



21370 SW Langer Farms Pkwy
Suite 142, Sherwood, OR 97140

Technical Memorandum

To: West Linn Planning Commission

From: Michael Ard, PE

Date: March 18, 2026

Re: 18850 Willamette Drive Kaady Car Wash - CUP-25-03/DR-25-03/VAR-25-02

This memorandum is written to provide a response to the public comments regarding traffic operation and safety that have been submitted into the record for the proposed Kaady Car Wash facility at 18850 Willamette Drive.

Traffic Operation

The traffic impact analysis letter previously provided appropriately made comparisons to the already-approved use of the site for a fast food restaurant with a drive through window. However, some residents have expressed concerns regarding whether sufficient capacity is currently available for re-activation of the site. The comments included citations regarding level of service at the intersection of Highway 43 and Walling Way as well as a quote from the prior owner of the McDonalds stating, “It gets really busy in the morning, but you couldn’t get back on the road... there was no stoplight to let you back on, if you got off. That made it difficult for people to come here.”

It should be noted that a fast-food restaurant with a drive-through window experiences its highest traffic volumes during the morning peak hour, so it is not surprising that the comments from the prior McDonalds owner focused on the morning commute period. Per the data from the Institute of Transportation Engineers previously provided in our Transportation Impact Analysis Letter dated February 12, 2026, a fast food restaurant generates 35 percent more traffic during the morning peak hour than during the evening peak hour (176 AM trips vs. 130 PM trips).

In contrast, the proposed car wash facility is projected to generate just 30 trips during the morning peak hour and 78 during the evening peak hour. Since half of site trips are entering and half exiting, this equates to 15 total vehicles exiting onto Highway 43 during the morning peak hour and 39 during the evening peak hour. That is an 83 percent decrease in exiting traffic as compared to the prior McDonalds restaurant during the morning peak hour.

More specifically, if we assume that 45 percent of exiting McDonalds traffic turned to the left and 55 percent turned to the right, that equates to 40 McDonalds patron vehicles making left turns onto Highway 43 during the morning peak hour. Assuming the same distribution for the proposed car wash results in a projected demand of just 7 vehicles turning left onto Highway 43 during the morning peak hour. With the



proposed car wash generating significantly fewer trips, there is no reason to believe congestion would be a problem during the morning peak hour.

To address the capacity questions more fully, we also recorded video of the site access on Highway 43 from 4:00 to 6:00 PM on Tuesday March 17, 2026, and from 8:00 to 9:00 AM on Wednesday March 18, 2026. We measured the number of vehicles exiting from the site access driveway onto Highway 43 as well as the duration during which there were vehicles waiting or queuing to exit the driveway.

Based on the observations, there were 5 vehicles that exited from the site during the morning peak hour, with at least one vehicle waiting to exit during 94 seconds of the morning peak hour. This indicates that the driveway is currently operating at 3 percent of capacity ($v/c = 0.03$) during the morning peak hour. With the addition of site trips from the proposed car wash, 15 additional vehicles would be projected to exit the site during the morning peak hour. If all of them exit the site via this driveway, it is projected to use 10 percent of capacity ($v/c = 0.10$).

During the two evening commute hours, there were 38 vehicles that exited from the site access driveway on Highway 43. The highest utilization of the egress occurred between 4:35 and 5:35 PM, when there was at least one vehicle present and waiting to enter the highway during 480 seconds of the hour. This indicates that the driveway is currently operating at 13 percent of capacity ($v/c = 0.13$) during the evening peak hour. With the addition of site trips from the proposed car wash, 39 additional vehicles would be projected to exit the site during the evening peak hour. If all of them exit the site via this driveway, it is projected to use 39 percent of capacity ($v/c = 0.39$).

Based on the analysis, even if the proposed use had represented an increase in site traffic versus the prior approved use, we would have shown that there is ample capacity to accommodate the car wash.

It should be noted that some public comments referred to delays and/or levels of service in the study area. The City of West Linn requires that intersections on Highway 43 operate acceptably per ODOT standards, which are based on the volume-to-capacity ratio (v/c). ODOT allows intersections to operate with a v/c of 0.99 or less. This standard is formally acknowledged in the city's adopted Transportation System Plan, which explicitly states that the applicable mobility standard for Highway 43 at Walling Way is " v/c 0.99", as established by ODOT. Intersection operation met this standard in 2015 while the McDonalds was actively operating and was also projected to meet the standard under projected future year 2040 traffic conditions.



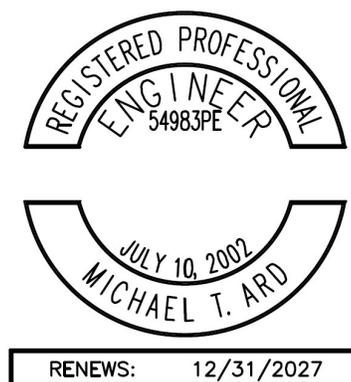
Traffic Safety

Finally, some residents have expressed concerns regarding safety. A review of crash history for the intersection of Highway 43 at Walling Way showed six reported crashes in the most recent five years for which data is available (January 2000 through December 2024). These included three rear-end collisions, one turning-movement collision, one pedestrian collision, and one fixed-object collision. The pedestrian collision occurred when a driver made a northbound left turn from Highway 43 onto Walling Circle (opposite Walling Way) without yielding to a pedestrian crossing on the west side of the roadway. The collision occurred at 8:00 PM on March 21, 2021, well after the 7:24 PM sunset, and the notes indicate that the “non-motorist clothing [was] not visible.” The crash resulted in a report of a “possible injury/complaint of pain” for the pedestrian.

In total, the reported crashes resulted in one non-incapacitating injury and five reports of a “possible injury/complaint of pain.” Based on the historical volume of traffic traveling through the intersection as reported by ODOT, the crash rate was calculated to be 0.238 crashes per million entering vehicles. This is well below the 90th percentile crash rate of 0.408 for four-way urban stop-controlled intersections in Oregon that would indicate a significant safety hazard exists at this location. Based on the analysis, this intersection is operating acceptably with respect to safety.

Conclusions

Following a more exhaustive look at operations and safety in the vicinity of the proposed Kaady Car Wash facility, even if the proposed use had not represented a decrease in traffic as compared to the prior approved use of the site and the applicant was required to explicitly demonstrate compliance with the city’s operational and safety transportation requirements, the proposed use would meet those requirements and can therefore be approved.



Appendix

Site Access Driveway - West Linn - Existing Conditions - AM Peak Hour

Veh. Count	Time	Movement	Delay	Elapsed	Q Overlap	Peak Hour	
1	8:09	Left	7	7	0	94	seconds total hourly delay
2	8:28	Left	10	10	0		
3	8:44	Right	9	9	0		
4	8:46	Left	25	25	0		
5	8:50	Left	43	43	0		
			18.8	94			

v/c = 0.03

We add 15 exiting in AM peak, projected v/c = 0.10
If ALL site trips exited via driveway

Site Access Driveway - West Linn - Existing Conditions - PM Peak Hour - 3/17/2026

Veh. Count	Time	Movement	Delay	Elapsed	Q Overlap	Peak Hour
1	4:00	Right	22	22	0	
2	4:00	Left	13	13	0	
3	4:03	Right	31	31	0	
4	4:05	Left	15	15	0	
5	4:08	Left	34	34	0	
6	4:08	Left	12	12	0	
7	4:10	Right	4	4	0	
8	4:11	Left	7	7	0	
9	4:11	Left	148	148	0	
10	4:14	Right	3	3	0	
11	4:16	Left	9	9	0	
12	4:20	Left	17	17	0	
13	4:35	Right	14	14	0	480 seconds total hourly delay
14	4:44	Right	40	40	0	
15	4:47	Left	5	5	0	
16	4:55	Left	81	81	0	
17	4:56	Right	28	5	23	
18	4:59	Left	17	17	0	
19	5:01	Right	4	4	0	
20	5:05	Right	13	13	0	
21	5:11	Right	24	24	0	
22	5:11	Right	34	14	20	
23	5:13	Left	9	9	0	
24	5:15	Left	85	85	0	
25	5:16	Left	87	71	16	
26	5:17	Left	75	14	61	
27	5:18	Right	3	3	0	
28	5:21	Left	9	9	0	
29	5:23	Left	39	39	0	
30	5:29	Left	10	10	0	
31	5:32	Left	13	13	0	
32	5:33	Right	10	10	0	
33	5:42	Right	7	7	0	
34	5:45	Left	11	11	0	
35	5:49	Left	10	10	0	
36	5:51	Left	24	24	0	
37	5:51	Right	14	14	0	
38	5:52	Left	9	9	0	
			26.1	870		

v/c = 0.13

We add 39 exiting in PM peak, projected v/c = 0.39
If ALL site trips exited via driveway

OREGON... DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

URBAN NON-SYSTEM CRASH LISTING
WILLAMETTE DR at WALLING WAY, City of West Linn, Clackamas County, ALL Crashes Severity, 01/01/2020 to 12/31/2024

1 - 3 of 4 Crash records shown.

SER#	P	R	J	S	W	D	M	CLASS	CITY STREET	INT-TYPE	RD CHAR	INT-REL	OFFERD	WTHR	CRASH	SFCL USE	TRLR QTY	MOVE	A	S	FROM	PRTC	INJ	G	E	L	I	C	P	LOC	CAUSE				
UNLOC?	D	C	S	V	L	K	L	LONG	FRS	(#LANES)	CONTL	N	CLR	S-1STOP	01	NONE	0	STRGHT	P#	TYPE	SVRTY	E	X	RES	LOC	ERROR	ACT	EVENT	CAUSE						
01369	N	N	N	N	N	N	N	14	WILLAMETTE DR	CROSS	INTER	CROSS	N	CLR	S-1STOP	01	NONE	0	STRGHT	01	DRVR	NONE	19	M	OR-Y	OR<25	043	000	00	07					
	WE								WALLING WAY	SE	SE	NONE	N	DRY	REAR	PRVTE		NW-SE																	
	4P								000300100500	0	05	0	N	DAY	INJ	PSNGR	CAR																		
	45	23	21.88	-122	38			37.99																											
00722	N	N	N	N	N	N	N	14	WILLAMETTE DR	3-LEG	INTER	3-LEG	N	RAIN	PED	01	NONE	0	TURN-L	01	DRVR	NONE	77	M	OR-Y	OR<25	029	000	00	02					
	5U								WALLING WAY	NW	NW	NONE	N	WET	PED	PRVTE		SE-SW																	
	8P								000300100500	0	06	0	N	DUSK	INJ	PSNGR	CAR																		
	45	23	21.9	-122	38			38.02																											
04154	N	N	N	N	N	N	N	14	WILLAMETTE DR	CROSS	INTER	CROSS	N	CLR	S-1STOP	01	NONE	0	STRGHT	01	DRVR	NONE	44	M	OR-Y	OR<25	016,043,026	038	000	00	27,07,29				
	WE								WALLING WAY	NW	NW	NONE	N	DRY	REAR	PRVTE		NW-SE																	
	5P								000300100500	0	06	0	N	DLIT	INJ	PSNGR	CAR																		
	45	23	21.88	-122	38			37.99																											
03452	N	N	N	N	N	N	N	14	WILLAMETTE DR	3-LEG	INTER	3-LEG	N	CLD	ANGL-OTH	01	NONE	9	STRGHT	01	DRVR	NONE	37	M	OR-Y	OR<25	000	000	00	00	02				
	FR								WALLING WAY	CN	CN	STOP SIGN	N	DRY	TURN	N/A		SE-NW																	
	7A								000300100500	0	02	0	N	DAY	PDO	PSNGR	CAR																		
	45	23	21.88	-122	38			37.99																											

Disclaimer: The information contained in this report is compiled from individual driver and police crash reports submitted to the Oregon Department of Transportation as required in ORS 811.720. The Crash Analysis and Reporting Unit is committed to providing the highest quality crash data to customers. However, because submittal of crash report forms is the responsibility of the individual driver, the Crash Analysis and Reporting Unit can not guarantee that all qualifying crashes are represented nor can assurances be made that all details pertaining to a single crash are accurate. Note: Legislative changes to DMV's vehicle crash reporting requirement, effective 01/01/2004, may result in fewer property damage only crashes being eligible for inclusion in the Statewide Crash Data File.

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TRANSPORTATION DATA SECTION - CRASH ANALYSIS AND REPORTING UNIT

URBAN NON-SYSTEM CRASH LISTING

WILLAMETTE DR at WALLING CIR, City of West Linn, Clackamas County, ALL Crashes Severity, 01/01/2020 to 12/31/2024

1 - 2 of 2 Crash records shown.

SER#	P R J S W DATE	CLASS	CITY STREET	INT-TYPE	RD CHAR	INT-REL	OFFERD	WTHR	CRASH	SFCL USE	TRLR QTY	MOVE	A S	CAUSE							
	I N V E S T E R T I M E	D I S T	F I R S T S T R E E T	(M E D I A N)	D I R E C T	I N T - R E L	R N D B T	S U R F	C O L L	O W N E R	F R O M	F R O M	E L I C N S	P E D							
	U N L O C ?	L O N G	L R S	(# L A N E S)	L O C T N	C O N T L	D R V M Y	L I G H T	S V R T Y	V H T Y P E	T O	P #	T Y P E	S V R T Y	E X R E S	L O C	E R R O R	A C T E V E N T	C R A S H		
03797	N N N N N 11/03/2023	14	WILLAMETTE DR	CROSS	INTER	N	Y	CLR	FIX OBJ	01 NONE	0	STRGHT		062,010							
N	FR		WALLING CIR	UNKNOWN	SE	UNKNOWN	N	WET	FIX	PRVTE	NW-SE		01 DRVR	INJC	51 M	OR-Y	081	000	062,010	00	
N	10A		000300100S00	0	06		N	DAY	INJ	PSNGR CAR				017		OR<25		000	062,010	00	
N	45 23 21.88	-122 38					N	DAY	INJ	PSNGR CAR								000	062,010	00	
		37.99																			10
00354	N N N N N 02/03/2022	14	WILLAMETTE DR	CROSS	INTER	N	N	CLR	S-1STOP	01 NONE	9	STRGHT		29							
NONE	TH		WALLING CIR	UNKNOWN	NW	UNKNOWN	N	WET	REAR	N/A	NW-SE			000							
N	7A		000300100S00	0	06		N	DAY	PDO	PSNGR CAR				000							
N	45 23 21.88	-122 38					N	DAY	PDO	PSNGR CAR				000							
		37.99																			
										02 NONE	9	STOP		011							
										N/A	NW-SE			000							
										PSNGR CAR				000							

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