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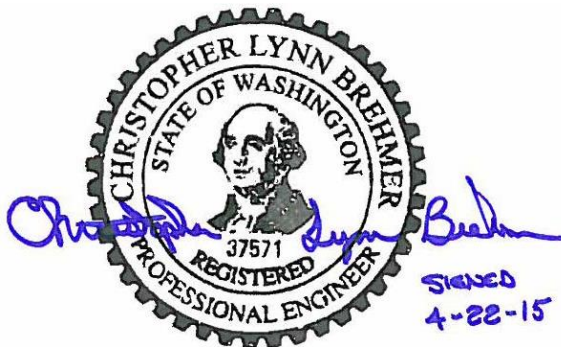
## MEMORANDUM

Date: April 22<sup>nd</sup>, 2015

Project #: 13865.0

To: Wes Heigh, City of Camas  
 cc: Randy Printz, Landerholm Law Firm  
 John O'Neil, Green Mountain Land, LLC

From: Chris Brehmer, P.E. and Kelly Laustsen  
 Project: Green Mountain Master Plan Development  
 Subject: Phase 1 Access Assessment

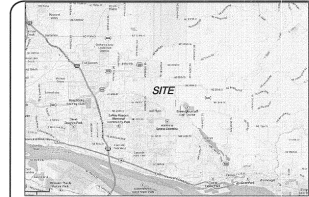


This memorandum presents a supplement to the June 2014 transportation impact analysis (TIA) for the Green Mountain Master Plan development to be located at the northeast corner of NE Ingle Road and NE Goodwin Road in Camas, Washington. Specifically, it assesses the implication of providing one access for the Phase 1 development, as opposed to the two access locations assumed in the TIA. Figure 1 provides a preliminary site plan for the Phase 1 development, showing the single access on NE Ingle Road.

The TIA assumed two access points for the Phase 1 development with exclusive southbound left-turn lanes at each access, as shown in Figure 2. Operations were re-assessed under 2018 total traffic conditions assuming a single site access, with an exclusive southbound left-turn lane. The access is subject to the City of Camas operating standards, which require LOS "D" or better and a volume-to-capacity (v/c) ratio of 0.90 or better for all intersections. As shown in Figure 2, the proposed access operates acceptably during the weekday AM and PM peak hours, with the stop-controlled westbound approach operating at LOS "B". Operational worksheets are provided in *Attachment A*. Therefore, based on this assessment, a single access to the Phase 1 development area with a southbound left-turn lane on Ingle Road satisfies City operating standards and no additional improvements are needed.

We trust this memorandum adequately addresses the traffic impacts associated with providing a single access at the Phase 1 development of the Green Mountain Master Plan development. Please contact us if you have any questions or comments regarding the contents of this memorandum or the analysis performed.

H:\proj\1513865 - Green Mountain Master Plan\dwgs\figs\13865\_traffic\_study - Nov update.dwg Apr 15, 2015 - 1:40pm - klausen Layout Tab: L\_upd site plan



VICINITY MAP SEC. 17, 20 & 21 T2N R3E W.M. NTS

SUBDIVISION NOTES

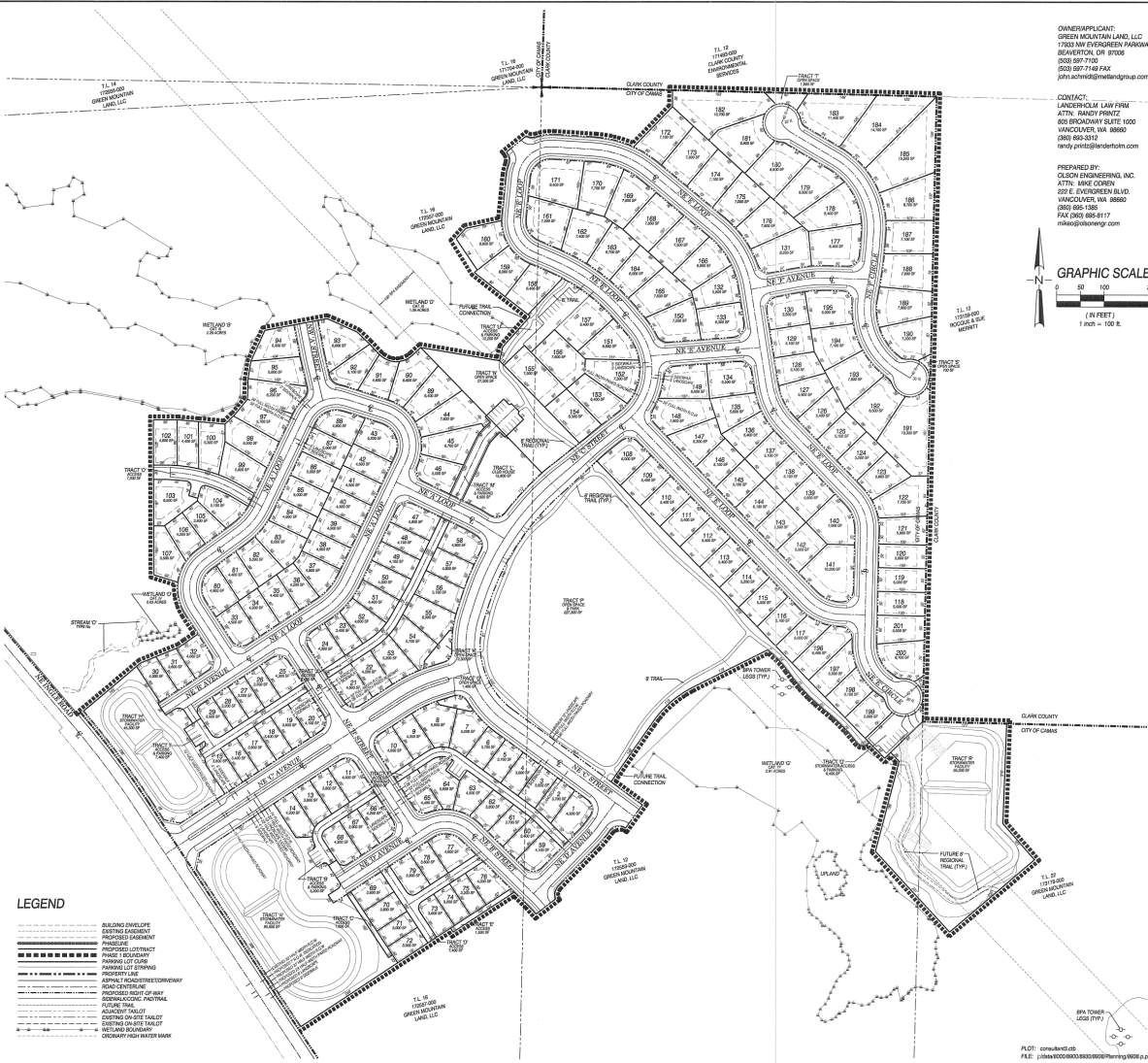
LANDS: SEE DATA  
PRESENT USE: GOLF COURSE  
PROPOSED SITE DATA: R.E. MF-10  
PROPOSED LOT SUBDIVISION: 201 LOT SUBDIVISION  
PROPOSED USE: METAL AND STEEL MANUFACTURING/PROTECTED AREAS AND PLANNED ENHANCEMENT AREAS AS SHOWN  
PROPOSED PRIVATE ROADS: AS SHOWN  
PROPOSED EASEMENTS: REFER TO ENGINEERING PLANS  
PROPOSED EASEMENT RIGHTS OF WAY: AS SHOWN  
PROPOSED EASEMENTS FOR ACCESS, DRAINAGE, UTILITIES, ETC.: REFER TO ENGINEERING PLANS  
PROPOSED COMMON ZONES: NONE PROPOSED  
PROPOSED EPPIC SYSTEMS: NONE PROPOSED  
PROPOSED DRAINAGE FACILITIES: AS SHOWN  
PROPOSED FLOOD FACILITIES: AS SHOWN  
PROPOSED SIGNAGE (SIGN PLAN): SEE SIGN PLAN  
PROPOSED LIGHTING: STREET LIGHTS TO BE PROVIDED AS SHOWN  
PROPOSED UTILITIES TRACTS, ETC.: AS SHOWN  
PROPOSED UTILITIES: REFER TO LANDSCAPE PLAN FOR SITES FOR SINGLE AND/OR MULTI-FAMILY USES FOR RESIDENCES & CLUBHOUSE  
PROPOSED BUILDINGS: AS SHOWN  
PROPOSED PARKING: AS SHOWN  
IF ANY CULTURAL RESOURCES AND/OR HUMAN REMAINS ARE DISCOVERED IN THE COURSE OF UNDERGOING THE DEVELOPMENT ACTIVITY, THE DEPARTMENT OF ARCHAEOLOGY AND HISTORIC PRESERVATION IN COMPLY SHALL BE NOTICED. FAILURE TO COMPLY WITH THESE STATE REQUIREMENTS MAY CONSTITUTE A CLASS F FELONY, SUBJECT TO IMPROVEMENT AND/OR FINES  
LANDS: SEE DATA  
TOTAL PHASE 1 AREA: 61.21 ACRES (2,830,856 SF)  
TOTAL PHASE 1 IMPROV. AREA: 45.50 ACRES (2,006,880 SF)  
TOTAL IMPROVEMENT AREA INCL. STORM FACILITIES: 28.50 ACRES (1,238,000 SF)  
TOTAL ACCESS TRACTS W, T, U, V, P, T, U, V AND U: 30.4 ACRES (1,331,400 SF)  
TOTAL AREA OF CRITICAL AREAS: 13.31 ACRES (580,000 SF)  
TOTAL AREA OF RECREATIONAL OPEN SPACES: 2 ACRES (87,000 SF)  
TOTAL OPEN SPACE TRACTS W, T, U, V, P, T, U AND A PORTION OF U

DEVELOPMENT STANDARDS

Table with columns: DEVELOPMENT TYPE, MIN. LOT AREA, MIN. LOT WIDTH, MIN. LOT DEPTH, MIN. FRONT YARD SETBACK, MIN. SIDE YARD SETBACK, MIN. REAR YARD SETBACK, MIN. BUILDING COVERAGE, MIN. FRONT YARD SETBACK FOR SINGLE-FAMILY DETACHED, MIN. SIDE YARD SETBACK FOR SINGLE-FAMILY DETACHED, MIN. REAR YARD SETBACK FOR SINGLE-FAMILY DETACHED.

Table with columns: DEVELOPMENT TYPE, MIN. LOT AREA, MIN. LOT WIDTH, MIN. LOT DEPTH, MIN. FRONT YARD SETBACK, MIN. SIDE YARD SETBACK, MIN. REAR YARD SETBACK, MIN. BUILDING COVERAGE, MIN. FRONT YARD SETBACK FOR SINGLE-FAMILY DETACHED, MIN. SIDE YARD SETBACK FOR SINGLE-FAMILY DETACHED, MIN. REAR YARD SETBACK FOR SINGLE-FAMILY DETACHED.

- 1. SINGLE-FAMILY DETACHED HOMES PERMITTED. FOR SINGLE-FAMILY DETACHED RESIDENCES BY A 3 FOOT FRONT YARD SETBACK.
2. THE MIN. ATTACHED SIDE OF A DWELLING UNIT SHALL BE THREE FEET. OTHERWISE A ZERO-LOT LINE IS REQUIRED.
3. MINIMUM BUILDING HEIGHT: THREE STOREYS AND A BARNMENT BUT NOT TO EXCEED MAXIMUM BUILDING HEIGHT.
4. MINIMUM REAR YARD FOR ALLEY ACCESS: GARAGE IS EITHER 4 FEET OR 18 FEET SETBACK BASED ON LOT AREA. LOT DEPTH ARE NOT PERMITTED TO BE OVERSHADING.
5. BUILDING ENVELOPES SHOWN ON THE PLAN ILLUSTRATE THE FRONT AND REAR YARD BUILDING SETBACKS. HOUSE TO WALL SETBACK FOR FRONT DRIVE FRONT AND REAR YARD SETBACKS. MINIMUM TO WALL SETBACK FOR FRONT DRIVE FRONT AND REAR YARD SETBACKS. MINIMUM TO WALL SETBACK FOR REAR DRIVE FRONT AND REAR YARD SETBACKS.
6. 3 FOOT FRONT YARD SETBACK AT OPEN SPACE OR PUBLIC TRAIL ACCESS TRACT.



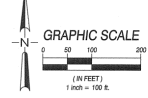
LEGEND



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PRELIMINARY PLAN FOR:  
GREEN MOUNTAIN MIXED USE PRD  
PHASE 1  
LAND SURVEYORS  
OLSON ENGINEERING INC.

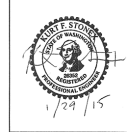


Table with columns: CHANGES / REVISIONS, DESCRIPTION, DATE, LOT STANDARD REVS, DESIGNED, DRAWN, CHECKED, DATE, SCALE, COPYRIGHT, SHEET.

Plan provided by Olson Engineering, 4/7/2015

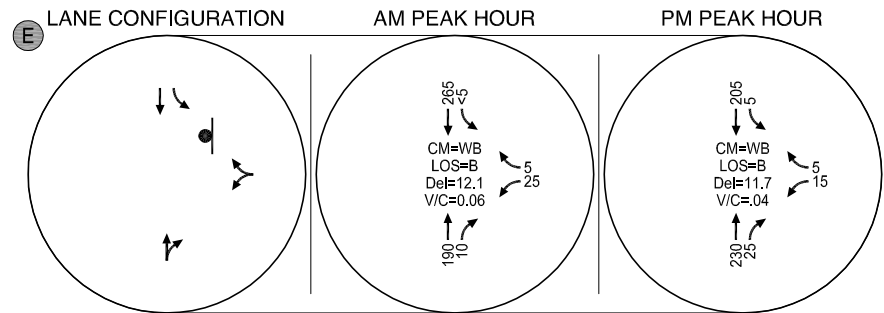
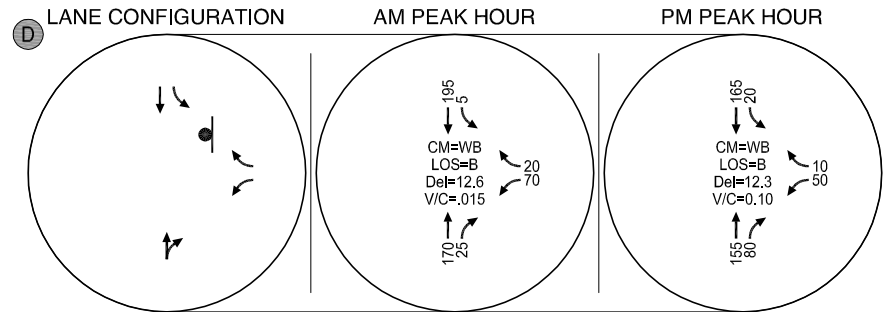
Preliminary Site Plan - Phase 1 Camas, Washington

Figure 1

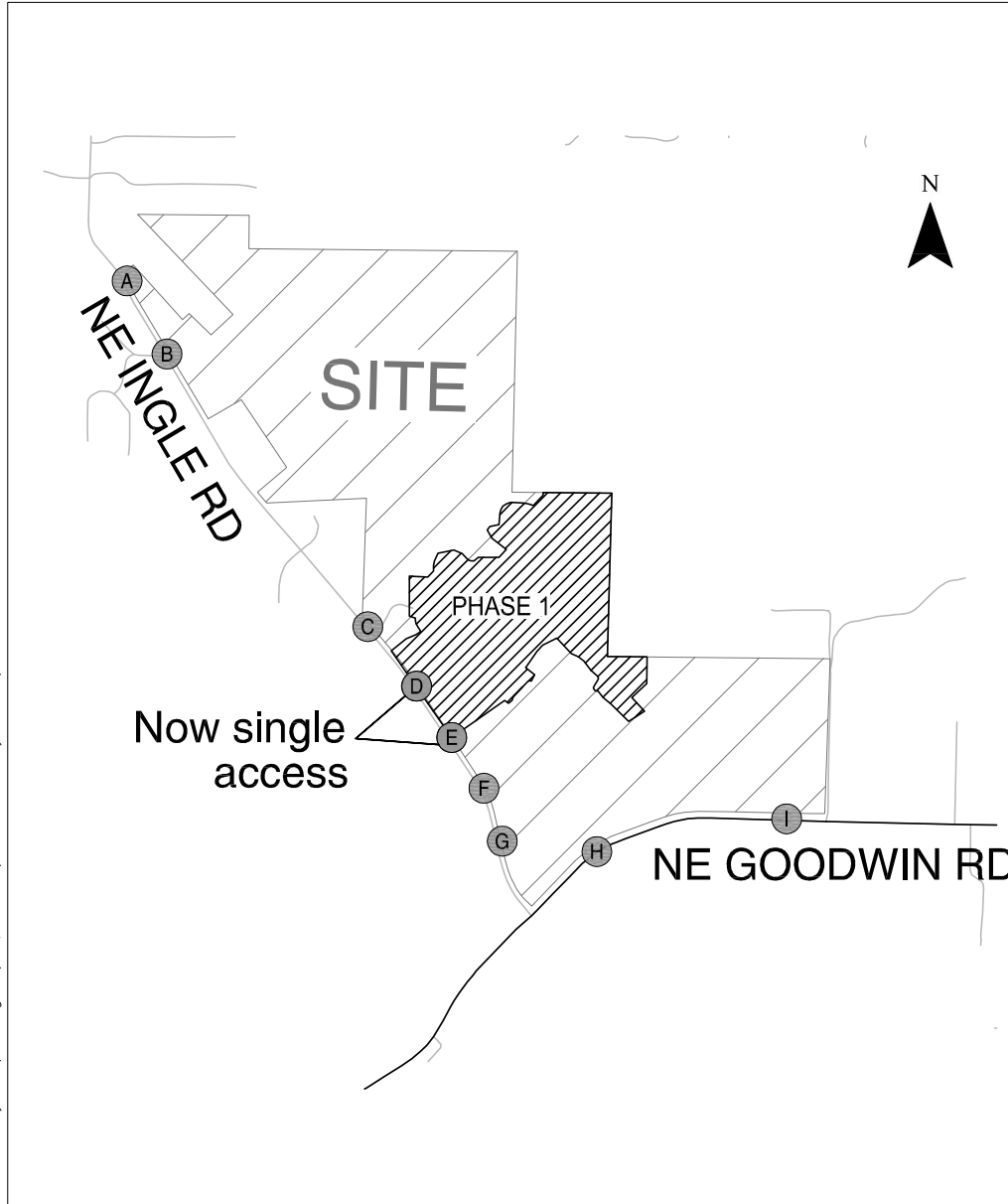
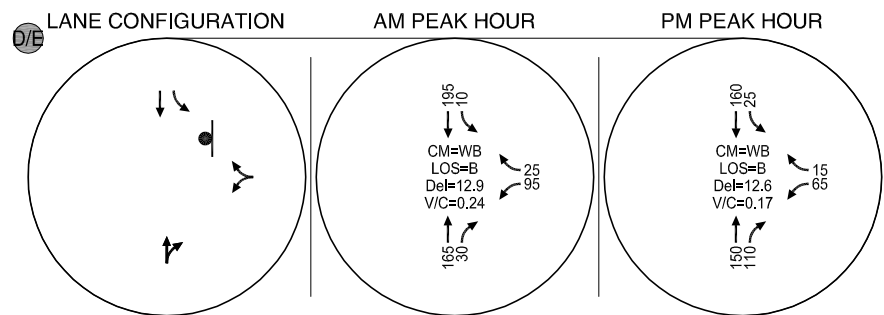


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### Previously Assumed (2 accesses)



### Currently Planned (1 access)



- STOP SIGN

CM = CRITICAL MOVEMENT (TWSC)  
 LOS = INTERSECTION LEVEL OF SERVICE (SIG) / CRITICAL MOVEMENT LEVEL OF SERVICE (TWSC)  
 Del = INTERSECTION AVERAGE CONTROL DELAY (SIG / CRITICAL MOVEMENT CONTROL DELAY (TWSC))  
 V/C = CRITICAL VOLUME-TO-CAPACITY RATIO  
 TWSC = TWO-WAY STOP CONTROL

2018 Site Access Lane Configurations and Operations (Phase 1) Camas, Washington

Figure 2

## Attachment A: Synchro Output Sheets

# HCM Unsignalized Intersection Capacity Analysis

## 300: Access & NE Ingle Rd

4/22/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	96	24	165	32	8	194
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	113	28	194	38	9	228
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	460	213			232	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	460	213			232	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	80	97			99	
cM capacity (veh/h)	559	832			1348	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	141	232	9	228
Volume Left	113	0	9	0
Volume Right	28	38	0	0
cSH	598	1700	1348	1700
Volume to Capacity	0.24	0.14	0.01	0.13
Queue Length 95th (ft)	23	0	1	0
Control Delay (s)	12.9	0.0	7.7	0.0
Lane LOS	B		A	
Approach Delay (s)	12.9	0.0	0.3	
Approach LOS	B			

Intersection Summary			
Average Delay		3.1	
Intersection Capacity Utilization		24.1%	ICU Level of Service A
Analysis Period (min)		15	

# HCM Unsignalized Intersection Capacity Analysis

## 300: Access & NE Ingle Rd

4/22/2015



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	64	16	149	108	27	158
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	75	19	175	127	32	186
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	488	239			302	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	488	239			302	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	86	98			97	
cM capacity (veh/h)	529	805			1270	

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	94	302	32	186
Volume Left	75	0	32	0
Volume Right	19	127	0	0
cSH	568	1700	1270	1700
Volume to Capacity	0.17	0.18	0.03	0.11
Queue Length 95th (ft)	15	0	2	0
Control Delay (s)	12.6	0.0	7.9	0.0
Lane LOS	B		A	
Approach Delay (s)	12.6	0.0	1.2	
Approach LOS	B			

Intersection Summary			
Average Delay		2.3	
Intersection Capacity Utilization		32.3%	ICU Level of Service A
Analysis Period (min)		15	