

PLAN AMENDMENT/ **REZONING REPORT**

► FILE #: AGENDA ITEM #: 1-G-21-RZ 8

> **AGENDA DATE:** 1-G-21-SP 2/11/2021

POSTPONEMENT(S): 1/14/2021

► APPLICANT: **S & E PROPERTIES**

OWNER(S): William E, III & Courtney Manrod

TAX ID NUMBER: 116 06704 View map on KGIS

JURISDICTION: Commission District 6 STREET ADDRESS: 12041 Hardin Valley Rd.

► LOCATION: North side of Hardin Valley Rd., west of Mission Hill Ln.

► TRACT INFORMATION: 6.98 acres.

SECTOR PLAN: Northwest County

GROWTH POLICY PLAN: Rural Area

ACCESSIBILITY: Access is via Hardin Valley Road, a minor arterial with a pavement width of

20.5 feet within a right-of-way width of 60 feet.

UTILITIES: Water Source: West Knox Utility District

> West Knox Utility District Sewer Source:

WATERSHED: Conner Creek

► PRESENT PLAN RR (Rural Residential) / HP (Hillside Protection) & SP (Stream

DESIGNATION/ZONING: Protection) / A (Agricultural)

LDR (Low Density Residential) / HP (Hillside Protection) & SP (Stream ► PROPOSED PLAN

DESIGNATION/ZONING: Protection) / PR (Planned Residential)

No

► EXISTING LAND USE: Rural residential

► DENSITY PROPOSED: 4 du/ac

EXTENSION OF PLAN

DESIGNATION/ZONING:

HISTORY OF ZONING

REQUESTS:

None noted.

SURROUNDING LAND USE,

PLAN DESIGNATION,

Agriculture/forestry/vacant - RR (Rural Residential) / HP (Hillside North:

Protection) / SP (Stream Protection)

Agriculture/forestry/vacant - RR (Rural Residential) / HP (Hillside South: **ZONING**

Protection) / SP (Stream Protection)

East: Agriculture/forestry/vacant - RR (Rural Residential) / HP (Hillside

Protection)

Agriculture/forestry/vacant - RR (Rural Residential) / HP (Hillside West:

Protection) / SP (Stream Protection)

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STAFF RECOMMENDATION:

- ▶ Deny LDR (Low Density Residential) because it is not in compliance with the Rural Area of the Knoxville-Knox County Growth Policy Plan and the surrounding development is consistent with the existing RR (Rural Residential) / HP (Hillside Protection) / SP (Stream Protection) land use designation.
- ► Approve PR (Planned Residential) up to 2 du/ac because it is consistent with the surrounding development and the adjacent residential densities, as well as the slope analysis.

COMMENTS:

SECTOR PLAN AMENDMENT REQUIREMENTS FROM GENERAL PLAN (May meet any one of these): CHANGES OF CONDITIONS WARRANTING AMENDMENT OF THE LAND USE PLAN:

1. This area has been trending towards PR zoning since the 2000s. A new housing development across Hardin Valley Road to the south was rezoned to PR with up to 2 du/ac in 2016 (Case # 7-J-16-RZ / 7-E-16-SP). Another PR development with up to 2.8 du/ac was approved in 2019 (Case # 10-H-19-RZ / 10-E-19-SP).

INTRODUCTION OF SIGNIFICANT NEW ROADS OR UTILITIES THAT WERE NOT ANTICIPATED IN THE PLAN AND MAKE DEVELOPMENT MORE FEASIBLE:

- 1. There have been no new road improvements in this area.
- 2. There has been a recently completed expansion of wastewater capacity in this area by the West Knox Utility District and a new middle school built for the Hardin Valley community by Knox County Schools. A study for forthcoming electrical line improvements by the West Knox Utility District and TVA is also underway.
- 3. While utility infrastructure does support additional residential growth in the area, the adopted Growth Policy Plan does not support residential densities greater than 2 du/ac, thus the existing Rural Residential is the maximum residential land use classification that staff can support at this location.

AN OBVIOUS OR SIGNIFICANT ERROR OR OMISSION IN THE PLAN:

- 1. There are no obvious or significant errors or omissions in the plan regarding these parcels. The 2016 update of the Northwest County Sector Plan took into consideration that this area is within the Rural Area of the Growth Policy Plan, which is intended to remain rural through limiting residential density growth and development of commercial and industrial land uses.
- 2. Residential densities in the general area are approximately 2 du/ac, which the existing Rural Residential land use classification recommends.
- 3. The slope analysis yields a recommended density of 1.92 du/ac, the RR (Rural Residential) land use classification is consistent with the maximum recommended residential density in the Hillside Protection (HP) Overlay land use classification.

TRENDS IN DEVELOPMENT, POPULATION OR TRAFFIC THAT WARRANT RECONSIDERATION OF THE ORIGINAL PLAN PROPOSAL:

- 1. The existing Rural Residential land use classification allows consideration of additional residential density at this location up to 2 dwelling units per acre and the majority of the surrounding residential densities are within that range as well.
- 2. The slope analysis for the property also recommends a reduced density.
- 3. The floodplain for Connor Creek extends into this property as well.

OTHER CONSIDERATIONS:

- 1. This property lies within the Rural Area of the Growth Policy Plan. The requested LDR (Low Density Residential) land use is not one of the recommended land use designations inside the County's Rural Area.
- 2. The Rural Area limits the intensity of residential density and commercial and industrial development. Consideration of LDR results in zoning districts for residential densities greater than 2 du/ac, which is not recommended for the Rural Area.
- 3. Low density development designations (1-3 du/ac) are limited to PR zoning when sanitary sewer and public water is provided, collectors and arterials connect the development to the Planned Growth Area or Urban Growth Boundary, and when a traffic impact analysis demonstrates that the proposed development will not unreasonably impair traffic flow along the arterial roads through the adjacent Planned Growth Area (Growth Plan Section 1, Policies, Subsection 3.5). A traffic impact letter has been submitted providing an

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analysis of the road conditions in the area, thus meeting Section 1, subsection 3.5 of the Growth Plan.

4. The HP (Hillside Protection) and SP (Stream Protection) overlay designations will remain on the property.

State law regarding amendments of the general plan (which includes Sector Plan amendments) was changed with passage of Public Chapter 1150 by the Tennessee Legislature in 2008. The law now provides for two methods to amend the plan at TCA 13-3-304:

- The Planning Commission may initiate an amendment by adopting a resolution and certifying the amendment to the Legislative Body. Once approved by majority vote of the Legislative Body, the amendment is operative.
- The Legislative Body may also initiate an amendment and transmit the amendment to the Planning Commission. Once the Planning Commission has considered the proposed amendment and approved, not approved, or taken no action, the Legislative Body may approve the amendment by majority vote and the amendment is operative.

REZONING REQUIREMENTS FROM ZONING ORDINANCES (must meet all of these):

THE PROPOSED AMENDMENT SHALL BE NECESSARY BECAUSE OF SUBSTANTIALLY CHANGED OR CHANGING CONDITIONS IN THE AREA AND DISTRICTS AFFECTED, OR IN THE COUNTY GENERALLY:

- 1. Infrastructure improvements have occurred in this area since the 2016 Northwest County Sector Plan update, including the expansion of wastewater capacity and a new middle school.
- 2. Electrical line improvements are currently being planned for the larger Hardin Valley area by West Knox Utility District and TVA.

THE PROPOSED AMENDMENT SHALL BE CONSISTENT WITH THE INTENT AND PURPOSE OF THE APPLICABLE ZONING ORDINANCE:

- 1. The proposed amendment to PR zoning is intended to provide optional methods of land development which encourage more imaginative solutions to environmental design problems. Residential areas thus established would be characterized by a unified building and site development program, open space for recreation and provision for commercial, religious, educational, and cultural facilities which are integrated with the total project by unified architectural and open space treatment.
- 2. Each planned unit development shall be compatible with the surrounding or adjacent zones. Such compatibility shall be determined by the planning commission by review of the development plans.

THE PROPOSED AMENDMENT SHALL NOT ADVERSELY AFFECT ANY OTHER PART OF THE CITY, NOR SHALL ANY DIRECT OR INDIRECT ADVERSE EFFECTS RESULT FROM SUCH AMENDMENT.

- 1. The proposed amendment to PR (Planned Residential) up to 2 du/ac is consistent with the surrounding development and expected to create minimal impacts if built out at the maximum density of approximately 14 additional dwelling units.
- 2. The development plan review during the subsequent, required, use on review process will provide for an opportunity to address potential conflicts with adjacent and surrounding development.
- 3. The slope analysis yields a reduced density of 1.92 du/ac due to the topographical constraints of the site and staff is recommending up to 2 du/ac.
- 4. The floodplain of Connor Creek is also delineated on the site and shown in Exhibit A, a greenway is proposed for this area by the 2020 adopted Knox County Greenway Corridor Study, see Exhibit B.

THE PROPOSED AMENDMENT SHALL BE CONSISTENT WITH AND NOT IN CONFLICT WITH THE GENERAL PLAN OF KNOXVILLE AND KNOX COUNTY, INCLUDING ANY OF ITS ELEMENTS, MAJOR ROAD PLAN, LAND USE PLAN, COMMUNITY FACILITIES PLAN, AND OTHERS:

- 1. The PR (Planned Residential) zone up to 2 du/ac is consistent with the RR (Rural Residential) and HP (Hillside Protection) overlay designations of the sector plan. The recommended density is also consistent with the Rural Area of the Growth Policy Plan.
- 2. However, density can be increased to 3 du/ac if certain criteria are met. The Growth Plan Section 1, Policies, Subsection 3.5 states, "Low density development designations (1-3 du/ac) are limited to PR zoning when sanitary sewer and public water is provided, collectors and arterials connect the development to the Planned Growth Area or Urban Growth Boundary, and when a traffic impact analysis demonstrates that the proposed development will not unreasonably impair traffic flow along the arterial roads through the adjacent Planned Growth Area." A traffic impact letter has been submitted providing an analysis of the road conditions in the area, thus meeting Section 1, subsection 3.5 of the Growth Plan.
- 3. The Knox County Greenways Corridor Study was adopted by Knox County Commission in January 2020 and recommended a preferred alignment for the Beaver Creek West Greenway connecting Brighton Farms

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Boulevard to Melton Hill Park through this area, adjacent to Connor Creek (See Exhibit B). The applicant and Knox County Parks and Recreation staff have been connected regarding this preferred greenway alignment. The PR zone district will also require site plan review by the Knoxville-Knox County Planning Commission through the use on review process to address site concerns related to floodplain and steep slopes, as well as compatibility with surrounding and adjacent development.

ESTIMATED TRAFFIC IMPACT: 322 (average daily vehicle trips)

Average Daily Vehicle Trips are computed using national average trip rates reported in the latest edition of "Trip Generation," published by the Institute of Transportation Engineers. Average Daily Vehicle Trips represent the total number of trips that a particular land use can be expected to generate during a 24-hour day (Monday through Friday), with a "trip" counted each time a vehicle enters or exits a proposed development.

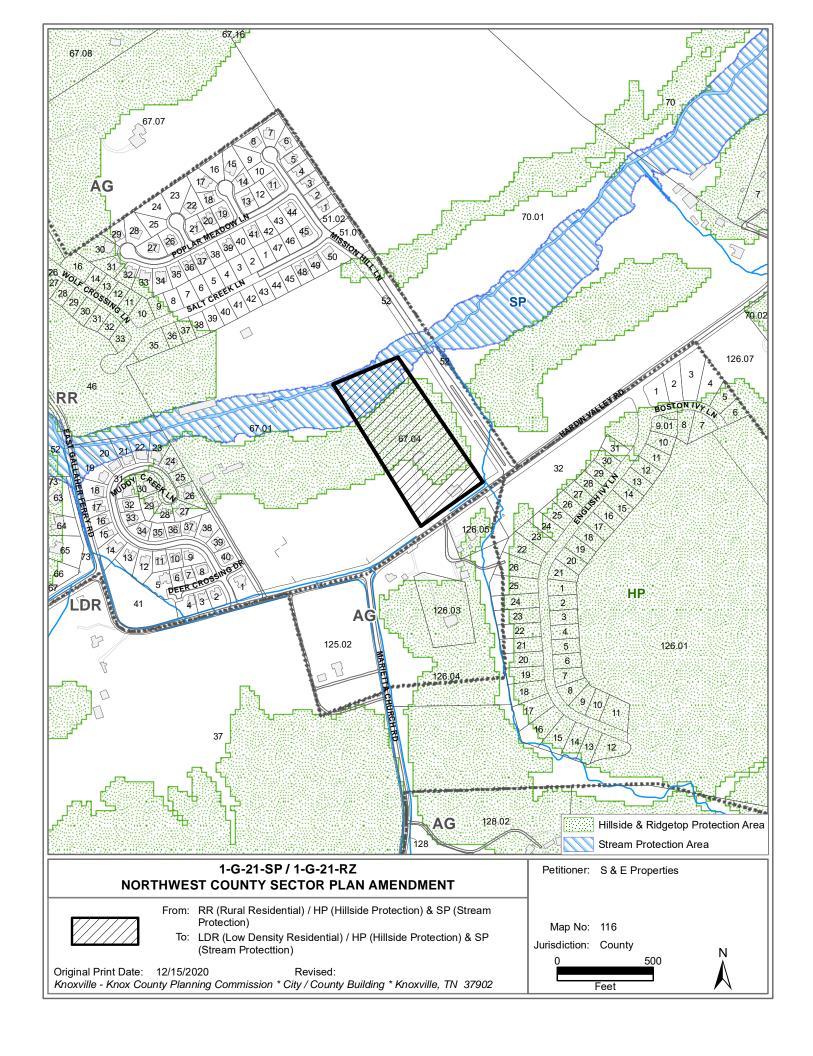
ESTIMATED STUDENT YIELD: 11 (public school children, grades K-12)

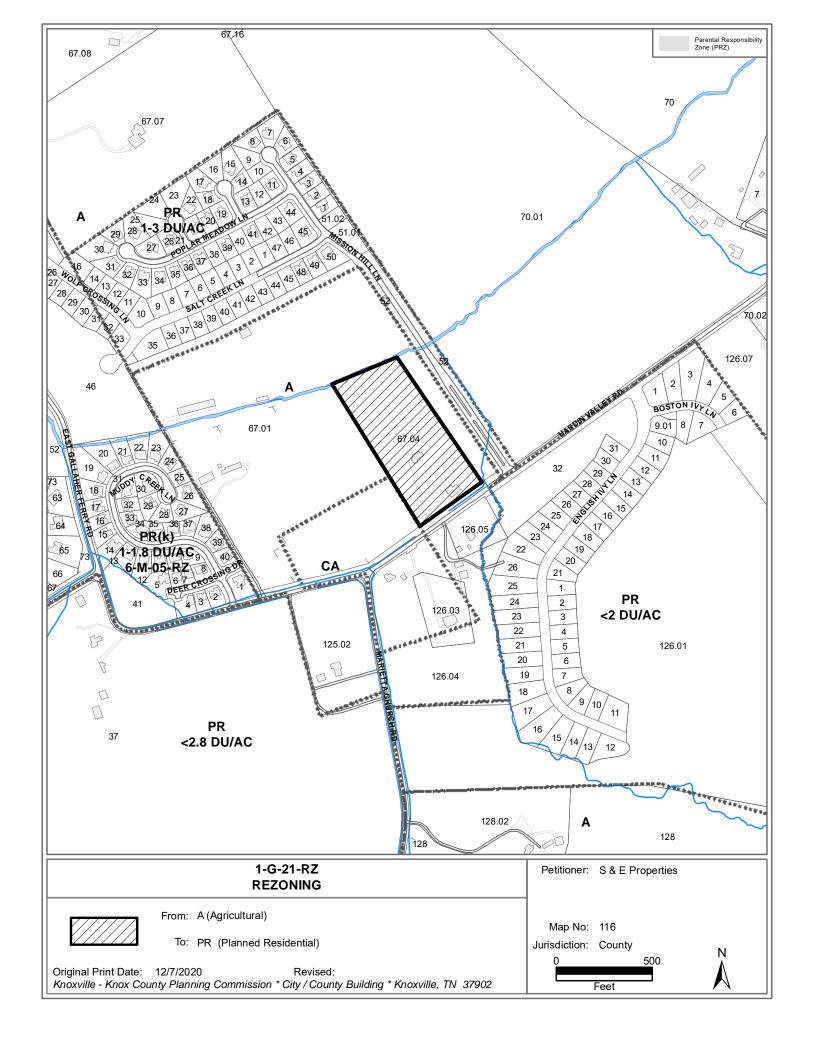
Schools affected by this proposal: Hardin Valley Elementary, Hardin Valley Middle, and Hardin Valley Academy.

- Potential new school population is estimated using locally-derived data on public school student yield generated by new housing.
- Students are assigned to schools based on current attendance zones as determined by Knox County Schools. Students may request transfers to different zones, and zone boundaries are subject to change.
- Estimates presume full build-out of the proposed development. Build-out is subject to market forces, and timing varies widely from proposal to proposal.
- Student yields from new development do not reflect a net addition of children in schools. Additions occur incrementally over the build-out period. New students may replace current population that ages through the system or moves from the attendance zone.

If approved, this item will be forwarded to Knox County Commission for action on 3/24/2020. If denied, Knoxville-Knox County Planning Commission's action is final, unless the action to deny is appealed to Knox County Commission. The date of the appeal hearing will depend on when the appeal application is filed. Appellants have 30 days to appeal a Planning Commission decision in the County.

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Request to Postpone • Table • Withdraw

Name of Applicant: S & E Properties

AS IT APPEARS ON THE CURRENT PLANNING COMMISSION AGENDA

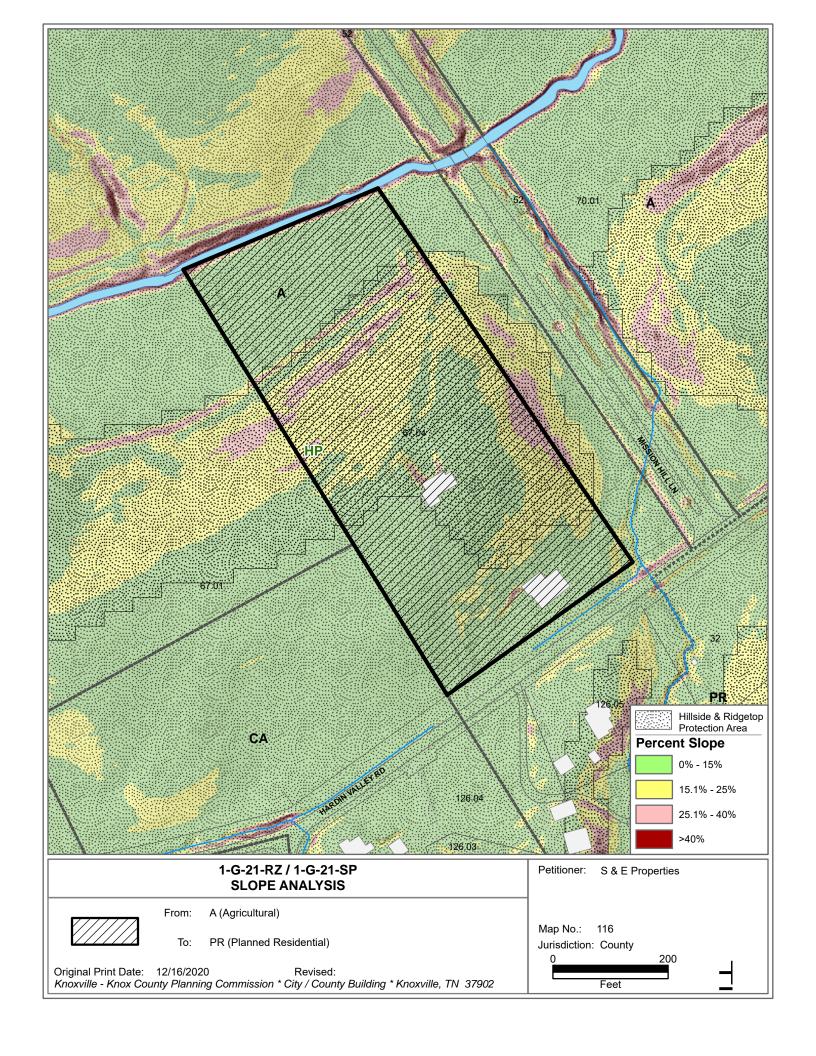
Original File Number(s): 1-G-21-RZ / 1-G-21-SP

Date Scheduled for Planning Review: 01/14/2021

Date Request Filed: 01/12/2021

Request Accepted by:

Consistent with the guidelines set forth in Planning's Administrative Rules and Procedures: POSTPONEMENTS Any first time (new) Planning application is eligible for one automatic postponement. This request is for 30 days
POSTPONEMENTS Any first time (new) Planning application is eligible for
Any first time (new) Planning application is eligible for
Any first time (new) Planning application is eligible for
only and does not require Planning approval if received
no later than 3:30 p.m. on the Friday prior to the Planning Commission meeting. All other postponement requests must be acted upon by Planning before they
can be officially postponed to a future public meeting.
TABLINGS Any item requested for tabling must be acted upon by the Planning Commission before it can be officially tabled.
WITHDRAWALS
Any item is eligible for automatic withdrawal. A request for withdrawal must be received no later than 3:30p.m. on the Friday prior to the Planning Commission meeting. Withdrawal requests that do not meet these guidelines must be acted upon by Planning Commission before they can be officially withdrawn.
Any new item withdrawn may be eligible for a fee refund according to the following: Application withdrawal with fee refund will be permitted only if a written request is received prior to public notice. This request must be approved by either the Executive Director, or the Planning Services Manager. Applications may be withdrawn after this time, but without fee refund.



1-G-21-RZ / 1-G-21-SP

			Acres					
Non-Hillsi	Non-Hillside Portions							
Hillside ar	nd Ridgetop Protect	ion Area						
Value	Percent Slope	Count	Acres					
1	0%-15%	2702	1.55					
2	15%-25%	3268	1.88					
3	25%-40%	665	0.38					
4	>40%	27	0.02					
			3.82					
Ridgetop Area 0								
		Site Total	7.19					

Staff - Slope / Density Analysis
Case: 1-G-21-RZ

CATEGORY	ACRES	RECOMMENDED DENSITY (Dwelling Units / Acre)	NUMBER OF UNITS
Non-Hillside	3.37	2.00	6.7
0-15% Slope	1.55	2.00	3.1
15-25% Slope	1.88	2.00	3.8
25-40% Slope	0.38	0.50	0.2
Greater than 40% Slope	0.02	0.20	0.0
Ridgetops	0	3.00	0.0
Subtotal: Sloped Land	3.83		7.1
Maximum Density Guideline (Hillside & Ridgetop Protection Plan)	7.20	1.92	13.8
Proposed Density (Applicant)	7.20	4.00	28.8

From Hillside & Ridgetop Protection Plan, page 33

LOW DENSITY AND RURAL RESIDENTIAL USES

Density and Land Disturbance Guidelines

As proposals for changes to the zoning map and development plans/concept plans are considered, the following factors are recommended to determine the overall allowable density for residential rezonings and the overall land disturbance allowable in new development or subdivisions for those portions of parcels that are within the Hillside and Ridgetop Protection Area. These factors should be codified as regulations in the future. The areas of the Growth Policy Plan referenced below are presented on page 18.

Table 3: Residential Density and Land Disturbance Guidelines for Recommendations on Changes to the Zoning Map and Development Plan/ Concept Plan Review within the Hillside and Ridgetop Protection Area that is within the Urban Growth and the Planned Growth Area

Percent of Slope	Recommended Maximum Density Factor*	Recommended Maximum Land Disturbance Factor**
0 - 15	Knox County: 5 dua City of Knoxville: 6 dua	100%
15 - 25	2 dua	50%
25 - 40	0.5 dua	20%
40 or more	0.2 dua	10%
Ridgetops***	***	***

dua: dwelling units per acre

- These factors should be considered guidelines to determine an overall recommended residential density for requests for changes to the zoning map to planned residential (RP-1 in the city and PR in the county) zone districts that are considered by the Metropolitan Planning Commission prior to being considered by the appropriate legislative body. The resulting zone district development right would be considered a budget for dwelling units to be applied over the entire proposed development.
- ** Until such time as regulations are codified by the appropriate legislate body, these factors should be considered guidelines to determine an overall recommended land disturbance area for development plans and concept plans that are considered for approval by the Metropolitan Planning Commission. The overall land disturbance area would be considered a budget for land disturbance to be applied over the entire proposed development.
- *** Ridgetops are generally the more level areas on the highest elevations of a ridge. Because the shapes of Knox County ridges are so varied (see pages 8 – 9), the ridgetop area should be determined on a case by case basis with each rezoning and related development proposal.

The Knoxville Knox County Hillside and Ridgetop Protection Plan - 33

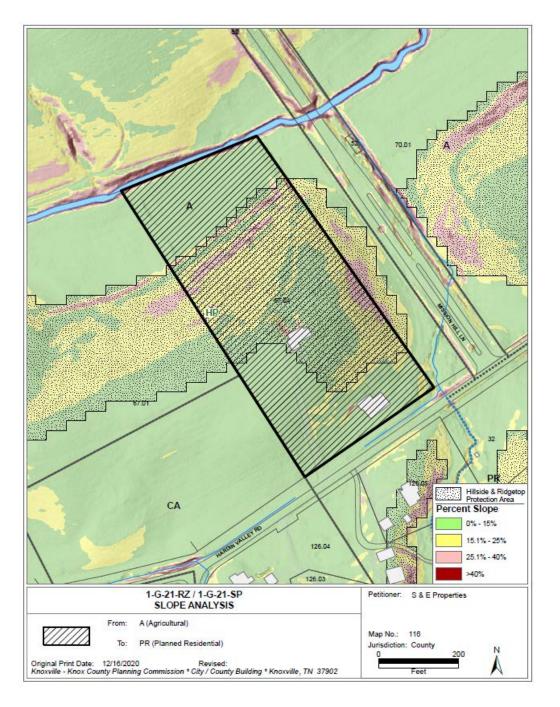


Exhibit A. 1-G-21-RZ / 1-G-21-SP Contextual Images

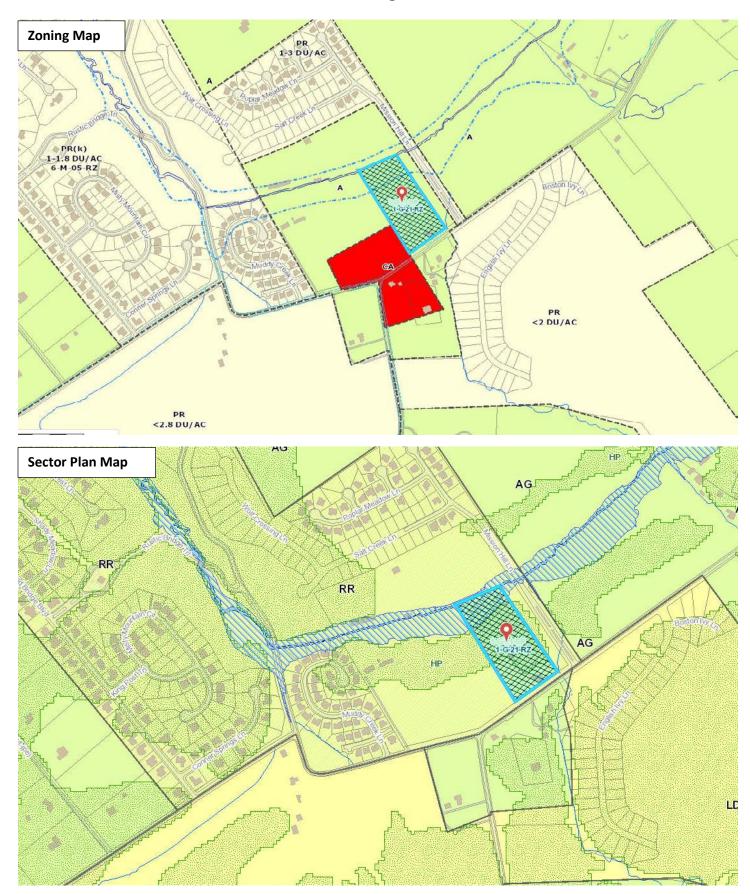
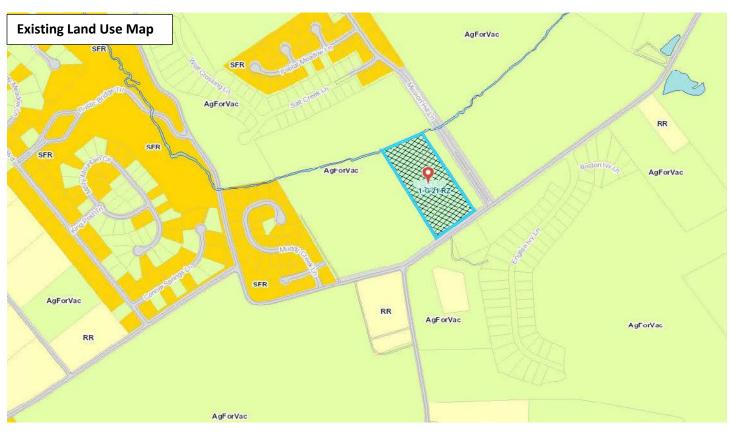
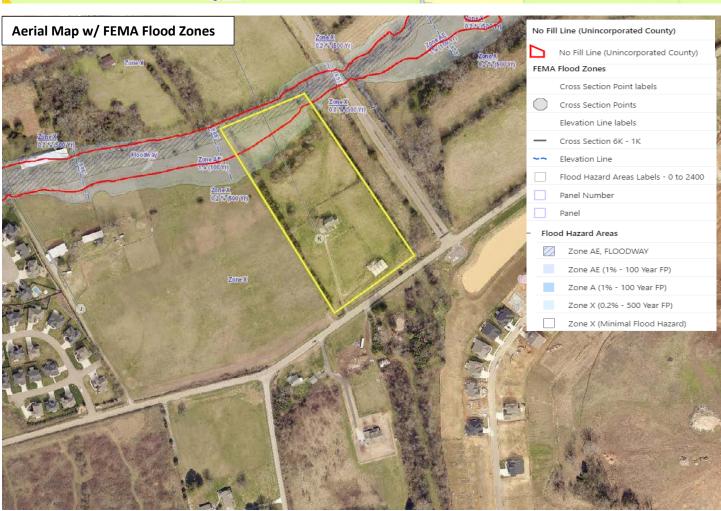


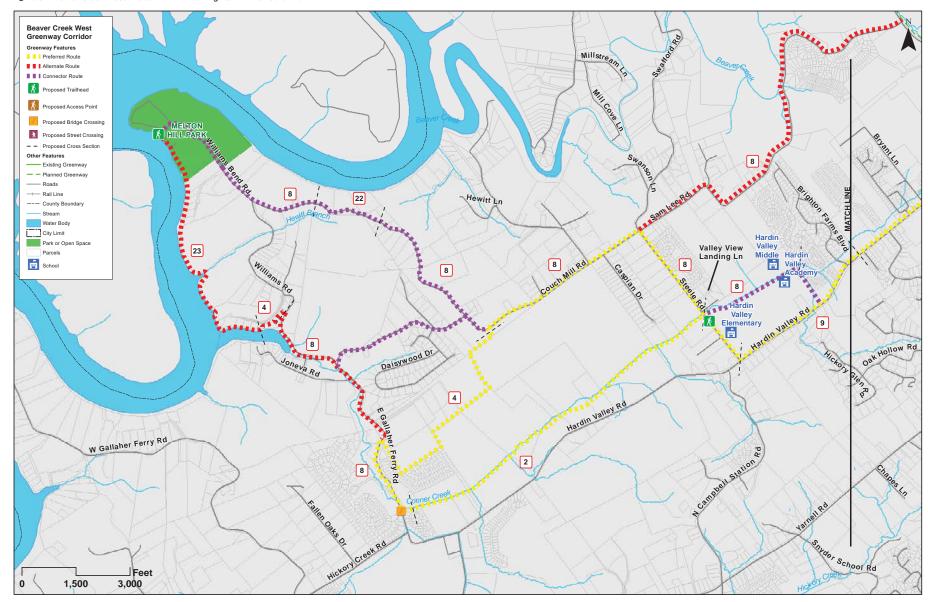
Exhibit A. 1-G-21-RZ / 1-G-21-SP Contextual Images





1-G-21-RZ / 1-G-21-SP Exhibit B. Knox County Greenway Corridor Study (Adopted by Knox County Commission - January 21, 2020)

Figure 3-1. Beaver Creek West: Melton Hill Park to Brighton Farms Boulevard





February 3, 2021

Ms. Tarren Barrett Knoxville-Knox County Planning 400 Main St, Suite 403 Knoxville, TN 37902

Re: Traffic Letter for 12041 Hardin Valley Road Subdivision

Dear Ms. Barrett:

12041 Hardin Valley Road Subdivision is located between the intersection of Mission Hill Lane and Marietta Church Road on Hardin Valley Road in Knox County, Tennessee. The development will include approximately 24 single family lots and have a single driveway connection to Hardin Valley Road. Construction is proposed to take place this year and this analysis assumes full build out for the development will occur in 2024.

The purpose of this traffic analysis is to evaluate the driveway access to Hardin Valley Road and determine the need for exclusive turn lanes.

Hardin Valley Road at the intersection of Mission Hill Lane is a two-lane road. The Knoxville-Knox County Planning Commission classifies Hardin Valley Road as a Minor Arterial with a 70 feet right-of-way per the Major Road Plan. The posted speed limit on Hardin Valley Road is 40 mph. Hardin Valley Road in this area is relatively flat with a less than 1% grade between Mission Hill Lane and Marietta Church Road and there are no existing sidewalks or designated bike lanes in the vicinity of the proposed development. An aerial photo of the property is included in the attachments.

Due to the altered traffic patterns from COVID-19 FMA did not collect any new turning movement counts. Ajax Engineering conducted a peak hour turning movement count at the intersection of Hardin Valley Road at Marietta Church Road on Tuesday November 1, 2016 from 7:00 a.m. to 9:00 a.m. and from 2:00 p.m. to 6:00 p.m. The AM peak hour at this intersection occurred between 7:15 a.m. and 8:15 a.m. and the PM peak hour occurred between 5:00 p.m. and 6:00 p.m.

In order to calculate existing traffic conditions FMA estimated the growth rate from the 2016 turning movement count to the projected existing 2021 traffic conditions. The growth rate was determined by analyzing nearby traffic counts provided by the Knoxville Regional Transportation Planning Organization or TPO in the vicinity of the proposed development. FMA assumed an average growth rate of 10% for the intersection of Hardin Valley Road at Marietta Church Road. Figure 1: 2021 Existing Peak Hour Traffic, the ADT trend line growth charts and the count data collected are included in the attachments.

The Knoxville Regional TPO maintains count stations in the vicinity of the proposed development. TPO count station ID: 093M353 is located on Hardin Valley Road east of Marietta Church Road and TPO count station ID: 093M275 is located on Marietta Church Road south of Hardin Valley Road. The annual growth rate for station ID: 093M353 between 2006 and 2019 is approximately 10.11% and the 2019 ADT was 6,920 vehicles per day. The annual growth rate for station ID: 093M275 between 2005 and 2019 is approximately 7.30% and the 2019 ADT was 2,050 vehicles per day. For the purpose of this study, an annual growth rate of 10% was assumed for traffic at the intersection of Hardin Valley Road at Marietta Church Road until full occupancy is reached in 2024. Figure 2: 2024 Background Peak Hour Traffic is included in the attachments.

The trip generation was calculated using the fitted curve equations where provided from *Trip Generation, 10th Edition,* published by the Institute of Transportation Engineers. Single-Family Detached Housing or Land Use 210 was used to calculate the daily trips, AM and PM peak hour trips. The land use worksheets are included in the attachments. A trip generation summary is shown in Table 1 – Trip Generation Summary.

Table 1 - Trip Generation Summary 12041 Hardin Valley Road Subdivision

Land Use	Density	Daily Trips	AM Peak Hour Enter Exit	PM Peak Hour Enter Exit
Single-Family Detached Housing (LUC 210)	24 Lots	280	6 17	16 10

The total number of new trips generated by the 12041 Hardin Valley Road Subdivision will be 280 new daily trips, 23 trips during the AM peak hour and 26 trips during the PM peak hour.

Hardin Valley Road at the intersection with the proposed driveway has an existing trip distribution of 70% eastbound and 30% westbound during the AM peak hour and 40% eastbound and 60% westbound during the PM peak hour. FMA assumed that 85% of traffic would enter/exit from the direction of Pellissippi Parkway (SR 62) during both the AM and PM peak hours. Figure 3: Peak Hour Site Traffic and Figure 4: Full Buildout Peak Hour Traffic are included in the attachments.

Unsignalized intersection capacity analyses were performed using the Highway Capacity Software (HCS7) for the AM and PM peak hours to evaluate the traffic conditions at the intersection of Hardin Valley Road at the proposed driveway connection. After the completion of the subdivision the full buildout traffic conditions for the eastbound approach (Hardin Valley Road) operate at a LOS A during both the AM and PM peak hours and the southbound approach (driveway) operates at a LOS C during both the AM and PM peak hours. The HCS7 worksheets are included in the attachments.

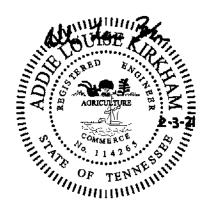
The Knox County Department of Engineering and Public Works handbook, "Access Control and Driveway Design Policy," was used to determine if a right turn lane or left turn is warranted at the intersection of Hardin Valley Road at the proposed driveway connection. Due to the relatively low traffic entering and exiting the subdivision no turn lane warrants are met for either the AM or PM peak hour conditions. The turn lane worksheets and analysis are included in the attachments.

Hardin Valley Road is classified as a Minor Arterial per the Major Road Plan. The minimum intersection spacing required on an arterial is 400 feet per the "Knoxville-Knox County Subdivision Regulations" as amended through February 13, 2020. In order to meet the minimum required intersection spacing the proposed driveway connection will need to be located greater than 400 feet east of Marietta Church Road and greater than 400 feet west of Mission Hill Lane. In the event that the proposed driveway location does not meet the minimum requirement a variance can be requested and will need to be reviewed by the Knoxville-Knox County Planning Commission.

The minimum required sight distance for a road with a posted speed limit of 40 mph is 400 feet in each direction in accordance with the "Knoxville-Knox County Subdivision Regulations" amended through February 13, 2020. FMA recommends that the sight distance at the proposed intersection of Hardin Valley Road at the driveway connection be measured at 15 feet from the edge of pavement looking both eastbound and westbound in order to ensure that the proposed driveway location meets the minimum required sight distance per the subdivision regulations.

I hope that this is helpful. Please contact me if you have any questions.

Thank you,



Addie Kirkham, P.E.

Enclosure: Attachments

Attachments



12041 Hardin Valley Road

Printed: 1/25/2021 at 11:58:14 AM

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ft

Knoxville - Knox County - KUB Geographic Information System

KGIS makes no representation or warranty as to the accuracy of his map and its information nor to its fitness for use. Any user of this map product accepts the same AS IS ,WITH ALL FAULTS, and assumes all responsibility for the use thereof, and futher covenants and agrees to hold KGIS harmless from any and all damage, loss, or liability arising from any use of this map product.

TRAFFIC COUNT DATA

Major Street: Hardin Valley Road (EB-WB)
Minor Street: Manietta Church Road (NB)
Traffic Control: Stop Control on Minor Street

11/1/2016 (Tuesday)
Wann/Sunny
Conducted by: Ajax Engineering

Primary Movement Vehicles	
ramary naovement venice;	

TIME	WEST	BOUND	NORTH	BOUND	EASTB	DUND	VEHICLE	FEAK
BEGIN	LT	THRU	LT	RT	THRU	RT	TOTAL	HOUR
7:00 AM	+	13	2	3175	- 36	1	93	
7:15 AM	3	26	3	15	85	2	134	7:15 AM - 8:15 AM
7:30 AM	9	31	4	17	78	5	144	
7:45 AM	7	26	3	23	54	3	116	5
8:00 AM	5	36	0	25	66	2	134	(
\$:15 AM	6	35	2	19	50	1	113	
\$:30 AM	4	44	2	18	45	2	115	
8:45 AM	- 3	20	1	10	52	1	87	
TOTAL	41	231	17	144	486	47	936	
			2000000	2000	***************************************			
2:00 PM	11	41	5	5	32	1	95	
2:15 PM	4	40	2	5	25	2	78	
2:30 PM	5	27	5	5	38	2	52	ž.
2:45 PM	13	45	- 3	2	45	0	108	
3:00 PM	13	40	4	10	28	- 3	98	
3:15 PM	6	39	2	6	40	0	93	,
3:30 PM	16	38	7. 0	S	25	2	96	5
3:45 PM	24	55	4	4	31	2	120	(
4:00 PM	14	42	3	3	28	6	96	
4:15 PM	9	54	2	6	31	2	104	2
4:30 PM	9	48	3	6	37	77.0	110)
4:45 PM	7	61	6	6	35	2	117	
5:00 PM	13	60	2	19	37	3	134	5:00 PM - 6:00 PM
5:15 PM	16	66	5	17	46	0	150	
5:30 PM	14	55	. 7	6	44	5	131	
5:45 PM	12	72	5	9	43	2	143	
TOTAL	186	783	65	117	565	39	1755	

AM Peak Hour 7:15 AM - 8:15 AM

TIME	TIME WESTBOUN		NORTH	DOUND	EASTBOUND		
BEGIN	LT	THRU	LT	RT	THRU	RT	
7:15 AM	3	26	3	15	85	2	
7:30 AM	9	31	4	17	78	5	
7:45 AM	7	26	3	23	54	- 3	
8:00 AM	5	36	0	25	66	2	
TOTAL	24	119	10	80	283	12	
PHF	0.67	0.83	0.63	0.80	0.83	0.60	

PM Peak Hour 5:00 PM - 6:00 PM

TIME	WEST	WESTBOUND		BOUND	EASTBOUND	
BEGIN	LT	THRU	LT	RT	THRU	RT
5:00 PM	13	60	2	19	37	3
5:15 PM	16	- 66	5 3	17	46	0
5:30 PM	14	55	7.	6	44	5
5:45 PM	12	72	- 5	9	43	2
TOTAL	55	253	19	51	170	10
PHF	0.36	0.88	0.68	0.67	0.92	0.50

Project: 12041 Hardin Valley Road Subdivision

Intersection: Hardin Valley Road at Marietta Church Road

Date Conducted: 11/01/2016

AM Peak Hour	7:15 AM - 8:15 AM	528
PM Peak Hour	5:00 PM - 6:00 PM	558

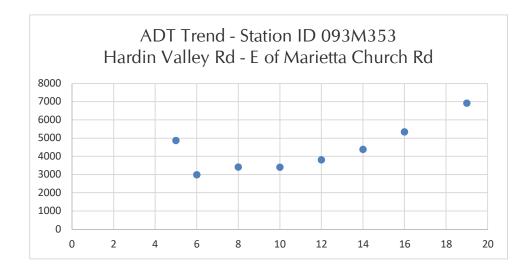
	Hardin Valley Road Hardin Valley Road		Hardin Valley Road			Mariet	ta Churc	ch Road		
	Ea	astbound	k	W	/estbou	nd	Ν	orthbou	nd	
Start	Thru	Right	Total	Left	Thru	Total	Left	Right	Total	Int. Total
Peak Hour Analysis from 7	:00 AM to	9:00 AN	Λ							
AM Peak Hour begins at 7:	15 AM									
7:15 AM	85	2	87	3	26	29	3	15	18	134
7:30 AM	78	5	83	9	31	40	4	17	21	144
7:45 AM	54	3	5 <i>7</i>	7	26	33	3	23	26	116
8:00 AM	66	2	68	5	36	41	0	25	25	134
Total Volume	283	12	295	24	119	143	10	80	90	528
Existing (10% over 5 yrs)	456	19		39	192		16	129		850
Future (10% over 8 yrs)	607	26		51	255		21	1 <i>7</i> 1		1132
PHF	0.83	0.60		0.67	0.83		0.63	0.80		0.92
Peak Hour Analysis from 4	:00 PM to	6:00 PM	1							
PM Peak Hour begins at 5:	00 PM		_							
5:00 PM	37	3	40	13	60	73	2	19	21	134
5:15 PM	46	0	46	16	66	82	5	17	22	150
5:30 PM	44	5	49	14	55	69	7	6	13	131
5:45 PM	43	2	45	12	72	84	5	9	14	143
Total Volume	170	10	180	55	253	308	19	51	70	558
Existing (10% over 5 yrs)	274	16		89	407		31	82		899
Future (10% over 8 yrs)	364	21		118	542		41	109		1196
PHF	0.92	0.50		0.86	0.88		0.68	0.67		0.93

	Adjusted
	Average Daily
Year	Traffic
2001	
2002	
2003	
2004	
2005	4871

2002	
2003	
2004	
2005	4871
2006	2990
2007	
2008	3410
2009	
2010	3400
2011	
2012	3810
2013	
2014	4380
2015	
2016	5340
2017	
2018	

6920

2019

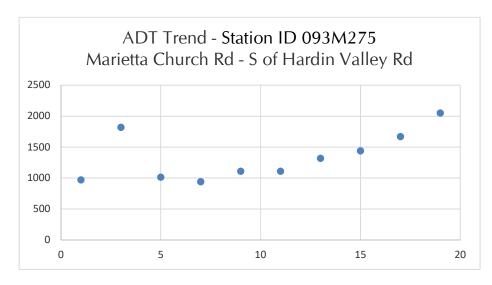


Most Recent Trend Line Growth

Year ADT 2006 2990 2019 6920

Annual Percent Growth 10.11%

Adjusted Average Daily Year Traffic



Most Recent Trend Line Growth

Year ADT 2005 1014 2019 2050

Annual Percent Growth	7.30 %
-----------------------	---------------

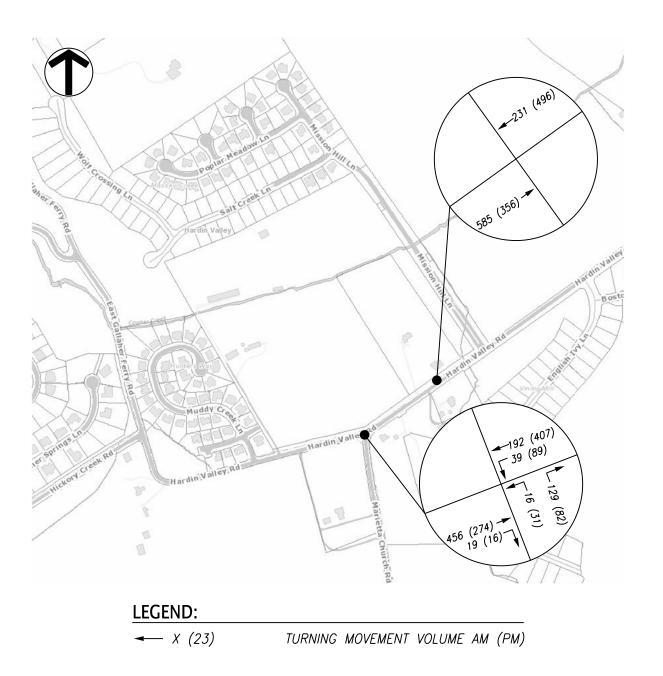


Figure 1: 2021 Existing Peak Hour Traffic

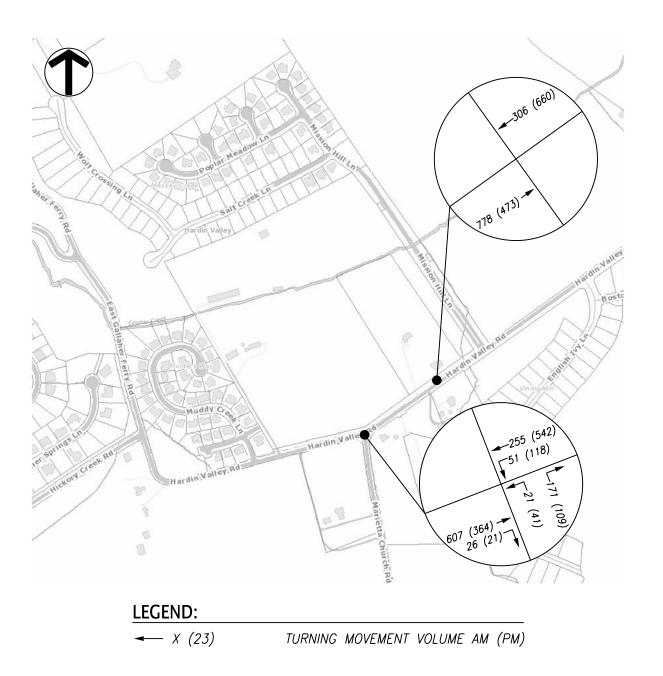


Figure 2: 2024 Background Peak Hour Traffic

Trip Generation

Project: 12041 Hardin Valley Subdivision

Date Conducted: 1/25/2021

Single-Family Detached Housing (LUC 210)

24 Single Family Lots

Average Daily Traffic

$$Ln(T) = 0.92Ln(X) + 2.71$$

 $Ln(T) = 0.92Ln(24) + 2.71$

T = 280

Peak Hour of Adjacent Street Traffic One Hour Between 7 and 9 a.m.

$$T = 0.71(X) + 4.80$$

$$T = 0.71(24) + 4.80$$

T = 22

Peak Hour of Adjacent Street Traffic One Hour Between 4 and 6 p.m.

$$Ln(T) = 0.96Ln(X) + 0.20$$

$$Ln(T) = 0.96Ln(24) + 0.20$$

$$T = 26$$

		Percent Number					
Time Period	Total Trips	Enter	Exit	Enter	Exit		
Weekday (24 hours)	280	50%	50%	140	140		
AM Peak Hour	22	25%	75%	6	17		
PM Peak Hour	26	63%	37%	16	10		

Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units On a: Weekday

Setting/Location: General Urban/Suburban

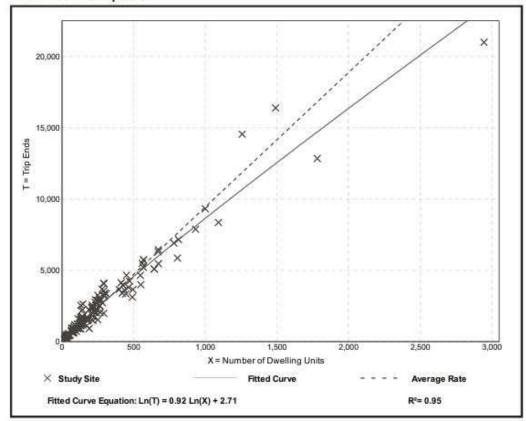
Number of Studies: 159 Avg. Num. of Dwelling Units: 264

Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.44	4.81 - 19.39	2.10

Data Plot and Equation





Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 7 and 9 a.m.

Setting/Location: General Urban/Suburban

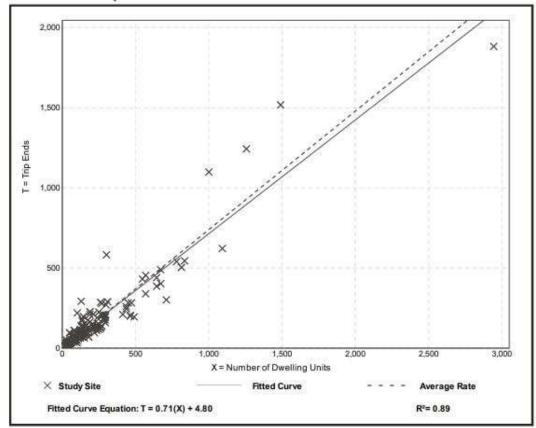
Number of Studies: 173 Avg. Num. of Dwelling Units: 219

Directional Distribution: 25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

Data Plot and Equation





Single-Family Detached Housing (210)

Vehicle Trip Ends vs: Dwelling Units

On a: Weekday,

Peak Hour of Adjacent Street Traffic,

One Hour Between 4 and 6 p.m.

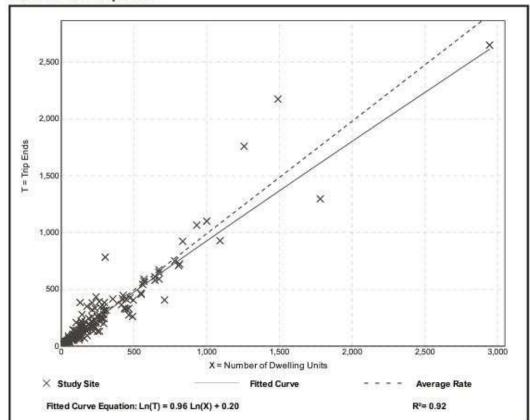
Setting/Location: General Urban/Suburban

Number of Studies: 190 Avg. Num. of Dwelling Units:

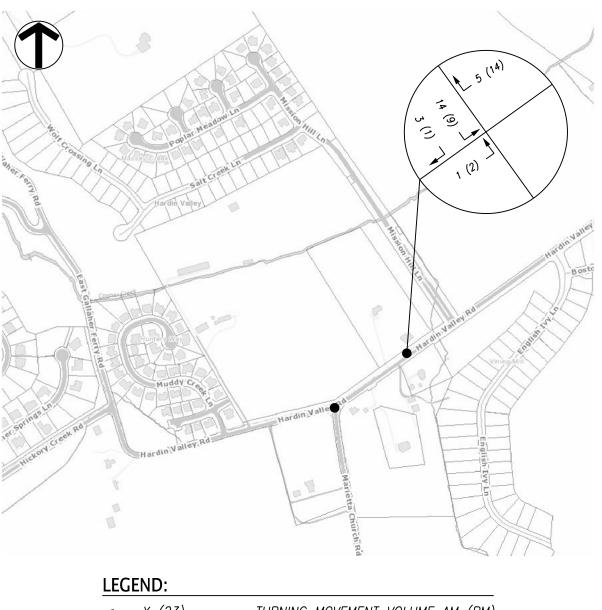
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Data Plot and Equation

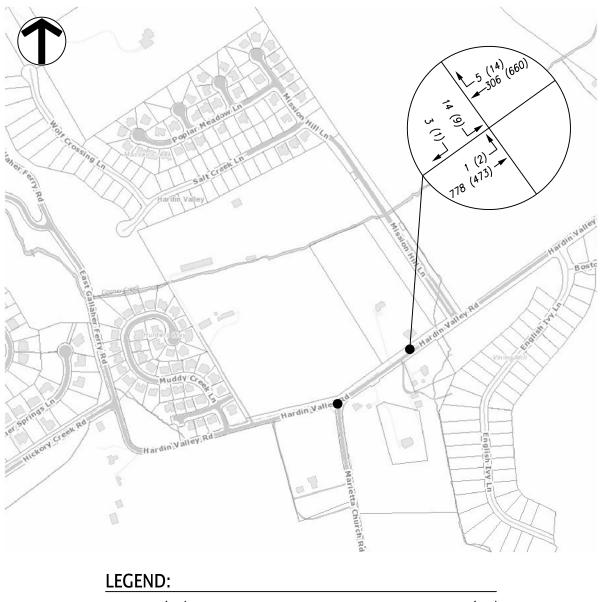






– *X (23)* TURNING MOVEMENT VOLUME AM (PM)

Figure 3: Peak Hour Site Traffic

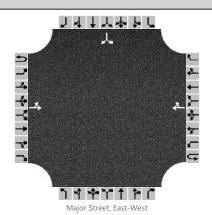


- X (23) TURNING MOVEMENT VOLUME AM (PM)

Figure 4: Full Buildout Peak Hour Traffic

HCS7 Two-Way Stop-Control Report										
General Information		Site Information								
Analyst	Addie Kirkham	Intersection	Hardin Valley at Drive							
Agency/Co.	FMA	Jurisdiction	Knox County							
Date Performed	2/3/2021	East/West Street	Hardin Valley Road							
Analysis Year	2024	North/South Street	Driveway							
Time Analyzed	Full Buildout AM Peak	Peak Hour Factor	0.92							
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25							
Project Description	330.018 12041 HV Subdivision									

Lanes



Vehicle V	olumes	and Ad	justments
-----------	--------	--------	-----------

Approach		Eastb	ound		Westbound			Northbound				Southbound				
Movement	U	L	T	R	U	L	Т	R	U	L	Т	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume, V (veh/h)		1	778				306	5						14		3
Percent Heavy Vehicles (%)		2												2		2
Proportion Time Blocked																
Percent Grade (%)													0			
Right Turn Channelized		N	lo			No				Ν	lo		No			
Median Type/Storage				Undi	vided											

Critical and Follow-up Headways

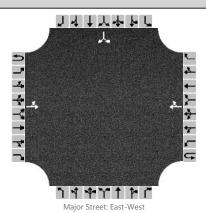
Base Critical Headway (sec)	4.1						/.1	6.2
Critical Headway (sec)	4.12						6.42	6.22
Base Follow-Up Headway (sec)	2.2						3.5	3.3
Follow-Up Headway (sec)	2.22						3.52	3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)	1								18	
Capacity, c (veh/h)	1220								237	
v/c Ratio	0.00								0.08	
95% Queue Length, Q ₉₅ (veh)	0.0								0.2	
Control Delay (s/veh)	8.0								21.5	
Level of Service, LOS	А								С	
Approach Delay (s/veh)	0	.0						21	5	
Approach LOS								(

HCS7 Two-Way Stop-Control Report										
General Information		Site Information								
Analyst	Addie Kirkham	Intersection	Hardin Valley at Drive							
Agency/Co.	FMA	Jurisdiction	Knox County							
Date Performed	2/3/2021	East/West Street	Hardin Valley Road							
Analysis Year	2024	North/South Street	Driveway							
Time Analyzed	Full Buildout PM Peak	Peak Hour Factor	0.93							
Intersection Orientation	East-West	Analysis Time Period (hrs)	0.25							
Project Description	330.018 12041 HV Subdivision									

Lanes



Vehicle Volumes and Adjustments

Approach		Eastbound Westbound			Northbound			Southbound								
Movement	U	L	Т	R	U	L	Т	R	U	L	Т	R	U	L	T	R
Priority	1U	1	2	3	4U	4	5	6		7	8	9		10	11	12
Number of Lanes	0	0	1	0	0	0	1	0		0	0	0		0	1	0
Configuration		LT						TR							LR	
Volume, V (veh/h)		2	473				660	14						9		1
Percent Heavy Vehicles (%)		2												2		2
Proportion Time Blocked																
Percent Grade (%)														(0	
Right Turn Channelized		N	lo		No			No				No				
Median Type/Storage				Undi	vided											

Critical and Follow-up Headways

Base Critical Headway (sec)	4.1						/.1	6.2
Critical Headway (sec)	4.12						6.42	6.22
Base Follow-Up Headway (sec)	2.2						3.5	3.3
Follow-Up Headway (sec)	2.22						3.52	3.32

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)	2											11	
Capacity, c (veh/h)	877											206	
v/c Ratio	0.00											0.05	
95% Queue Length, Q ₉₅ (veh)	0.0											0.2	
Control Delay (s/veh)	9.1											23.5	
Level of Service, LOS	А											С	
Approach Delay (s/veh)	0	.1							23.5				
Approach LOS											(2	

Project: 12041 Hardin Valley Subdivision

Hardin Valley Road at Driveway Connection

Hardin Valley Road VOLUMES

at Driveway Connection

LEFT TURN	Opposing	Thru	LT	LT MAX	Warrant Met
AM	311	778	1	25	NO
PM	674	473	2	20	NO

Hardin Valley Road VOLUMES

at Driveway Connection

 RIGHT TURN
 Thru
 RT
 RT MAX
 Warrant Met

 AM
 306
 5
 249
 NO

 PM
 660
 14
 25
 NO

TABLE 5A

LEFT-TURN LANE VOLUME THRESHOLDS FOR TWO-LANE ROADWAYS WITH A PREVAILING SPEED OF 36 TO 45 MPH

(If the left-turn volume exceeds the table value a left -turn lane is needed)

OPPOSING	THROU	GH VOLUME	PLUS RIGH	I-IURIV	OFOME	
VOLUME	100 - 149	150 - 199	200 - 249	250 - 299	300 - 349	350 - 399
100 - 149	250	180	140	110	80	70
150 - 199	200	140	105	90	70	60
200 - 249	160	115	85	75	65	55
250 - 299	130	100	75	65	60	50
300 - 349	110	90	70	60	55	45
350 - 399		80	65	55	50	40
400 - 449	90	70	60	50	45	35
450 - 499	80	65	55	45	40	30
500 - 549	70	60	45	35	35	25
550 - 599	65	55	40	35	30	25
600 - 649	60	45	35	30	25	25
650 - 699	55	35	35	30	25	20
700 - 749	50	35	30	25	20	20
750 or More	45	35	25	25	20	20

OPPOSING	THROU	GH VOLUME I	LUS RIGH	T-TURN \	OLUMB	
VOLUME	350 - 399	400 - 449	450 - 499	500 - 549	550 - 599	=/ >600
100 - 149	70	60	50	45	40	35
150 - 199	60	55	45	40	35	30
200 - 249	55	50	40	35	30	30
250 - 299	50	45	35	30	30	30
300 - 349 350 - 399	45 40 ·	40 35	35 30	30 A	M Peak 1	LT 25
400 - 449	35	30	30	25	20	20
450 - 499	30	25	25	20	20	20
500 - 549	25	25	20	20	20	15
550 - 599	25	20	20	20	20	15
600 - 649	25	20	20	20	20	15
650 - 699	20	PM Peak 2	LT 20	20	20	15
700 - 749	20	20	20	15	15	15
750 or More	20	20		15	15	15

^{*} Or through volume only if a right-turn lane exists

TABLE 5B

RIGHT-TURN LANE VOLUME THRESHOLDS FOR TWO-LANE ROADWAYS WITH A PREVAILING SPEED OF 36 TO 45 MPH

RIGHT-TURN	THROUGH VOLUME PLUS LEFT-TURN VOLUME *											
VOLUME	< 100	100 - 199	200 - 249	250 - 299	300 - 349	350 - 399						
Fewer Than 25 25 - 49 50 - 99				AM Peak 5	RT 🔵							
100 - 149 150 - 199						-						
200 - 249 250 - 299			ļ		Yes	Yes Yes						
300 - 349 350 - 399			Yes	Yes Yes	Yes Yes	Yes Yes						
400 - 449 450 - 499		Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes						
500 - 549 550 - 599	Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes						
600 or More	Yes	Yes	Yes	Yes	Yes	Yes						

RIGHT-TURN	THR	THROUGH VOLUME PLUS LEFT-TURN VOLUME *										
VOLUME	350 - 399	400 - 449	450 - 499	500 - 549	550 - 6 0 0	+/>600						
Fewer Than 25				PN	A Peak 14 I							
25 - 49 50 - 99				Yes	Yes Yes	Yes Yes						
100 - 149 150 - 199		Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes						
200 - 249 250 - 299	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes						
300 - 349 350 - 399	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes						
400 - 449 450 - 499	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes						
500 - 549 550 - 599	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes	Yes Yes						
600 or More	Yes	Yes	Yes	Yes	Yes	Yes						

^{*} Or through volume only if a left-turn lane exists.



Date: February 3, 2021

Project Name: 12041 Hardin Valley Road Subdivision

To: Knox County Engineering & Public Works

Subject: Traffic Letter Review for 12041 Hardin Valley Road Subdivision

Dear Knox County Engineering staff,

The following comment response document is submitted to address comments dated January 29, 2021:

1. **Reviewer Comment:** Page 2 of report directly beneath Table 1, please change the number of AM site trips from 22 to 23 to match Table 1.

Response: Revised AM trips to 23 to match Table 1.

2. Reviewer Comment: The study assumes 5% annual growth, which is the same value used in the 2017 Vining Mill study. Based on the ADT data at the time of the Vining Mill study, 5% was an appropriate assumption. However, given the more recent traffic growth data cited in this study (over 10% per year on Hardin Valley Road and over 7% per year on Marietta Church Road) we would recommend that 10% annual traffic growth be assumed.

<u>Response:</u> Revised the growth rate to 10% and updated the figures and HCS7 reports to reflect the change.

Sincerely,



Addie Kirkham, P.E.



Development Request
DEVELOPMENT SUBDIVISION ZONING

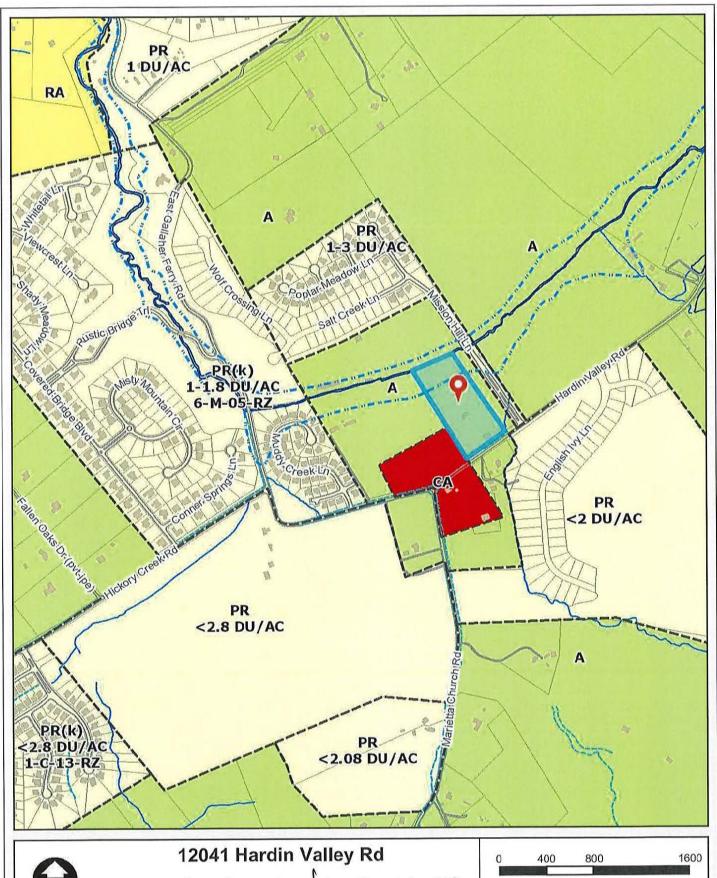
☐ Concept Plan

✓ Plan Amendment

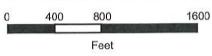
☐ Development Plan

Planning KNOXVILLE I KNOX COUNTY	☐ Planned Development☐ Use on Review / Special Use☐ Hillside Protection COA	□ Final Plat	Rezoning
S+ E Properties		607.03	
Applicant Name		Aff	liation
ll/30/2020 Date Filed	V/14/Z1 Meeting Date (if applicable)		File Number(s)
Date Filed	Meeting Date (if applicable)	1-6	-11-KZ
		1-G	-21-RZ
CORRESPONDENCE A	Il correspondence related to this application	should be directed to th	e approved contact listed below.
☐ Applicant ☐ Owner ☐ O	ption Holder	ngineer 🗌 Architect/L	andscape Architect
St & Properties			
Name	Comp	Moseleg	
405 Monttovon	R Ky		37919
Address	City	Sta	
865-454-3727	e ou moseles a tale of	A	
Phone	Eric Moselega i cloud	. com	
CURRENT PROPERTY INFO			
Manrod (Wr Owner Name (if different)	n E & Courtney a.) Owner Address	12041 Ha	rdin Valley Rd.
The second of th		9 5.1.	Samuel 2170
12041 Hardn U	ally 1d.	16-06704	
Property Address		Parcel ID	of more than 5 acres
STAFF USE ONLY		11 22 . 17	P 800
HIS of Hardin Valley General Location	Id West of Missien	HILL I	1.982
Cambrellantina	1 200 1 10001 04 1 11001211		<u></u>
	122 1 20	10 2 0	
	122 1 20	10 2 0	
Lounty Commession Jurisdiction (specify district above)	City Derver RR (Lural Pasident) Sector Plan Land Use Classification	A (Agracul Zoning District	trore)

DEVELOPMENT REQUEST		
☐ Development Plan ☐ Use on Review / Special Use ☐ Hillside Prot☐ Residential ☐ Non-Residential Home Occupation (specify)	rection COA	delated City Permit Number(s)
Other (specify)		
SUBDIVISION REQUEST		
	F	Related Rezoning File Number
Proposed Subdivision Name		
Unit / Phase Number Combine Parcels Divide Parcel Total N	Number of Lots Created	
Other (specify)		
☐ Attachments / Additional Requirements		
ZONING REQUEST		
Zoning Change PR Proposed Zoning		Pending Plat File Number
Plan Amendment Change LDP / HP, SP		
Proposed Plan Designation(s)		
Proposed Density (units/acre) None nared Previous Rezoning Requests		
Other (specify)		
Ottler (specify)		
STAFF USE ONLY		
PLAT TYPE	0325 d	Total
☐ Staff Review ☐ Planning Commission	22 949	.00 \$1,749.00
ATTACHMENTS	Fee 2 0617	- 7,770
☐ Property Owners / Option Holders ☐ Variance Request	0617	-0
ADDITIONAL REQUIREMENTS	SP 1800).00
☐ Design Plan Certification (Final Plat)☐ Use on Review / Special Use (Concept Plan)	Fee 3	
☐ Traffic Impact Study		
☐ COA Checklist (Hillside Protection)	ř.	E 25
AUTHORIZATION By signing below, I certify I am the property ov	vner, applicant or the owners	authorized representative.
5/22 Enz Mosaly		11/201-
Applicant Signature Please Print		11/30/2020
865.454. 3727 encamos de en	aid and com	
Phone Number 1 Email Ema	O COUNTY	
9 Ch Albanzar ELIZABETH AL		11/30/2020
Staff Signature Please Print		фасе



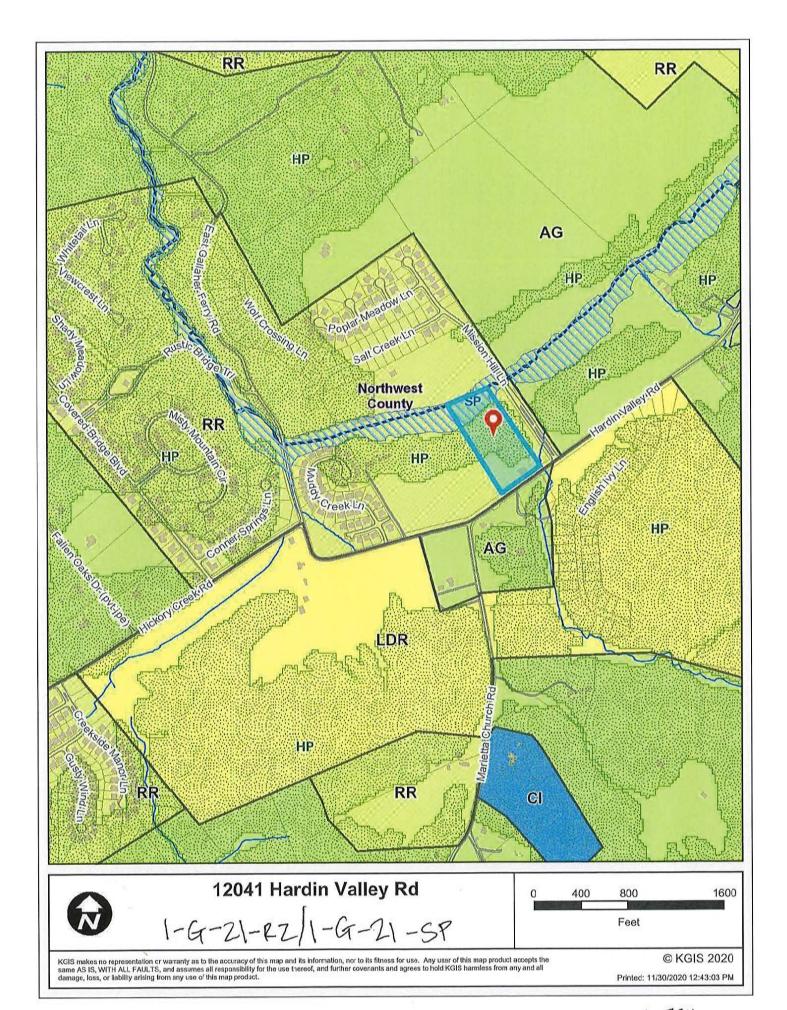




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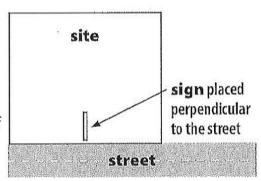
REQUIRED SIGN POSTING AGREEMENT

For all rezoning, plan amendment, concept plan, use on review, right-of-way closure, and street name change applications, a sign must be posted on the subject property, consistent with the adopted Administrative Rules and Procedures.

At the time of application, staff will provide a sign(s) to post on the property as part of the application process. If the sign(s) go missing for any reason and need to be replaced, then the applicant will be responsible for picking up a new sign(s) from the Planning offices. The applicant will be charged a fee of \$10 for each replacement sign.

LOCATION AND VISIBILITY

The sign must be posted in a location that is clearly visible from vehicles traveling in either direction on the nearest adjacent/frontage street. If the property has more than one street frontage, then the sign should be placed along the street that carries more traffic. Planning staff may recommend a preferred location for the sign to be posted at the time of application.



TIMING

The sign(s) must be posted 15 days before the scheduled Planning Commission public hearing and must remain in place until the day after the meeting. In the case of a postponement, the sign can either remain in place or be removed and reposted 15 days before the next Planning Commission meeting.

I hereby agree to post and remove the sign(s) provided on the subject property