

Defense Access Roads Needs Report

Aberdeen Proving Ground (APG)

Harford County, MD

Purpose of the Report

This Access Needs Report is intended to support a request for funding under the Defense Access Road (DAR) program. The funding would be used for improvements at three intersections directly outside APG gate access points along MD 22 and MD 715. (*See Figure 1*)

Specifically, those intersections are (in order of priority) (*See Figures 3-5*):

- MD 22 at MD 132B (Old Post Road)
- MD 22 at MD 462 (Paradise Road)
- MD 715 at US 40 and Old Philadelphia Road

Overview

As a result of the 2005 Base Realignment and Closure action, the area in and around APG is expected to experience considerable growth in employment. An additional 4,317 on-base BRAC-related jobs are expected by 2011. An additional 10,000 Enhanced Use Lease (EUL)-related jobs are anticipated by EUL build-out. (*See Table 1*)

Table 1
APG – Incoming and Outgoing personnel

Incoming	# Current positions	# positions by incoming tenant	Civilians	Military	Contractors	Students
ARI	30	15	10	0	5	
ARL	70	66	64	2	0	
ATEC	610	610	287	184	139	
C4ISR	7,000	7,679	5,620	150	1,909	
BROOKS CB	*	67	16	12	39	
JPEO	*	250	73	13	164	
MRMC	*	49	22	8	19	
DTRA	*	31	23	0	8	
TOTALS	8,110	8,767	6,115	369	2,283	

*Approximately 400 employees combined total

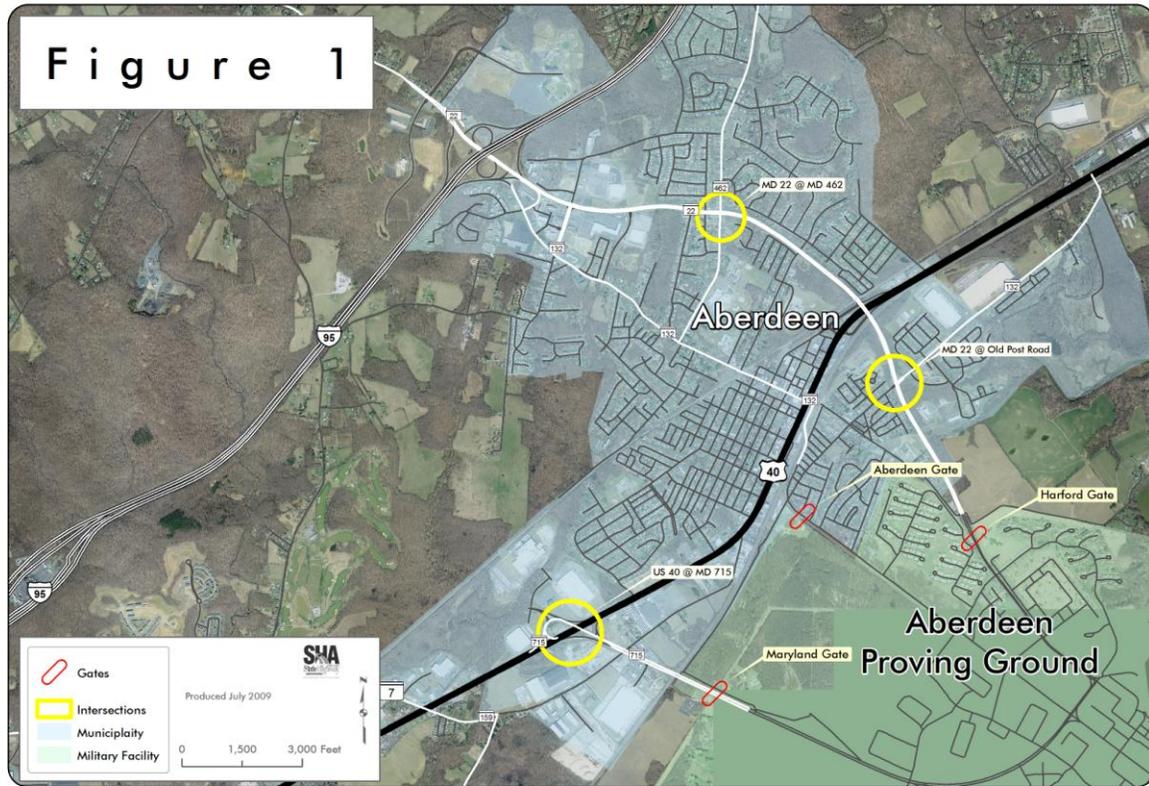
Outgoing	# Current positions	# Positions by outgoing tenant	Civilians	Military	Contractors	Students
Army Env. Cmd.	400	343	156	2	176	N/A
OC & S	4,000	4,107	251	662	141	3,053
TOTALS	4,400	4,450	416	664	317	3,053

Net Gain of Positions to APG = 4,317

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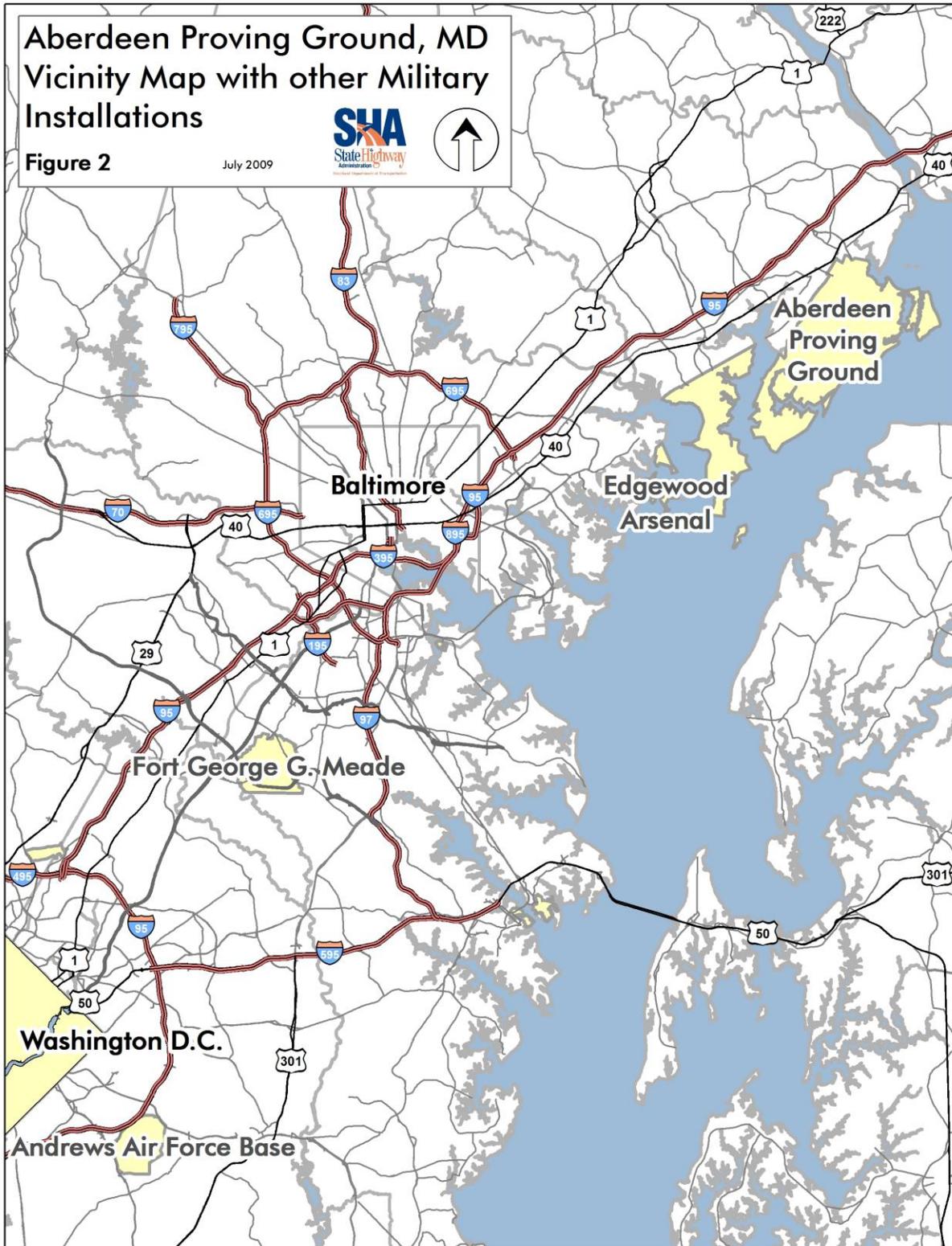
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The BRAC and EUL related growth is expected to have a significant impact on the roadway system providing access to APG in terms of congestion and safety. The Maryland State Highway Administration (SHA) has been aggressively pursuing efforts to identify both short-term and long-term roadway improvements needed to handle the influx in traffic. However, in large part due to the economic downturn, much of the funding needed to implement these improvements is not available. Without improvements, the intersections located directly outside the primary, active gates to APG will experience severe congestion.

Access to APG

APG is located in Harford County MD, approximately 70 miles northeast of Washington D.C. and 35 miles northeast of Baltimore (*See Figure 2*). The Proving Ground is roughly bound by a rectangle formed by the Chesapeake Bay to the south, Interstate I-95 to the north, the MD 152 to the west and MD 222 to the east. Primary access to APG is gained via three gates off of MD 22 and MD 715. (*See Figure 1*)

MD 22 – Existing conditions

MD 22 is functionally classified as an Urban Freeway and Expressway on the Federal Functional Classification System. Through the APG area, the existing typical section is a four-lane undivided roadway. Table 2 summarizes the existing roadway characteristics throughout the corridor by segment including typical section, speed, number of lanes and median type.

Table 2
MD 22 - Existing Roadway Conditions

Intersection of MD 22 and (from west to east)	Typical Section	Speed	Lanes	Median Type
I-95	Undivided	45	4	Curbed
Beards Hill Road	Undivided	45	4	Curbed
MD 462 (Paradise Road)	Undivided	50	4	Curbed
MD 132B (Old Post Road)	Undivided	50	4	Curbed

Current BRAC Related Projects Underway in the APG Area

▪ *Long-Term*

- The Maryland State Highway Administration (SHA) has identified the MD 22 corridor from MD 543 to the APG property line. This project will identify improvements needed to adequately address forecasted traffic volumes for the year 2030. The impacts and costs associated with these improvements are quite extensive, thus it may be some time before they can be implemented. Until the ultimate improvements can be built, SHA will rely on interim projects such as the intersection improvements as well as developer funded improvements. The total estimated cost for the recommended improvements is over \$120 million dollars.

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Short-Term (Projects needed by 2011)

➤ SHA is developing intersection improvements at key locations along MD 22 and US 40 in the APG area. The intersection improvements, which could be implemented within 2-3 years provided all the necessary funding is available, are needed to address the more immediate impact resulting from BRAC related growth in and around APG. Design is currently underway for the six highest priority intersections:

- **MD 715 at US 40 including Old Philadelphia Road***
- **MD 22 at MD 132B (Old Post Road)**
- **MD 22 at MD 462 (Paradise Road)**
- MD 22 at Beards Hill Road
- US 40 at MD 159 and MD 7
- US 40 at MD 155 and MD 7A

*Due to the close proximity of these intersections, needed improvements at MD 715 and Old Philadelphia Road are being designed as one project.

- The total estimated cost of the priority intersection projects outlined above is approximately \$114 million, including design, right-of-way acquisition and construction. Of the total estimated cost, approximately \$69 million remains unfunded. (See appendix A for current funding levels)
- Design for each of the intersection projects is nearly 35% complete. Provided funding is available, all of these intersections could be implemented by Fall 2011.

Proposed DAR Improvements

While all of the intersection projects listed above are needed, given their location with relationship to the installation gates and degree of traffic impact resulting from the BRAC action at APG, there is a consensus among the Proving Ground, County and SHA staff that the top three intersection projects, as highlighted above and described on the following page, are the highest priority of all the needed improvements to the State roadway network surrounding the installation.

The two priority intersection projects along MD 22 and the intersection along US 40 at MD 715 will improve traffic operations and safety by adding intersection capacity as well as improving bicycle and pedestrian accommodations. Through the extent of each of the respective projects, new and upgraded ADA compatible sidewalks will be installed along with a 4-foot bicycle compatible shoulder along MD 22. The operation of the intersections will also benefit from new and optimized traffic signals. The following is a brief description of each of the three priority intersection projects:

MD 22 at MD 462 (Paradise Road):

At MD 462, the existing northbound shared through/right movement will be converted into an exclusive through movement and an exclusive right turn movement onto eastbound MD 22. Southbound MD 462 will add a second exclusive left turn lane to eastbound MD 22. The existing shared through/right onto westbound MD 22 will be converted into an exclusive through lane and exclusive right turn to westbound MD 22. Along eastbound MD 22, the existing right

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to southbound MD 462 will be converted into a shared through/right turn to southbound MD 462 with the through lane tapering back to two lanes approximately 1200 feet beyond the intersection. An additional through lane will be added to westbound MD 22 through the intersection and taper back to two lanes approximately 750 feet beyond the intersection. (*See Figure 3*)

MD 22 at MD 132B (Old Post Road):

The roadway improvements proposed for MD 22 at Old Post Road include widening MD 22 eastbound to add an additional through lane and a second left turn lane onto northbound Old Post Road. Also, an additional through lane will be added westbound through the intersection. (*See Figure 4*)

MD 715 US 40 and Old Philadelphia Road:

The roadway improvements proposed for MD 715 includes reconstructing the US 40 eastbound ramp to MD 715 southbound to provide two additional turn lanes (total of 3) as well as a new slip ramp to provide a left turn at a new signalized intersection to northbound MD 715.

Southbound MD 715 will be widened to add an additional through lane at US 40 and a second additional through lane at Old Philadelphia Road which will taper back to two lanes beyond the Amtrak Bridge. The northbound MD 715 ramp to eastbound US 40 will be widened to provide a second lane which will ultimately tie to another BRAC priority intersection at US 40 and MD 159. (*See Figure 5*)

Figures 3 thru 5 on the following pages depict the proposed improvements described above.



Figure 3

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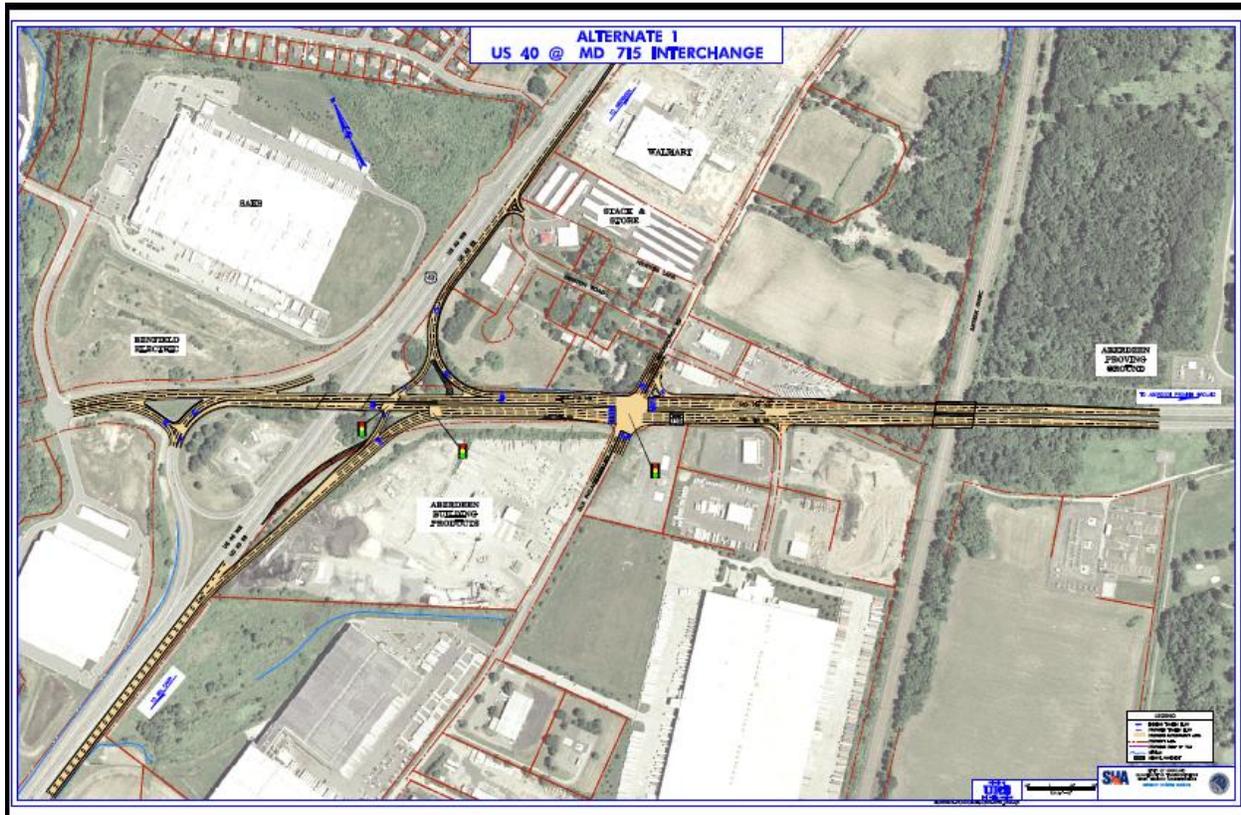


Figure 5

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Existing (Pre-BRAC) Peak Hour Traffic Volumes and LOS

SHA has developed a balanced set of traffic volumes for existing (pre-BRAC) conditions for the study area surrounding APG using traffic count data collected in 2005. **Figure 6** shows the resulting year 2005 AM and PM peak hour traffic volumes for each of the three priority intersections. These volumes were used to determine the existing “Level of Service” at each location. Level of Service (LOS) is a qualitative measure of the traffic operations at an intersection that assigns a grade ranging from “A” (best) to “F” (worst). Table 3 on the following page shows the existing LOS for each intersection during the typical AM and PM peak hours. The results of the analysis indicate that all locations operate under capacity (LOS E or better) under pre-BRAC conditions.

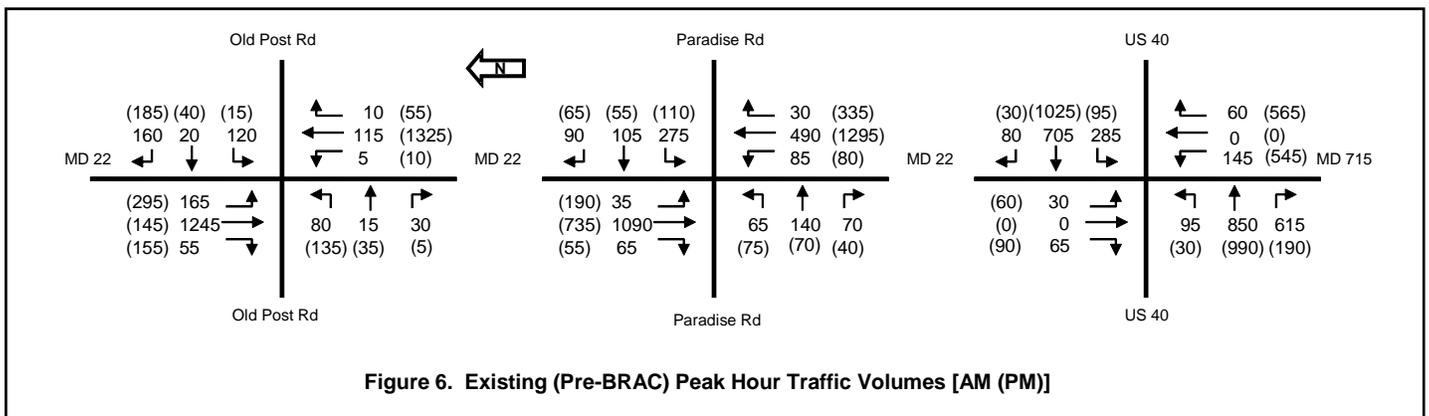


Figure 6. Existing (Pre-BRAC) Peak Hour Traffic Volumes [AM (PM)]

Projected (Post-BRAC) Peak Hour Traffic Volumes and LOS

SHA has also developed future traffic forecasts for the three study intersections based on data from the regional travel demand forecasting model. The forecasts reflect regional growth through the year 2015 for the purposes of design, including proposed Enhanced Use Lease (EUL) development outside the Proving Ground gates, but the traffic projections for movements into and out of APG represent year 2015 (post-BRAC) levels. **Figure 7** shows the resulting post-BRAC AM and PM peak hour traffic forecasts for the three priority intersections.

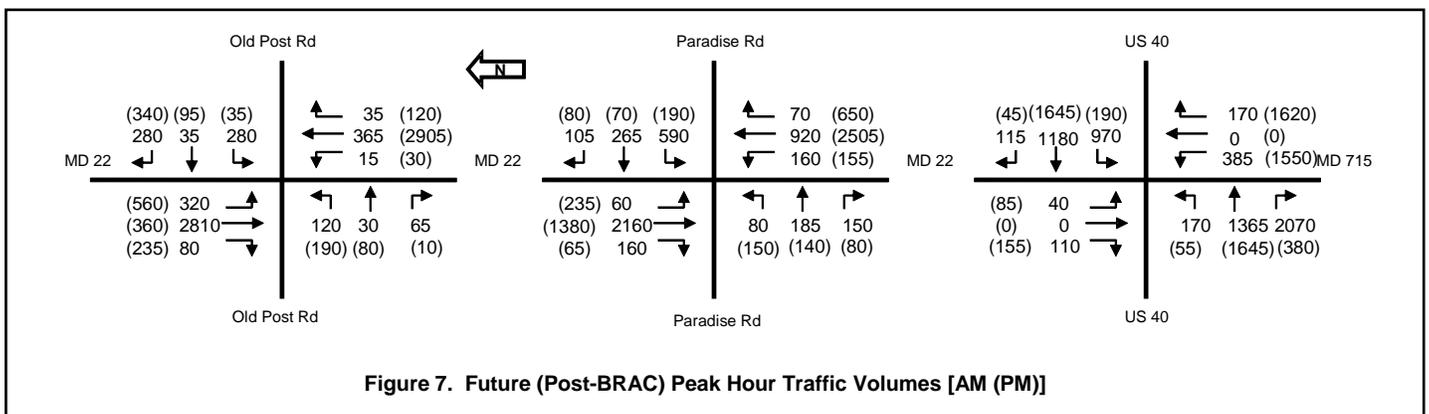


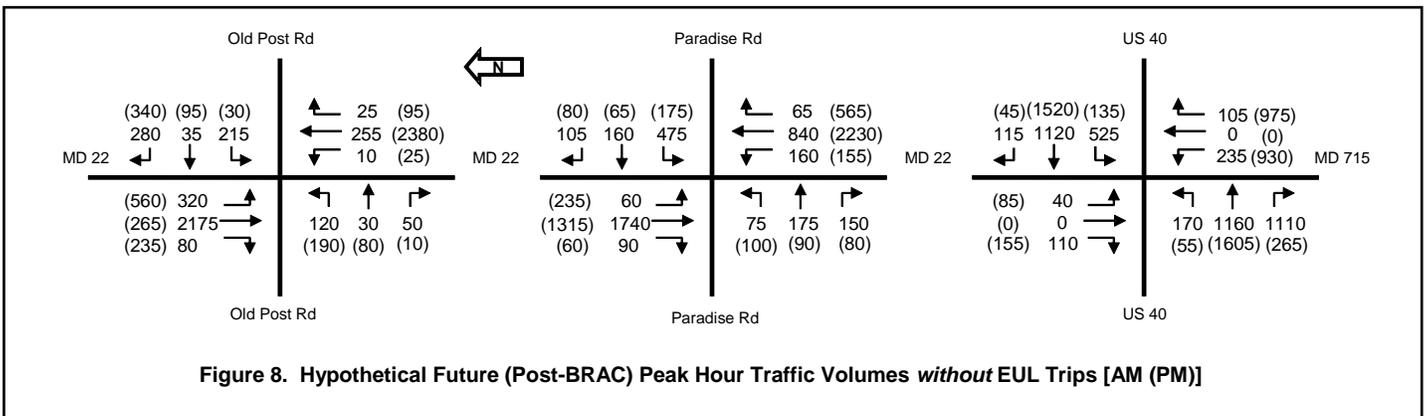
Figure 7. Future (Post-BRAC) Peak Hour Traffic Volumes [AM (PM)]

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To isolate the impact of BRAC traffic without EUL development, **Figure 8** below illustrates a hypothetical post-BRAC scenario with the trips generated by the EUL development removed. The hypothetical volumes presented in **Figure 8** are shown for informational purposes only. It should be noted that all designs and analyses of post-BRAC conditions were based on the forecast volumes presented in **Figure 7**, which include the combined impacts of BRAC and EUL.



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A comparison of the existing (pre-BRAC) traffic volumes to the future (post-BRAC) volume projections developed by SHA indicate that the following movements are projected to double in traffic during the AM and/or PM peak hours:

MD 22 at MD 462

- Right turn from southbound MD 22 to westbound MD 462 (AM peak)
- Through movement westbound MD 462 at MD 22 (AM peak)
- Left turn from eastbound MD 462 to northbound MD 22 (PM peak)
- Through movement eastbound MD 462 at MD 22 (PM peak)

MD 22 at MD 132B

- Through movement southbound MD 22 at MD 132B (AM and PM peak)
- Right turn from eastbound MD 132B to southbound MD 22 (AM and PM peak)
- Left turn from westbound MD 132B to southbound MD 22 (AM and PM peak)
- Left turn from northbound MD 22 to westbound MD 132B (AM and PM peak)
- Through movement northbound MD 22 at MD 132B (AM and PM peak)
- Right turn from northbound MD 22 to eastbound MD 132B (AM and PM peak)

MD 715 at US 40 and MD 715 at Old Philadelphia Road (OPR)

- Left turn from northbound MD 715 to westbound OPR (AM and PM peak)
- Through movement northbound MD 715 at OPR (AM and PM peak)
- Right turn from northbound MD 715 to eastbound OPR (AM and PM peak)
- Right turn from eastbound OPR to southbound MD 715 (AM and PM peak)
- Left turn from westbound OPR to southbound MD 715 (AM and PM peak)
- Through movement southbound MD 715 at OPR (AM and PM peak)
- Left turn from northbound MD 715 to westbound US 40 (AM and PM peak)
- Right turn from northbound MD 715 to eastbound US 40 (AM and PM peak)
- Left turn from westbound US 40 to southbound MD 715 (AM peak)
- Right turn from eastbound US 40 to southbound MD 715 (AM peak)

It is important to note that all of the movements noted above which are expected to experience a doubling of peak hour volumes in the post-BRAC condition represent traffic that is either entering or leaving the post gates.

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The projected LOS of each intersection was calculated based on the post-BRAC traffic forecasts prepared by SHA. The results indicate that, as a result of the forecasted traffic growth, all three intersections are projected to operate at failing (LOS F) conditions during both the AM and PM peak hours under a No-Build scenario. The proposed improvements recommended by SHA are expected to improve the post-BRAC operations at the three study intersections to LOS E during all peak periods.

Intersection	Existing (Pre-BRAC)		Future (Post-BRAC) No-Build		Future (Post-BRAC) Build	
	AM	PM	AM	PM	AM	PM
MD 22 at Paradise Road	C (0.80)	C (0.74)	F (1.59)	F (1.31)	E (0.98)	E (0.93)
MD 22 at Old Post Road	A (0.53)	C (0.75)	F (1.21)	F (1.53)	E (0.95)	E (0.93)
MD 715 at US 40 & Old Phil. Rd.	A (0.51)	A (0.54)	F (1.84)	F (1.51)	E (0.98)	E (0.94)

Estimated Cost / Funding

The total estimated for the proposed DAR intersection projects is \$66.3 million. Table 3 presents the estimated cost at each intersection:

Table 4 – Estimated Costs (\$millions)

	Proposed DAR Intersection Project	Right of Way	Construction	Total
#1	MD 22 @ Paradise Road	10.2	8.0	18.2
#2	MD 22 @ Old Post Road	0.5	9.2	9.7
#3	MD 715 @ US 40 & Old Philadelphia Road	8.1	30.3	38.4
Total Estimated Cost for Proposed DAR Projects				\$66.3

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Funding

- The Maryland Department of Transportation's (MDOT) current six-year capital program, the Fiscal Year 2009 – 2014 Consolidated Transportation Program (CTP) includes a total of \$31.9 million in funding for all the needed intersection improvements in the APG area, including the proposed DAR intersection projects. If all of the currently programmed funds, as well as a \$3.1 million appropriation in the FY 2009 omnibus bill and an existing \$10.2 million earmark (including state matching funds) were applied to the proposed DAR intersection projects (see appendix A and B), **\$21.1 million of the total estimated cost would remain unfunded.**

Table 5 – Unfunded Costs (\$millions)

Total Estimated Cost of Proposed DAR Improvements		66.3
Current Funding Level		45.2
FY 2009 – 2014 CTP	31.9	
FY 2009 Federal Appropriation (Ominbus)	3.1	
Federal Earmark	10.2	
Total Unfunded Costs for Proposed DAR Projects		\$21.1

- The nationwide economic downturn has had a considerable impact on revenue projections for both the State of Maryland and MDOT. Traditional revenue sources, including vehicle titling and motor fuel taxes are markedly down, and consumers are shifting away from purchases of SUVs toward smaller, less expensive and more fuel-efficient vehicles. While these trends are positive in a number of respects, including transportation's impact on the environment, they have also resulted in a significant reducing in revenue available for transportation programs.
- In Maryland, all of these factors have combined to create a loss of approximately \$350 million a year in projected revenue for the Transportation Trust Fund. The annual loss is comprised of approximately \$220 million in titling tax revenue, \$45 million in gas tax revenue, and \$85 million in losses from other revenue sources.
- These economic forces have served to undermine MDOT's ability to support its planned capital program and resulted in significant project deferments throughout the state. As safety and system preservation are the state's top priorities, scarce resources are duly committed to serve such preservation efforts.
- The limited funding presently available for critical BRAC-related intersection improvements detailed herein is clearly inadequate. While it is an accomplishment to have arrived at the current level of project design given such a challenging fiscal environment, it is clear that **additional funding sources, such as the DAR program, will be necessary to implement these key improvements aimed at supporting APG and the important work it performs.**

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Recommendation

While we acknowledge that the EUL is not directly related to the influx of BRAC personnel, it is necessary to include EUL traffic in the traffic analysis in order to provide adequate roadway improvements. The required criteria to qualify for DAR funding is met even without the EUL, however it is included in the report in order to accurately depict the impending traffic congestion. It is therefore recommended that DAR funding be provided to support advancement of the three highest priority intersection projects along MD 22 and MD 715 at Aberdeen Proving Ground:

- MD 715 at US 40 and Old Philadelphia Road
- MD 22 at Old Post Road
- MD 22 at Paradise Road

DAR funding will allow the Army to contribute financially to the development of these needed improvements, which will benefit APG directly in terms of providing adequate roadway access for the influx of traffic resulting from the 2005 BRAC action.