

From: [Lennon, Tiernan](#)
To: [Stahl, Megan D.](#)
Cc: [Cindy Schulz](#); [Troy Andersen](#); [Sumalee Hoskin](#); [Jennifer Stanhope](#); [Glenn Smith](#)
Subject: Proposed Conservation Measure & Potential Hibernacula Spreadsheet
Date: Wednesday, November 08, 2017 3:23:39 PM
Attachments: [MVP Potential Hib Comments 11.8.17.xlsx](#)

Hey Megan - See our edits to the proposed conservation measure below:

Mountain Valley, LCC will provide a site-specific plan to the Service for review and written approval prior to initiating any construction activities within 0.5 mile of portal PS-WV3-Y-1. The site-specific plan will ensure no alteration, physical or otherwise, of the portal's entrance or environment that will adversely affect its use by federally listed bats, including those hibernating within the portal. In the event that the Service determines the site-specific plan cannot avoid adverse effects to federally listed bats, Mountain Valley, LCC will reroute the Project such that all activities are at least 0.5 mile away from portal PS-WV3-Y-1. In certain instances, conducting some activities within 0.5 mile of portal PS-WV3-Y-1 may not adversely affect federally listed bats; however, Mountain Valley, LCC will receive Service review and written approval of all activities within 0.5 mile of portal PS-WV3-Y-1 prior to initiating such activities.

Additionally, the Service has completed our review of your potential hibernacula spreadsheet. We have no additional questions or comments. Please revise the spreadsheet and submit the final version to us and FERC.

Thank you,

--

[Tiernan Lennon](#)

Fish and Wildlife Biologist
West Virginia Field Office
U.S. Fish and Wildlife Service
694 Beverly Pike
Elkins, WV 26241
304-636-6586 Ext. 12
Fax: 304-636-7824
Tiernan_Lennon@fws.gov

| Feature Name | Feature ID | State | County | Partial Opening (ft) | Submittal Status (in the BA) | Indirect Effect on the BA | Long-term Effect on the BA | Distance to LDD as Documented in the BA (meters) | Actual Distance to LDD as Documented in the BA (meters) | Length based on Reference(s) in Column 8 (feet) | Closest Feature to LDD | Topographic setting/ gradient based on Reference(s) in Column 8 | Core Ditch pit based on Reference(s) in Column 8 | Soilability based on Physical Data (ft) | Potential for Construction Impacts | Backs for distance (feet) | Cave Date Reference(s) | FWS Comments (OK = FWS approved, no comment) | FWS Status |
|--------------|--------------|----------|------------|----------------------|------------------------------|---------------------------|----------------------------|--|---|---|---|--|--|---|------------------------------------|--|--|--|---|
| | WV-0055 | West V g | Barren | | Submittal | Not Occupied | Known | | | 60 ROW | | The main pit is located on a hillside on a wooded slope on a wooded hillside in the rear side of a residential area adjacent to the route as it comes down the hillside. | | Soilability | Potential | MAF will be placed in the upper 10 feet to avoid adverse effects to Federally listed plants that are in the pit. | 02/14/2019 Review | comes out on mesa w/ it be applied to the pit to avoid adverse effects, OK | MAF will be placed in the upper 10 feet to avoid adverse effects to Federally listed plants that are in the pit. OK w/ it conduct a review to gather more info on the pit tail (e.g., with the way the pit tail is built, slope, potential adverse effects, how constant water may affect the hydrologic units of the pit tail, etc.). WYDOP info on the pit tail - no impact on the ridge. |
| | VA-0219 | V g n s | Glenn | | Submittal | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 9000 Road | Urged and 10m on the ridge | | | Soilability | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | V g n s Spawning call So very, DAA Ka at Team | OK, please comment added | |
| | VA-0220 | V g n s | Glenn | | Submittal | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 30 Road | Downing and 10m on the ridge | | | Soilability | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | 02/14/2019 Review | OK | |
| | VA-0261 | V g n s | Glenn | | Submittal | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 20 Road | Downing and 10m on the ridge | | | Soilability | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | 02/14/2019 Review | OK | |
| | West V g n s | Barren | | | Submittal | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 60 Road | Upland 10m on the ridge | | | Soilability | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | 02/14/2019 Review | please comment added | |
| | VA-0124 | V g n s | Glenn | | Submittal | Known | Known | | | 3880 ROW | On the hillside opposite the ridge and 10m on the LDD. Hyd. along only up and down. | | | Soilability | No | no impact based on hydrology and geology analysis, add more data. | Douglas, Holsinger, DAA Ka at Team | OK | |
| | VA-0129 | V g n s | Glenn | | Submittal | Not Occupied | Known | | | 3880 Road | Down 10m on the ridge and 10m on the LDD. | | | Soilability | No | no impact based on hydrology and geology analysis, add more data. | Douglas, Holsinger, DAA Ka at Team | OK | |
| | VA-0136 | V g n s | Montgomery | | Submittal | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 215 ROW | Downing and 10m on the ridge | | | Soilability | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | Douglas, DAA Ka at Team | OK | |
| | VA-0131 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 208 Road | Downing and 10m on the ridge | | | Potential | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | Holsinger | OK | |
| | VA-0140 | V g n s | Montgomery | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 600 ROW | On the hillside above the ridge. | | | Potential | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | Douglas, DAA Ka at Team | OK | |
| | VA-0159 | V g n s | Montgomery | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 135 Road | On the hillside above the ridge. | | | Potential | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | V g n s Spawning call So very, DAA Ka at Team | based on the info sent on 10/10/2018, FWS has data on the ridge is a suitable. | |
| | VA-0220 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 1330 ROW | Urged and 10m on the ridge | | | Potential | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | Holsinger, DAA Ka at Team | OK | |
| | VA-0245 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 85 Road | Located at the top of the ridge on the hillside above the ridge. | | | Potential | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | Douglas | OK | |
| | VA-0133 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 6230 ROW | Urged and 10m on the ridge | | | Potential | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | Douglas, Holsinger, DAA Ka at Team | OK | |
| | VA-0142 | V g n s | Montgomery | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 300 Road | Downing and 10m on the ridge | | | Potential | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | V g n s Spawning call So very, DAA Ka at Team | OK | |
| | VA-0134 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 300 Road | On the hillside above the ridge. | | | Potential | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | Douglas, Holsinger | OK | |
| | VA-0141 | V g n s | Montgomery | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 1330 ROW | Downing and 10m on the ridge | | | Potential | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | Douglas, DAA Ka at Team | OK | |
| | VA-0199 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 430 ROW | On the hillside above the ridge. | | | Potential | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | V g n s Spawning call So very, DAA Ka at Team | OK | |
| | VA-0218 | V g n s | Montgomery | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | | | | | Potential | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | OK, DAA Ka at Team | OK | |
| | VA-0147 | V g n s | Montgomery | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 60 Road | Downing and 10m on the ridge | | | Potential | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | Douglas | OK | |
| | VA-0152 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 10 ROW | Downing and 10m on the ridge | | | No | N/A | not suitable based on cave length. | Holsinger, DAA Ka at Team | OK | |
| | VA-0154 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 0 ROW | Downing and 10m on the ridge | | | No | N/A | not suitable based on cave length. | DAA Ka at Team | OK | |
| | VA-0164 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 335 Road | On the hillside above the ridge. | | | No | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | Douglas, V g n s Spawning call So very, DAA Ka at Team | OK | |
| | VA-0172 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 0 ROW | Urged and 10m on the ridge | | | No | No | no impact based on existing access that will not be upgraded - we demand, we have been in the area with a constant flow of light and light only. | DAA Ka at Team | OK | |
| | VA-0145 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 75 ROW | Downing and 10m on the ridge | | | No | N/A | not suitable based on cave length and no a flow. | Douglas, V g n s Spawning call So very, DAA Ka at Team | OK | |
| | VA-0157 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 75 ROW | Downing and 10m on the ridge | | | No | N/A | not suitable based on cave length. | Douglas, V g n s Spawning call So very, DAA Ka at Team | OK | |
| | VA-0215 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 40 ROW | Urged and 10m on the ridge | | | No | N/A | not suitable based on cave length. | V g n s Spawning call So very, DAA Ka at Team | OK | |
| | VA-0144 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 15 ROW | Downing and 10m on the ridge | | | No | N/A | not suitable based on cave length. | DAA Ka at Team | OK | |
| | VA-0153 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 0 Road | Downing and 10m on the ridge | | | No | N/A | not suitable, if bad | DAA Ka at Team | OK | |
| | VA-0213 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 300 Road | Downing and 10m on the ridge | | | No | N/A | not suitable based on cave length. | V g n s Spawning call So very, DAA Ka at Team | OK | |
| | VA-0228 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 20 Road | On the hillside above the ridge. | | | No | N/A | not suitable based on cave length. | Douglas, V g n s Spawning call So very, DAA Ka at Team | OK | |
| | WV-0067 | West V g | Barren | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 20 ROW | Urged and 10m on the ridge | | | No | N/A | not suitable based on cave length. | West V g n s Spawning call So very | OK | |
| | VA-0227 | V g n s | Glenn | | Unknown | Soilability, Unsurveyed | Soilability, Unsurveyed | | | 35 ROW | Urged and 10m on the ridge | | | No | N/A | not suitable based on cave length. | V g n s Spawning call So very | OK | |

| | | | | | | | | | | | | | | |
|---------|----------|---------|---------|---------------------|---------------------|--|-----------|---|--|----|-----|--|--|----|
| VA-0227 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 73 ROW | Urg ad ent, ac on c wab on a h h | | No | N/A | not su table based on ent ance and collapse | V g n a Spelling cal Su vey, DAA Ka et Team | OK |
| WV-0017 | West V g | Mon on | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 15 ROW | 5 downy f om route, locat on unce ta n | | No | N/A | not su table based on cave length | Hempel V g n a Spelling cal Su vey, DAA Ka et Team | OK |
| VA-0243 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 87 ROW | Urg ad ent, ac on c wab on a h h | | No | N/A | not su table based on flood ng | V g n a Spelling cal Su vey, DAA Ka et Team | OK |
| VA-0211 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 25 ROW | Urg ad ent | | No | N/A | not su table based on cave length | V g n a Spelling cal Su vey | OK |
| VA-0212 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 0 ROW | Ac on s d aw and urg ad ent | | No | N/A | not su table based on ent ance and cave length | V g n a Spelling cal Su vey | OK |
| WV-0056 | West V g | Mon on | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 1007 ROW | Downing ad ent of route | | No | No | no impact based on d stance to end of cave, not su table based on flood ng | Hempel, WV-0056, DAA Ka et Team | OK |
| VA-0135 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 9343 ROW | Urg ad ent | | No | No | no impact based on urg ad ent and 1 mile away, not su table based on flood ng | Douglas, DAA Ka et Team | OK |
| VA-0219 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 650 ROW | Urg ad ent | | No | No | no impact based on urg ad ent, not su table based on flood ng | V g n a Spelling cal Su vey, DAA Ka et Team | OK |
| VA-0209 | V g n a | Montgon | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 60 ROW | On oppo te h h ac on s low caddie | | No | N/A | not su table based on su face p1 and no a flow | V g n a Spelling cal Su vey, DAA Ka et Team | OK |
| VA-0216 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 135 ROW | Urg ad ent | | No | No | no impact based on urg ad ent, not su table based on su face and no a flow | V g n a Spelling cal Su vey, DAA Ka et Team | OK |
| VA-0215 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 87 ROW | Urg ad ent | | No | No | no impact based on urg ad ent, not su table based on su face and no a flow | V g n a Spelling cal Su vey, DAA Ka et Team | OK |
| VA-0220 | V g n a | Montgon | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 20 ROW | urg ad ent and ac on s 85 f om across road | | No | N/A | not su table based on cave length | V g n a Spelling cal Su vey | OK |
| VA-0225 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 15 ROW | 5 downy ac on s small caddie on road dge | | No | N/A | not su table based on cave length | V g n a Spelling cal Su vey, DAA Ka et Team | OK |
| VA-0158 | V g n a | Montgon | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 50 ROW | 5 downy a couple dge and d w e f om Ad | | No | N/A | not su table based on ent ance | V g n a Spelling cal Su vey, DAA Ka et Team | OK |
| VA-0146 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 8 ROW | Urg ad ent | | No | N/A | not su table based on ent ance and cave length | V g n a Spelling cal Su vey | OK |
| VA-0214 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 12 ROW | On other side of h h | | No | N/A | not su table based on cave length | V g n a Spelling cal Su vey | OK |
| VA-0182 | V g n a | Montgon | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 15 ROW | Urg ad ent | | No | N/A | not su table based on cave length | Douglas, V g n a Spelling cal Su vey | OK |
| VA-0145 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 35 ROW | Urg ad ent | | No | N/A | not su table based on su face p1 | V g n a Spelling cal Su vey, DAA Ka et Team | OK |
| VA-0218 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 10 ROW | Urg ad ent | | No | N/A | not su table based on cave length and su face p1 | V g n a Spelling cal Su vey, DAA Ka et Team | OK |
| VA-0230 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 40 ROW | Other side of h h, down the dge | | No | No | no impact based on route de of 0.5-m in-le buffer, topog asph, not su table based on length | V g n a Spelling cal Su vey | OK |
| VA-0199 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 40 ROW | Urg ad ent | | No | No | no impact based on route de of 0.5-m in-le buffer, urg ad ent, not su table based on cave length | Douglas, V g n a Spelling cal Su vey | OK |
| VA-0146 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 400 ROW | Downing ad ent | | No | No | no impact based on route de of 0.5-m in-le buffer, not su table based on f l | Douglas | OK |
| VA-0210 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 14350 ROW | Urg ad ent of route | | No | No | no impact based on route de of 0.5-m in-le buffer, urg ad ent and 1 mile away, not su table based on flood ng and co lapse | V g n a Spelling cal Su vey, DAA Ka et Team | OK |
| VA-0137 | V g n a | Montgon | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 5400 ROW | Downing ad ent | | No | No | no impact based on route de of 0.5-m in-le buffer and 1 mile away, not su table based on flood ng | Douglas, Hock nge, DAA Ka et Team | OK |
| VA-0214 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 25 ROW | Urg ad ent | | No | No | no impact based on route de of 0.5-m in-le buffer, urg ad ent, not su table based on cave length | V g n a Spelling cal Su vey, DAA Ka et Team | OK |
| VA-0215 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 0 ROW | On other side of h h | | No | No | no impact based on route de of 0.5-m in-le buffer, not su table based on length | V g n a Spelling cal Su vey | OK |
| VA-0149 | V g n a | Montgon | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 250 ROW | 5 downy tower of nest h h, ac on s road | | No | No | no impact based on route de of 0.5-m in-le buffer, not su table based on ent ance and 1 mile f l ed | Douglas, DAA Ka et Team | OK |
| VA-0138 | V g n a | Montgon | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 272 ROW | So face - downing ad ent of route, subse face - urg ad ent of route | | No | No | no impact based on route de of 0.5-m in-le buffer, not su table based on flood ng and be ng f l ed w th a g n c d e s | Douglas, V g n a Spelling cal Su vey, DAA Ka et Team | OK |
| WV-0064 | West V g | Mon on | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 20 ROW | Urg ad ent a couple d aw water ly | | No | No | no impact based on route de of 0.5-m in-le buffer, urg ad ent, not su table based on cave length | Hempel | OK |
| VA-0211 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 40 ROW | Other side of h h, down the dge | | No | No | no impact based on route de of 0.5-m in-le buffer, not su table based on p1 and su face p1 | V g n a Spelling cal Su vey, DAA Ka et Team | OK |
| VA-0211 | V g n a | Montgon | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 46 ROW | On low dge | | No | No | no impact based on route de of 0.5-m in-le buffer, not su table based on cave length and cave as an m ad den | V g n a Spelling cal Su vey, DAA Ka et Team | OK |
| VA-0217 | V g n a | G l e s | Unknown | Su tab 1 ty Unknown | Su tab 1 ty Unknown | | 25 ROW | Urg ad ent | | No | No | no impact based on route de of 0.5-m in-le buffer, urg ad ent, not su table based on cave length | V g n a Spelling cal Su vey, DAA Ka et Team | OK |

* Table Potent al h be recorde nes p o act n MWP B ding cal Assessment APPENDIX D SUPPLEMENTAL INFORMATION BASED UPON USGS AND USGS COMMENTS

***To be cons de ed su table h d t

1. The open rgn should be at least one (1) foot n d ane te o n g e .
2. The passage should cont nue beyond the "de h nose" and not have an rbr oue end w th n 60 feet of ent anck.
3. Ent anck that a e flood ed n p o ne to flood ng n, ad s n on t l g, col lapsed sh d, o rther we re measure ble to b e w l be excluded.
4. Open rgn that have occu ad acce ntly e, w th n the past 12 month(s) due to c ent on o rta dence w l be excluded.

***Potent al cont act on impact evaluat on was based on

1. Locat on and p o m n ty to l m s of d stance (LOD)
2. T and way f om LOD
3. Topog aph c n e t r g l g ad ent
4. Hyd ology
5. No se
6. Spec f c cont act on act v t e n p o m n ty to featu e

***Maple source

DAA (D nge Adm Assoc) ka et Team (qual f cat on attached)

B l Bellore - P otes onal G eog r, ba et natu al resou ce Focus, 45 yea s map source cave and ka et mapping and weas ch West V g n a and V g n a Spelling cal Su vey.

Map ka et al - Concept of Analys, geog r, we comment, al ly focus, 35 yea s map source cave and ka et mapping and weas ch V g n a Spelling cal Su vey.

Douglas, H n v h (1984). Cave of V g n a V g n a Cave Su vey. So ba Ch n v, V g n a, 265 p.

Hempel, John C. (1975). Cave and ka et of Mon on County, WV. West V g n a Spelling cal Su vey Bu let n 4, P m b u g h, Pennsylvania.

Hock nge, John R. (1975). Desc pt on of V g n a Cave. Bu let n No. 85, V g n a D v s on of M n e al Resou ce, Ch b r t e n, V g n a.