

From: [Hoskin, Sumalee](#)
To: [Stahl, Megan D.](#); [Tiernan Lennon](#)
Cc: [Cindy Schulz](#); [Jennifer Stanhope](#); [Dawley, Joseph](#)
Subject: Re: Responses to spreadsheet comments
Date: Friday, November 03, 2017 4:09:44 PM
Attachments: [20171103b MVP Potential Hib Within Action Area.xlsx](#)

Megan,

My apologies, just noticed the spreadsheet didn't save correctly. Please delete the version I just send and reference the attached. To clarify, there are 5 remaining portals highlighted in yellow and 1 in red for a total of 6 outstanding portals.

Sumalee

Sumalee Hoskin
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On Fri, Nov 3, 2017 at 3:34 PM, Sumalee Hoskin <sumalee_hoskin@fws.gov> wrote:

Megan,

Thanks for responding so quickly. I added 2 columns to your spreadsheet, "FWS Comments" and "FWS Notes" they were in the spreadsheet that Tiernan sent and it didn't appear as if they were incorporated into the one you sent this morning. I highlighted the cells in yellow that we have not provided our concurrence to your assessment because we are waiting for additional information. There are 5 remaining. I highlighted 1 cell red, Portal MVP-NI-151.02, to indicate Tiernan has not had the chance to review the additional information and determine if she agrees with the assessment.

I have re-named the spreadsheet (attached) to reflect it is the most recent version. I look forward to hearing the results from the field crew about portal PS-WV3-Y-1.

Regards,

Sumalee

Sumalee Hoskin
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From: Stahl, Megan D. [mailto:MStahl@eqt.com]
Sent: Friday, November 03, 2017 7:37 AM
To: Hoskin, Sumalee; Lennon, Tiernan
Cc: Cindy Schulz; Jennifer Stanhope; Dawley, Joseph
Subject: Responses to spreadsheet comments

Tiernan and Sumalee,

As we discussed, I am providing information that I currently have to share on the spreadsheet so that you can continue your evaluation. The attached version is updated as indicated below. Please note that several cells are highlighted in yellow indicating where MVP still owes you information. As I mentioned to Tiernan yesterday, we will have a survey crew at PS-WV3-Y-1 this morning to collect additional data. We should be able to provide an update to you later today and a formal report on Monday.

1. PS-WV3-Y-1: portal evaluation data sheet, survey data sheets, and photos are attached
2. MVP-NI-151.02 now reads: no impact based on upgradient of existing access road, road will be widened and upgraded and will be supplemented with additional E&S controls near the potential portal location
3. Jones Cave now reads: no impact based on trend parallel to existing access road ([REDACTED]) that will not be upgraded or widened, and will be supplemented with additional E&S controls
4. Pedlar Hills: data from the detailed report from VSS was added

Please let me know if you need anything else.

Megan

Megan Stahl

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Feature Name	featureid	State	County	Portal Opening ID	Suitability as Documented in the BA*	Indiana Bat Status as Documented in the BA*	Northern Long-eared Bat Status as Documented in the BA*	Distance to LOD as Documented in the BA (meters)*	Actual Distance to LOD based on Reference(s) in Column R (meters)	Cave Length based on Reference(s) in Column R (feet)	Closest Feature within LOD	Topographic setting/gradient based on Reference(s) in Column R	Cave Description based on Reference(s) in Column R	Suitability based on Physical Details**	Potential for Construction Impact***	Basis for determinations	Cave Data References****	FWS Comments (OK= FWS agrees with assessment)	FWS Notes
	WV-0055	West Virgi	Braxton		Suitable	Not Occupied	Known			60	ROW	40 degree slope on wooded hillside, parallel?		Suitable	Potential	currently not enough information to rule out potential for impact from construction activities	ESI Field Review	Is the portal downslope from pipeline LOD or on the same contour?	Megan will send ESI's bat survey report on this portal to Sumalee. DAA will conduct a site visit to gather more info on this portal (e.g. which way the portal trends, slope, potential re-route distance, how construction may affect the hydrology/structural integrity of the portal, etc). WVDEP info on this portal - no existing mining maps.
	VA-0259	Virginia	Giles		Suitable	Suitable, Unsurveyed	Suitable, Unsurveyed			9000	Access Road	Upgradient from existing access road		Suitable	No	no impact based on existing access that will not be upgraded or widened, it will be used in its current condition for light truck traffic only	Virginia Speleological Survey, DAA Karst Team	OK, previous comment addressed	
	VA-0260	Virginia	Giles		Suitable	Suitable, Unsurveyed	Suitable, Unsurveyed			50	Access Road	Downgradient from existing access road		Suitable	No	no impact based on existing access that will not be upgraded or widened, it will be used in ints current condition for light truck traffic only	ESI Field Review	OK	
	VA-0261	Virginia	Giles		Suitable	Suitable, Unsurveyed	Suitable, Unsurveyed			20	Access Road	Downgradient from existing access road		Suitable	No	no impact based on existing access that will not be upgraded or widened, it will be used in ints current condition for light truck traffic only	ESI Field Review	OK	
		West Virginia	Nicholas		Suitable	Suitable, Unsurveyed	Suitable, Unsurveyed			60	Access Road	Upslope from existing access road		Suitable	No	no impact based on upgradient of existing access road, road will be widened and upgraded and will be supplemented with additional E&S controls near the potential portal location	ESI Field Review		WVFO will review new information and provide a response.
	VA-0134	Virginia	Giles		Suitable	Known	Known			3980	ROW	On hillside opposite side Rd and Creek from LOD. Hydrologically upgradient.		Suitable	No	no impact based on hydrologic and geologic analysis, addressed in BA	Douglas, Holsinger, DAA Karst Team	OK	
	VA-0129	Virginia	Giles		Suitable	Not Occupied	Known			3388	Access Road	Cave is uphill from route and AR		Suitable	No	no impact based on hydrologic and geologic analysis, addressed in BA	Douglas, Holsinger, DAA Karst Team	OK	
	VA-0136	Virginia	Montgome		Suitable	Suitable, Unsurveyed	Suitable, Unsurveyed			215	ROW	Sideways two draws southwest.		Suitable	No	no impact based on outside of 0.5-mile buffer	Douglas, DAA Karst Team	OK	
	VA-0131	Virginia	Giles		Unknown	Suitability Unknown	Suitability Unknown			208	Access Road	Downslope from existing gravel driveway.		Potential	No	no impact based on trend parallel to existing access road (Steele Acres Drive) that will not be upgraded or widened, and will be supplemented with additional E&S controls	Holsinger	OK	
	VA-0140	Virginia	Montgome		Unknown	Suitability Unknown	Suitability Unknown			600	ROW	In hillside above Route.		Potential	No	no impact based on upgradient and distance to end of cave	Douglas, DAA Karst Team	OK	

<div><div></div><div></div></div>	VA-0159	Virginia	Montgome	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	135	Access Road	Other side of draw from AR.	<div><div></div><div></div></div>	Potential	No	no impact based on topography and trend away from AR	Virginia Speleological Survey, DAA Karst Team	Is there only 1 entrance, does the "no airflow" comment refer the entire cave or was there no air flow detected at the entrance?	
<div><div></div><div></div></div>	VA-0250	Virginia	Giles	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	1530	ROW	Upgradient, across creek, over a hill.	<div><div></div><div></div></div>	Potential	No	no impact based on upgradient and distance to end of cave	Holsinger, DAA Karst Team	OK	
<div><div></div><div></div></div>	VA-0245	Virginia	Giles	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	85	Access Road and ROW	Sideways far along the mountain.	<div><div></div><div></div></div>	Potential	No	no impact based on distance to single pit, no trend	Douglas	Better describe the pit, is this a cave/portal? Is it enclosed? Explain what "sideways far along the mountain" means	
<div><div></div><div></div></div>	VA-0133	Virginia	Giles	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	6230	ROW	Upgradient	<div><div></div><div></div></div>	Potential	No	no impact based on upgradient and trends away	Douglas, Holsinger, DAA Karst Team	OK	
<div><div></div><div></div></div>	VA-0142	Virginia	Montgome	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	503	Access Road	Sideways across a ridge and draw.	<div><div></div><div></div></div>	Potential	No	no impact based on topography across a ridge	Virginia Speleological Survey, DAA Karst Team	OK	
<div><div></div><div></div></div>	VA-0194	Virginia	Giles	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	500	Access Road	On flank of mountain across creek, road, and US-460. Upgradient.	<div><div></div><div></div></div>	Potential	No	no impact based on topography upgradient on ridge on different mountain across road and stream	Douglas, Holsinger	OK	
<div><div></div><div></div></div>	VA-0141	Virginia	Montgome	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	1323	ROW	Downgradient	<div><div></div><div></div></div>	Potential	No	no impact based on distance 0.49-mile from LOD and trend away	Douglas, DAA Karst Team	OK	
<div><div></div><div></div></div>	VA-0199	Virginia	Giles	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	437	ROW	On opposite hill	<div><div></div><div></div></div>	Potential	No	no impact based on entrance outside 0.5-mile buffer, closest passage is 0.44-mile	Virginia Speleological Survey, DAA Karst Team	OK	
<div><div></div><div></div></div>	VA-0238	Virginia	Montgome	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>				<div><div></div><div></div></div>	Potential	No	no impact based on outside of 0.5-mile buffer	ESI, DAA Karst Team	OK	
<div><div></div><div></div></div>	VA-0147	Virginia	Montgome	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>				<div><div></div><div></div></div>	Outside Action Area	No	outside of 0.5-mile buffer	Douglas	Is the cave suitable?	
<div><div></div><div></div></div>	VA-0162	Virginia	Giles	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	10	ROW	Downgradient but not in draw	<div><div></div><div></div></div>	No	N/A	not suitable based on cave length	Holsinger, DAA Karst Team	OK	
<div><div></div><div></div></div>	VA-0154	Virginia	Giles	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	0	ROW	Sideways from route, in powerline clearing	<div><div></div><div></div></div>	No	N/A	not suitable based on cave length	DAA Karst Team	OK	
<div><div></div><div></div></div>	VA-0164	Virginia	Giles	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	535	Access Road	On hill above AR	<div><div></div><div></div></div>	No	No	no impact based on upgradient and trend away, not suitable based on entrance size and blockage	Douglas, Virginia Speleological Survey, DAA Karst Team	OK	
<div><div></div><div></div></div>	VA-0132	Virginia	Giles	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	0	ROW	Uphill from ROW.	<div><div></div><div></div></div>	No	No	no impact based topography upgradient, not suitable base on entrance and cave length	DAA Karst Team	OK	
<div><div></div><div></div></div>	VA-0143	Virginia	Giles	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	75	ROW	Sideways from route	<div><div></div><div></div></div>	No	N/A	not suitable based on surface pit	Virginia Speleological Survey	OK	
<div><div></div><div></div></div>	VA-0157	Virginia	Giles	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	72	ROW	Sideways from route.	<div><div></div><div></div></div>	No	N/A	not suitable based on cave length and no air flow	DAA Karst Team	OK	
<div><div></div><div></div></div>	VA-0253	Virginia	Giles	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	40	ROW	Upgradient of route.	<div><div></div><div></div></div>	No	N/A	not suitable based on cave length	Douglas, Virginia Speleological Survey	OK	
<div><div></div><div></div></div>	VA-0144	Virginia	Giles	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	15	ROW	Marginally downgradient and across road from route. In sinkhole.	<div><div></div><div></div></div>	No	N/A	not suitable based on cave length	Virginia Speleological Survey, DAA Karst Team	OK	
<div><div></div><div></div></div>	VA-0153	Virginia	Giles	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	0	Access Road	Sideways from route	<div><div></div><div></div></div>	No	N/A	not suitable, filled	DAA Karst Team	OK	
<div><div></div><div></div></div>	VA-0213	Virginia	Giles	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	100	Access Road	Sideways from AR / public road	<div><div></div><div></div></div>	No	N/A	not suitable based on surface pit	Virginia Speleological Survey	Does the fissure lead to a 100-ft cave? Or is the fissure 100-ft?	
<div><div></div><div></div></div>	VA-0228	Virginia	Giles	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	20	Access Road	On hillside opposite AR	<div><div></div><div></div></div>	No	N/A	not suitable based on cave length	Virginia Speleological Survey, DAA Karst Team	OK	
<div><div></div><div></div></div>	WV-0067	West Virgi	Monroe	<div><div></div><div></div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div><div></div><div></div></div>	<div><div></div><div></div></div>	20	Access Road and ROW	Upgradient from route.	<div><div></div><div></div></div>	No	N/A	not suitable based on cave length	West Virginia Speleological Survey	OK	

	VA-0222	Virginia	Giles		Unknown	Suitability Unknown	Suitability Unknown			35	ROW	Upgradient		No	N/A	not suitable based on cave length	Virginia Speleological Survey	OK	
	VA-0227	Virginia	Giles		Unknown	Suitability Unknown	Suitability Unknown			72	ROW	Upgradient, across creek, on a hill.		No	N/A	not suitable based on entrance and collapse	Virginia Speleological Survey, DAA Karst Team	OK	
	WV-0057	West Virgi	Monroe		Unknown	Suitability Unknown	Suitability Unknown			15	ROW	Sideways from route, location uncertain		No	N/A	not suitable based on cave length	Hempel	OK	
	VA-0242	Virginia	Giles		Unknown	Suitability Unknown	Suitability Unknown			87	ROW	Upgradient, across creek, over a hill.		No	N/A	not suitable based on flooding	Virginia Speleological Survey, DAA Karst Team	OK	
	VA-0221	Virginia	Giles		Unknown	Suitability Unknown	Suitability Unknown			25	ROW	Upgradient		No	N/A	not suitable based on cave length	Virginia Speleological Survey	OK	
	VA-0232	Virginia	Giles		Unknown	Suitability Unknown	Suitability Unknown			0	ROW	Across a draw and upgradient.		No	N/A	not suitable based on entrance and cave length	Virginia Speleological Survey	OK	
	WV-0056	West Virgi	Monroe		Unknown	Suitability Unknown	Suitability Unknown			1607	ROW	Downgradient of route		No	No	no impact based on distance to end of cave, not suitable based on flooding	Hempel, WV-DEP, DAA Karst Team	OK	
	VA-0135	Virginia	Giles		Unknown	Suitability Unknown	Suitability Unknown			9343	ROW	Upgradient		No	No	no impact based on upgradient and trends away, not suitable based on flooding	Douglas, DAA Karst Team	OK	
	VA-0219	Virginia	Giles		Unknown	Suitability Unknown	Suitability Unknown			650	ROW	Access Road and Upgradient		No	No	no impact based on upgradient, not suitable based on flooding	Virginia Speleological Survey, DAA Karst Team	OK	
	VA-0209	Virginia	Montgome		Unknown	Suitability Unknown	Suitability Unknown			60	ROW	On opposite hill across low saddle		No	N/A	not suitable based on surface pit and no airflow	Virginia Speleological Survey, DAA Karst Team	OK	
	VA-0216	Virginia	Giles		Unknown	Suitability Unknown	Suitability Unknown			135	ROW	Access Road and Upgradient		No	No	no impact based on upgradient, not suitable based on surface and no airflow	Virginia Speleological Survey, DAA Karst Team	OK	
	VA-0215	Virginia	Giles		Unknown	Suitability Unknown	Suitability Unknown			92	ROW	Access Road and Upgradient		No	No	no impact based on upgradient, not suitable based on surface and no airflow	Virginia Speleological Survey, DAA Karst Team	OK	
	VA-0220	Virginia	Montgome		Unknown	Suitability Unknown	Suitability Unknown			20	ROW	Access upgradient and across I81 from access road		No	N/A	not suitable based on cave length	Virginia Speleological Survey	OK	
	VA-0225	Virginia	Giles		Unknown	Suitability Unknown	Suitability Unknown			15	ROW	Sideways across a small sadle, on next ridge.		No	N/A	not suitable based on cave length	Virginia Speleological Survey, DAA Karst Team	OK	
	VA-0158	Virginia	Montgome		Unknown	Suitability Unknown	Suitability Unknown			50	ROW	Access Sideways a couple ridges and draws from AR.		No	N/A	not suitable based on entrance	Virginia Speleological Survey, DAA Karst Team	OK	
	VA-0146	Virginia	Giles		Unknown	Suitability Unknown	Suitability Unknown			8	ROW	Upgradient		No	N/A	not suitable based on entrance and cave length	Virginia Speleological Survey	OK	
	VA-0234	Virginia	Giles		Unknown	Suitability Unknown	Suitability Unknown			12	ROW	On other side of hill.		No	N/A	not suitable based on cave length	Virginia Speleological Survey	OK	
	VA-0182	Virginia	Montgome		Unknown	Suitability Unknown	Suitability Unknown			15	ROW	Across ridges, creekbed, road and up next hillside. Upgradient.		No	N/A	not suitable based on cave length	Douglas, Virginia Speleological Survey	OK	
	VA-0145	Virginia	Giles		Unknown	Suitability Unknown	Suitability Unknown			55	ROW	Upgradient		No	N/A	not suitable based on surface pit	Douglas, Virginia Speleological Survey, DAA Karst Team	OK	

<div></div>	VA-0218	Virginia	Giles	<div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div></div>	<div></div>	10	ROW	Upgradient	<div></div>	No	N/A	not suitable based on cave length and suface pit	Virginia Speleological Survey, DAA Karst Team	OK	
<div></div>	VA-0230	Virginia	Giles	<div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div></div>	<div></div>	40	Access Road	Other side of hill, down the ridge.	<div></div>	No	No	no impact based on outside of 0 5-mile buffer, topography, not suitable based on length	Virginia Speleological Survey	OK	
<div></div>	VA-0169	Virginia	Giles	<div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div></div>	<div></div>	40	ROW	Upgradient	<div></div>	No	No	no impact based on outside of 0 5-mile buffer, upgradient, not suitable based on cave length	Douglas, Virginia Speleological Survey	OK	
<div></div>	VA-0246	Virginia	Giles	<div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div></div>	<div></div>	400	ROW	Downgradient.	<div></div>	No	No	no impact based on outside 0 5-mile buffer, not suitable based on fill	Douglas	OK	
<div></div>	VA-0210	Virginia	Giles	<div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div></div>	<div></div>	14320	ROW	Upgradient of route.	<div></div>	No	No	no impact based on outside of 0 5-mile buffer, upgradient and trend away, not suitable based on flooding and collapse	Virginia Speleological Survey, DAA Karst Team	OK	
<div></div>	VA-0137	Virginia	Montgome	<div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div></div>	<div></div>	5400	ROW	Downgradient	<div></div>	No	No	no impact based on outside of 0 5-mile bufferand trend away, not suitable based on flooding	Douglas, Holsinger, DAA Karst Team	OK	
<div></div>	VA-0214	Virginia	Giles	<div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div></div>	<div></div>	25	Access Road and ROW	Upgradient	<div></div>	No	No	no impact based on outside of 0 5-mile buffer, upgradient, not suitable based on cave length	Virginia Speleological Survey, DAA Karst Team	OK	
<div></div>	VA-0235	Virginia	Giles	<div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div></div>	<div></div>	0	ROW	On other side of hill	<div></div>	No	No	no impact based on outside of 0 5-mile buffer, not suitable based on length	Virginia Speleological Survey	OK	
<div></div>	VA-0149	Virginia	Montgome	<div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div></div>	<div></div>	250	ROW	Sideways toward next hill, across road	<div></div>	No	No	no impact based on outside of 0 5-mile buffer, not suitable based on entrance and likely filled	Douglas, DAA Karst Team	OK	
<div></div>	VA-0138	Virginia	Montgome	<div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div></div>	<div></div>	272	ROW	Surface - downgradient of route, subsurface - upgradient of route	<div></div>	No	No	no impact based on outside of 0 5-mile buffer, not suitable based on flooding and being filled with organic debris	Douglas, Virginia Speleological Survey, DAA Karst Team	OK	
<div></div>	WV-0064	West Virgi	Monroe	<div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div></div>	<div></div>	20	ROW	Upgradient a couple draws easterly	<div></div>	No	No	no impact based on outside of 0 5-mile buffer, upgradient, not suitable based on cave length	Hempel	OK	
<div></div>	VA-0231	Virginia	Giles	<div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div></div>	<div></div>	45	Access Road	Other side of hill, down the ridge.	<div></div>	No	No	no impact based on outside of 0 5-mile buffer, not suitable based on tight surface pit	Virginia Speleological Survey	OK	
<div></div>	VA-0151	Virginia	Montgome	<div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div></div>	<div></div>	46	Access Road	On low ridge	<div></div>	No	No	no impact based on outside of 0 5-mile buffer, not suitable based on cave length and use as animal den	Virginia Speleological Survey, DAA Karst Team	OK	
<div></div>	VA-0217	Virginia	Giles	<div></div>	Unknown	Suitability Unknown	Suitability Unknown	<div></div>	<div></div>	25	Access Road and ROW	Upgradient	<div></div>	No	No	no impact based on outside of 0 5-mile buffer, upgradient, not suitable based on cave length	Virginia Speleological Survey, DAA Karst Team	OK	

* Table "Potential hibernacula near project" in MVP Biological Assessment APPENDIX D SUPPLEMENTAL INFORMATION BASED UPON USFS AND USFWS COMMENTS

- **To be considered suitable habitat:
- The openings should be at least one (1) foot in diameter or larger.
 - The passage should continue beyond the “dark zone” and not have an obvious end within 40 feet of entrance.
 - Entrances that are flooded or prone to flooding (i e., debris on ceiling), collapsed shut, or otherwise inaccessible to bats will be excluded.
 - Openings that have occurred recently (i.e., within the past 12 months) due to creation or subsidence will be excluded.

***Potential construction impact evaluation was based on:

- 1. Location and proximity to limits of disturbance (LOD)
- 2. Trend away from LOD
- 3. Topographic setting/gradient
- 4. Hydrology
- 5. Noise
- 6. Specific construction activities in proximity to feature

****References:

DAA (Draper Aden Associates) Karst Team (qualifications attached):

- Bill Balfour – Professional Geologist, karst and natural resource focus. 45 years experience cave and karst mapping and research. West Virginia and Virginia Speleological Survey.
- Mike Futrell – Geospatial Analyst, geology, environment, utility focus. 35 years experience cave and karst mapping and research. Virginia Speleological Survey.

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