in very modest improvements in operation at the Lakeville Street/East D Street and Lakeville Street/ Caulfield Lane intersections compared to the projections contained in the Riverfront TIS. Combined with the existing traffic levels, it is estimated that Old Lakeville Street would carry up to 45 southbound vehicles during the p.m. peak hour.

Scenario 2 – Convert to Two-Way Street with Right Turns Only

This configuration would also result in a safety improvement compared to the current intersection. The potential for changes in traffic flow are greater than with Scenario 1 since traffic flow would become two-way. The prohibition of left turns at East D Street would, however, limit the number of drivers who might find this route an improvement over the current Caulfield Lane-Lakeville Street route. As with Scenario 1, the attractiveness of this route to drivers is also likely to be limited until such time as Hopper Street is reconstructed through future redevelopment. The primary benefit of this connection would likely be for traffic associated with the existing commercial building on Old Lakeville Road, whose drivers must currently travel one-half mile to exit the area via the SMART crossing at Caulfield Road. During p.m. peak hour observations, 7 drivers exited this commercial building, and with full occupation of the complex perhaps 5-10 trips could be expected to divert to the new right-turn-out onto East D Street.

An assessment of average travel times was made in order to fully gauge the potential for implementation of Scenario 2 to result in area-wide shifts in traffic patterns. This analysis was focused on the travel times a driver might encounter during the p.m. peak hour when traveling between the intersections of Caulfield Lane/Hopper Street and Lakeville Street/East D Street via the two possible routes; the first route being Caulfield Lane and Lakeville Street, and the second route being via Hopper Street and Old Lakeville Street (newly converted to two-way traffic). Future p.m. peak hour volumes and operation including the southern crossing and buildout of the Riverfront project were used for the analysis, and it was assumed that Hopper Street was reconstructed to a smooth roadway along its entire length.

The analysis reveals that the route via Old Lakeville Street is shorter than the current route but would entail higher delays, particularly at the right turn movement onto East D Street. Drivers attempting to turn right from Old Lakeville Street onto East D Street will routinely encounter queues created by the adjacent signal. In many cases, the best opportunity for a driver to make this right turn movement will

be through the courtesy of a driver on eastbound East D Street, slowing to allow the vehicle into traffic (in other words, "waving them in"). Through the use of the Simtraffic it was estimated that a driver would, on average, encounter 101 seconds of delay in making this movement during the p.m. peak hour. As a result, the average travel speed between intersections on this route is projected to be 12 mph, whereas an average speed of 16 mph would be realized by instead using Caulfield Lane and Lakeville Street. A summary of the projected travel speeds on each route is shown in Table 1.

Table 1
Average Northbound Travel Speed between
Hopper Street/Caulfield Lane and East D Street/Lakeville Street
(Future PM Peak Hour with Riverfront Development)

Route	Route Distance	Average Speed	Driving Time	Intersection Delay			Total Drive Time	Average Speed on Route
				E. D/Old Lakeville	E. D/ Lakeville	Caulfield/ Lakeville		
Hopper-Old Lakeville	0.72 mi	25 mph	104 sec	0 sec	101 sec	14 sec	219 sec	12 mph
Caulfield-Lakeville	0.76 mi	30 mph	91 sec	59 sec	0 sec	25 sec	175 sec	16 mph

Notes: mi=mile; mph=miles per hour; sec=seconds

Based on the results of this analysis, it is anticipated that traffic volume on Old Lakeville Street would remain relatively low despite the conversion to a two-way street. The only drivers who would likely realize a benefit in using the new outbound right turn onto East D Street would be those originating from the nearby commercial development and uses on the northernmost end of Hopper Street. It is estimated that up to 45 northbound drivers may use the new connection in the future. This altered travel pattern could result in a slight improvement to future operation at the Lakeville Street/ Caulfield Lane intersection, which is anticipated to operate poorly in the future, though any changes are likely to be modest.

Conclusions and Recommendations

- It is estimated that up to 30 vehicles may utilize Old Lakeville Street in the future with Scenario 1 (all southbound), with up to 75 vehicles projected for Scenario 2 (45 northbound and 30 southbound).
- Implementation of either scenario is anticipated to result in negligible shifts in area-wide traffic. Little change, if any, would be expected in the LOS results contained in the Riverfront TIS, and any such changes are likely to represent a positive effect rather than a negative one.
- It is recommended that "NO LEFT TURN" signs be installed on westbound East D Street at the relocated Old Lakeville Street intersection with implementation of either scenario.

We hope this information is useful to you and the City. Please contact us with any questions.

Sincerely,

Zachary Matley, AICP
Associate

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