

**APPENDIX A
 ENDANGERED, THREATENED, AND SENSITIVE SPECIES
 LIKELIHOOD OF OCCURRENCE
 Reflecting 2003 changes and species account updates**

02/06/2006

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
Threatened / Endangered					
Mammals					
Gray wolf	<i>Canis lupus</i>	LE/GE/N4/SX	High spruce forest and associated northern mixed hardwood/coniferous forest. Considered extirpated from WV since 1900 when the last wolf was killed in the state. ^{1, 41}		Considered extirpated from WV. ^{1, 41}

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
--	-----------------	--------------	---------	-----------	--------------------------

Virginia big-eared bat
Corynorhinus townsendii virginianus
 LE/G4T2/N2/S2

Uses caves during summer (maternity sites) and winter (hibernacula). These caves are typically located in karst regions dominated by oak-hickory or beech-maple-hemlock forest associations. Forage in patchy mosaic habitats^{3, 45} Cave Mountain cave (Pendleton Co.) and Cave Hollow/Arbogast cave (Tucker Co.) have been designated as Critical Habitat by USFWS. Significant status is based on Federal Caves Resources Protection Act of 1988. Forest Plan amendment calls for creation of MP 837 for areas 200' from VBEB caves. Reference Forest Plan Amendment.

Cave Name	Cave Status	Distance to watershed(mi)	Ownership	Quad
Alpena #1	Extirpated from this cave, within proclamation boundary		Private	Bowden
Alpena #2	Extirpated from this cave, within proclamation boundary		Private	Bowden
Aqua-terra	within proc boundary, hibernacula		Private	Whitmer
Big Springs	Gated, significant, hibernacula		FS	Parsons
Bowden	Significant, hibernacula		Private/FS	Bowden
Brook Stemple	Historical, within 5 miles of Proc boundary		Private	Aurora
Cave Hollow/Arbogast	Critical, gated, significant, hibernacula, maternity		FS	Mozark
Cave Mountain	Gated, significant, critical, maternity		FS	Upper Tract
Cedar Hill	Historical		Private	Petersburg West
Flute	Transient colony		Private	Sugar Grove
Gale Warner	Maternity cave		Private	Circleville
Harper Trail	Hibernacula		FS	Beverly East
Hellhole	Critical, fenced, within proc boundary		Private	Onego
Izaak Walton	Within proc boundary		Private	Beverly East
Keys			Private	Franklin
Mill Run #1	Signed, within proc boundary		Private	Hopeville
Mill Run #2	Signed, within proc boundary		Private	Hopeville
Minor Rexrode	Gated, fenced, maternity and hibernacula, outside proc boundary		Private	Sugar Grove
Mystic	Signed, maternity, within proc boundary		Private	Onego
New Trout	Hibernacula		Private	Sugar Grove
Peacock	Signed, maternity, hibernacula, within proc boundary		Private	Petersburg West
Rexrode	Historical		Private	Moatstown
Schoolhouse	Fenced, gated, maternity, within proc boundary		Private	Upper Tract
Seneca Caverns	Within proc boundary		Private	Onego
Sinks of Gandy	Within proc boundary		Private	Sinks of Gandy
Sites	Historical		Private	Sugar Grove
Smoke Hole	Maternity, within proc boundary		Private	Upper Tract
Stewart Run			FS	Snyder Knob
Trout	Within 5 miles of Proc boundary		Private	Sugar Grove
Warners	Historical		Private	Onego

The project area for Cherry River is 70 miles away from the nearest VBEB Caves.

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
Eastern cougar	<i>Puma concolor cougar</i>	LE/G5TH/NH/SH	Very large, remote, undisturbed, mountainous areas. Hardwood or mixed forest.	Presence in West Virginia is unconfirmed at this time. ^{1, 41} The last documented eastern cougar is one shot in Pendleton Co. in 1887 but as late as 1936 there were reported tracks in Pocahontas Co. ⁴¹ Local residents have reported seeing this species in Randolph Co., but these sightings cannot be confirmed.	Presence in West Virginia is unconfirmed at this time. ^{1, 41}
WV northern flying squirrel	<i>Glaucomys sabrinus fuscus</i>	LE/G5T2/N2/S2	Associated with boreal habitats, especially spruce-fir and northern hardwood forests. Elevations from 2600-4600'. Northern hardwood forests that contain a conifer component. ^{2, 26, 45}	Extends southwestward, following the Allegheny Mt., from Canaan Heights and the northwestern edge of the Dolly Sods Wilderness Area (Tucker Co.) in the north to Briery Knob (Pocahontas Co.) and Rabbit Run (Greenbrier Co.) in the south. Also encompassing areas in Randolph, Webster, and Pendleton Co.	Absent. No habitat within the project area.

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence																																																																																																																								
Indiana bat	<i>Myotis sodalis</i>	LE/G2/N2/S1	<p>Winter in caves or mines that satisfy their highly specific need for cold temperatures during hibernation. During summer, roost in trees and forage primarily in riparian and upland forests.^{4, 45} Cave Hollow/Arbogast cave (Tucker Co.) has been designated as Critical Habitat by USFWS. Significant status is based on Federal Caves Resources Protection Act of 1988.</p> <p style="background-color: yellow;">Forest Plan amendment calls for Indiana bat habitat to be designated MP 838. Reference Forest Plan Amendment.</p> <table border="1"> <thead> <tr> <th>Cave Name</th> <th>Cave Status</th> <th></th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Big Springs</td><td>Gated, significant</td><td></td><td>FS</td><td>Parsons</td></tr> <tr><td>Bob Gee</td><td>Within proclamation boundary</td><td></td><td>Private</td><td>Trout</td></tr> <tr><td>Bowden</td><td>Significant</td><td></td><td>Private</td><td>Bowden</td></tr> <tr><td>Cass</td><td>Within proclamation boundary</td><td></td><td>Private</td><td>Cass</td></tr> <tr><td>Cave Hollow/Arbogast</td><td>Critical, Gated, significant</td><td></td><td>FS</td><td>Mozark</td></tr> <tr><td>Coal Run</td><td></td><td></td><td>Private</td><td>Mozark</td></tr> <tr><td>Falling Spring</td><td>Within proclamation boundary</td><td></td><td>Private</td><td>Mingo</td></tr> <tr><td>Fortlick</td><td>Within 5 miles of Proc boundary</td><td></td><td>Private</td><td>Valley Head</td></tr> <tr><td>Gooseberry</td><td>Within 5 miles of Proc boundary</td><td></td><td>Private</td><td>Adolph</td></tr> <tr><td>Hellhole</td><td>Critical, Within proc boundary</td><td></td><td>Private</td><td>Onego</td></tr> <tr><td>Higginbotham's #1 - #4</td><td>Within 5 miles of Proc boundary</td><td></td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Izaak Walton</td><td>Within proclamation boundary</td><td></td><td>Private</td><td>Beverly East</td></tr> <tr><td>Lobelia Saltpeter</td><td>Within 5 miles of Proc boundary</td><td></td><td>Private</td><td>Lobelia</td></tr> <tr><td>Martha's</td><td>Within 5 miles of Proc boundary</td><td></td><td>Private</td><td>Hillsboro</td></tr> <tr><td>Schoolhouse</td><td>Within proclamation boundary</td><td></td><td>Private</td><td>Upper Tract</td></tr> <tr><td>Simmons Mingo</td><td>Within proclamation boundary</td><td></td><td>Private</td><td>Mingo</td></tr> <tr><td>Smoke Hole</td><td>Within proclamation boundary</td><td></td><td>Private</td><td>Upper Tract</td></tr> <tr><td>Snedegers</td><td>Restricted access</td><td></td><td>Private</td><td>Droop</td></tr> <tr><td>Stewart Run</td><td>Within proclamation boundary</td><td></td><td>Private</td><td>Snyder Knob</td></tr> <tr><td>Trout</td><td>Within 5 miles of Proc boundary</td><td></td><td>Private</td><td>Sugar Grove</td></tr> <tr><td>Tub</td><td>Within 5 miles of Proc boundary</td><td></td><td>Private</td><td>Hillsboro</td></tr> <tr><td>Two Lick Run</td><td>Signed, significant</td><td></td><td>FS</td><td>Bowden</td></tr> <tr><td>Upper Martha's</td><td>Within 5 miles of Proc boundary</td><td></td><td>Private</td><td>Hillsboro</td></tr> </tbody> </table> <p>The nearest Indiana bat caves is 17-18 away from the Cherry River Project area. Potential roosting habitat could be found throughout the Monongahela National Forest including the Cherry River Project area.</p>	Cave Name	Cave Status		Ownership	Quad	Big Springs	Gated, significant		FS	Parsons	Bob Gee	Within proclamation boundary		Private	Trout	Bowden	Significant		Private	Bowden	Cass	Within proclamation boundary		Private	Cass	Cave Hollow/Arbogast	Critical, Gated, significant		FS	Mozark	Coal Run			Private	Mozark	Falling Spring	Within proclamation boundary		Private	Mingo	Fortlick	Within 5 miles of Proc boundary		Private	Valley Head	Gooseberry	Within 5 miles of Proc boundary		Private	Adolph	Hellhole	Critical, Within proc boundary		Private	Onego	Higginbotham's #1 - #4	Within 5 miles of Proc boundary		Private	Williamsburg	Izaak Walton	Within proclamation boundary		Private	Beverly East	Lobelia Saltpeter	Within 5 miles of Proc boundary		Private	Lobelia	Martha's	Within 5 miles of Proc boundary		Private	Hillsboro	Schoolhouse	Within proclamation boundary		Private	Upper Tract	Simmons Mingo	Within proclamation boundary		Private	Mingo	Smoke Hole	Within proclamation boundary		Private	Upper Tract	Snedegers	Restricted access		Private	Droop	Stewart Run	Within proclamation boundary		Private	Snyder Knob	Trout	Within 5 miles of Proc boundary		Private	Sugar Grove	Tub	Within 5 miles of Proc boundary		Private	Hillsboro	Two Lick Run	Signed, significant		FS	Bowden	Upper Martha's	Within 5 miles of Proc boundary		Private	Hillsboro		
Cave Name	Cave Status		Ownership	Quad																																																																																																																									
Big Springs	Gated, significant		FS	Parsons																																																																																																																									
Bob Gee	Within proclamation boundary		Private	Trout																																																																																																																									
Bowden	Significant		Private	Bowden																																																																																																																									
Cass	Within proclamation boundary		Private	Cass																																																																																																																									
Cave Hollow/Arbogast	Critical, Gated, significant		FS	Mozark																																																																																																																									
Coal Run			Private	Mozark																																																																																																																									
Falling Spring	Within proclamation boundary		Private	Mingo																																																																																																																									
Fortlick	Within 5 miles of Proc boundary		Private	Valley Head																																																																																																																									
Gooseberry	Within 5 miles of Proc boundary		Private	Adolph																																																																																																																									
Hellhole	Critical, Within proc boundary		Private	Onego																																																																																																																									
Higginbotham's #1 - #4	Within 5 miles of Proc boundary		Private	Williamsburg																																																																																																																									
Izaak Walton	Within proclamation boundary		Private	Beverly East																																																																																																																									
Lobelia Saltpeter	Within 5 miles of Proc boundary		Private	Lobelia																																																																																																																									
Martha's	Within 5 miles of Proc boundary		Private	Hillsboro																																																																																																																									
Schoolhouse	Within proclamation boundary		Private	Upper Tract																																																																																																																									
Simmons Mingo	Within proclamation boundary		Private	Mingo																																																																																																																									
Smoke Hole	Within proclamation boundary		Private	Upper Tract																																																																																																																									
Snedegers	Restricted access		Private	Droop																																																																																																																									
Stewart Run	Within proclamation boundary		Private	Snyder Knob																																																																																																																									
Trout	Within 5 miles of Proc boundary		Private	Sugar Grove																																																																																																																									
Tub	Within 5 miles of Proc boundary		Private	Hillsboro																																																																																																																									
Two Lick Run	Signed, significant		FS	Bowden																																																																																																																									
Upper Martha's	Within 5 miles of Proc boundary		Private	Hillsboro																																																																																																																									

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
Birds					
Bald Eagle	<i>Haliaeetus leucocephalus</i>	LT/G4/S1	Typically found along the shores of large rivers and lakes, as main prey is fish and waterfowl. Nests in tall trees or on cliffs near large rivers or lakes. ⁶	Grant, Hampshire, Mineral and Hardy Co. Migratory routes traverse areas of the MNF Ranger Districts.	Unlikely. The nearby Cherry and Gauley Rivers could attract this species during the non-breeding season, but the land along the river is probably too developed to support nesting bald eagles since they are sensitive to human disturbance during nesting. Bald Eagles have not been reported from the project area.
Amphibian					
Cheat Mountain Salamander	<i>Plethodon nettingi</i>	LT/G2/S1	Moist spruce or mixed spruce/deciduous forests, including, but not limited to, shaded or moist coves, possibly with rhododendron and/or small emergent rocks within spruce or hemlock forest. Spruce stands containing Bazzania (a liverwort). ⁷	Minimum elevation is 2600' on the Cheat district, and 2940' on the Potomac and Greenbrier districts. Range extends east of McGowan Mt. (Randolph Co.) to Dolly Sods (Tucker Co.), south to Spruce Knob (Pendleton & Pocahontas Co.), southwest to Thorny Flat (Pocahontas Co.), north to Barton Knob (Randolph Co.). Not known to occur on the Gauley, Marlinton, or White Sulphur districts.	Absent. No habitat for this species is present in the project area.
Reptiles & Fish					
None					
Plants – Surveys were conducted for these species in the project area in 2001, 2003, 2004, 2005; none were found					
Small-whorled pogonia	<i>Isotria medeoloides</i>	LT/G2/S1	Mixed deciduous or mixed-deciduous/coniferous forest in generally second or third growth successional stages; occurs in both fairly young forests and in maturing stands. Majority of occupied sites have: sparse to moderate ground cover; relatively open understory, proximity to logging roads, streams or	Occurs on only one site in WV in Greenbrier County, White Sulphur District	Possible. Potential habitat may be available in project area. However, project area is not near any known locations.

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
			other features that create long persisting breaks in canopy; associated species -- witch-hazel, striped maple, hazelnut, serviceberry; highly acidic nutrient-poor soil. ¹⁷		
Shale Barren Rockcress	<i>Arabis serotina</i>	LE/G2/S2	Biennial herb found mostly on shale barrens of eastern counties of WV. ⁸	Grant, Greenbrier, and Pendleton counties.	Absent. Preferred habitat conditions not present.
Virginia Spirea	<i>Spiraea virginiana</i>	LT/G2/S1	Clonal shrub found on damp, rocky banks of larger high gradient streams. Flood-scoured mouths of side streams, rocky isles, and seasonally flooded side channels, in shrub thickets between the river and forest. Full sun or shade. ⁹	Known from Greenbrier Co. near Greenbrier Youth Camp; National Park Service land in Nicholas Co.	Possible. Potential habitat available along Cherry River. However, project area is not near known locations.
Running Buffalo Clover	<i>Trifolium stoloniferum</i>	LE/G3/S2	Perennial clover found on rich, fertile (limestone geology & soils), semi-shaded habitats. Open, savannah-like forests; lightly disturbed areas such as old logging roads. Also old farmsteads and cemeteries. ⁹	Logging roads on the Fernow Experimental Forest; Swecker Ridge, McGowan Mt., Cheat Mt. (Chestnut Ridge), Shavers Fork (Randolph and Tucker Co.). Also found in Greenbrier and Pendleton Co.	Unlikely. No limestone soils present in project area.
Sensitive Species					
Mammals					
Southern rock vole	<i>Microtus chrotorrhinus carolinensis</i>	G4T3/S2 (SOC)	Moist rocky areas or mossy rocks and logs in spruce & mixed deciduous-coniferous forests ⁴⁸ , often with birch, other hardwoods & hemlock components. Dense ground cover of mosses, ferns, & northern herbs. Unvegetated talus, grass balds, recent clearcuts, & road-fills. Highly associated with surface or subsurface water. ^{10, 48}	Tucker, Randolph, Pendleton, Pocahontas, & Greenbrier Co.	Possible, but most preferred habitats are located on the eastern side of the Cherry River Watershed.
Eastern small-footed bat	<i>Myotis leibii</i>	G3/S1(SOC)	Hibernates in caves, sometimes under stones or in deep crevices. Summer roosts and maternity sites in buildings, caves, rock crevices, tunnels or under bridges. It is thought that rock outcrops are important for this species. Forages over ponds and streams. Summer habitat may or may not be in proximity to hibernation	Preston, Tucker, Grant, Randolph, Pendleton, Pocahontas, and Greenbrier Co.	Possible, but surveys conducted in 2000 and 2002 did not locate this species.

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
			sites. ^{11, 42}		
Allegheny woodrat	<i>Neotoma magister</i>	G3G4/S3 (SOC)	Extensive rocky areas in deciduous or mixed forests, outcrops, cliffs, rocky talus slopes, caves, riverbanks with sandstone rocks and boulders ¹² and buildings ^{47, 45} .	Widespread across the Monongahela in rocky areas and around many caves	Known to occur in the watershed, however, rocky outcrops and riparian areas would not be impacted by the proposed project.
Southern water shrew	<i>Sorex palustris punctulatus</i>	G5T3/S1 (SOC)	Found near streams or other bodies of water. Heavy vegetative cover and plentiful logs, rocks, crevices, or other sources of shelter that offer high humidity and overhead protection ⁴⁷ . Dominant trees often yellow birch and red maple with dense rhododendron and laurel understory. ¹³	Preston, Tucker, Randolph, Pendleton, and Pocahontas Co.	Possible along streams. Riparian areas would be avoided by the project.
Birds					
Northern Goshawk	<i>Accipiter gentilis</i>	G5/S1B,S1N(SOC)	Coniferous, deciduous, & mixed forests; utilizes a variety of forest types, structural conditions, and successional stages. Usually nests in trees greater than 12" DBH. WV is on the southern extent of range. ^{15, 21}	Pocahontas, Randolph, Webster, Tucker Co. They also may be found nesting at elevations above 2500-3000 feet in Grant, Greenbrier, Mineral, Nicholas, and Preston Co.	Possible, but known nest areas on the eastern side of the watershed has not been active in the last 6 years. Surveys were conducted in 2005 but known were found.
Peregrine falcon	<i>Falco peregrinus anatum</i>	G4/S1B2SN	Nest sites on cliffs, prominent high spots, buildings and bridges. Needs isolation from human disturbance. ⁵	Historic nest sites in Grant, Pendleton, and Greenbrier Co. Known nests found on North Fork Mountain and Gauley Gorge.	Absent as a breeder, possible as a migrant, but would not be affected.
Migrant Loggerhead shrike	<i>Lanius ludovicianus migrans</i>	G4T3Q/S1BS2N	Most numerous in dry, open, eastern valleys (Shenandoah Valley). Prefers open farm and pasture, usually perching on scattered trees or wires. Favored nesting site: dense brush, most often with thorn trees. ^{21, 22}	May be found almost any summer in Hampshire, Grant, Pendleton, Greenbrier, and Monroe Co. Rare and local in Nicholas, Pocahontas, Tucker, and Hardy Co. Confirmed nesting in Berkley, Grant, Greenbrier, Monroe, and Mercer Co. ²¹	Possible on private land. This species is very rare in the state. It is usually associated with fields or other openings, which are rare on FS land in the project area.
Reptiles					

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
Timber rattlesnake	<i>Crotalus horridus</i>	G4/S3	Rough mountainous terrain where brushy ridges and rocky hillsides with ledges abound. Common in wooded areas, but may occur in valleys, along streams and among slab piles around old sawmill sites. ¹⁷	In WV, range extends from the Eastern Panhandle across the Alleghenies south into Mercer and Mingo counties.	Possible, but not known from the project area. Rocky outcrops would not be affected by the proposed project.
Amphibians					
Green salamander	<i>Aneides aeneus</i>	G3G4/S3 (SOC)	Smaller deeper crevices in rock faces, well-shaded and moist, but not wet, or under bark on trees, rotting logs, etc. Usually below 3000' in northern MNF; below 3500' in southern MNF. ^{17, 23}	Droop Mtn.; Blackwater Falls State Park; Tucker, Pocahontas, Randolph, Webster, and Nicholas Co. ³⁰	Does occur in the western portion of the Cherry River Watershed. Rocky outcrops would not be affected by the proposed project.
Hellbender	<i>Cryptobranchus alleghaniensis</i>	G3G4/S2 (SOC)	Cool, clear, larger permanent streams. Found throughout the Ohio River drainage. They spend most of their time under flat rocks, emerging at night to forage for food. ^{17, 23}	Tucker, Randolph, Pocahontas, Webster, Nicholas, and Greenbrier Co.	Known to occur in the North Fork Cherry near north of the Ranger Station. Because of erosion protection mitigation measures and avoidance of riparian areas, this species would not be affected by the projects.
Fish					
Redside dace	<i>Clinostomus elongatus</i>	G4/S1S2	Clear, cool streams, in small pools or backwater areas; most often found over gravel or cobble substrates and not typically found in association with aquatic vegetation. Found in the Monongahela River basin, the upper main channel of the Ohio River, and Middle Grave Creek; patchily distributed and uncommon.	Species has not been taken within MNF boundaries. The closest known localities are from Blackwater River above the falls (i.e. Canaan Valley), and Laurel Creek in Preston Co. ^{24, 25}	Unlikely based on known range. Riparian areas would not be affected by projects.
Candy darter	<i>Etheostoma osburni</i>	G3/S2(SOC)	Occupies rocky riffles, appears to be most common in cool to cold sections of moderate to small streams. Widely distributed, locally common endemic of lower New River drainage. ^{49, 18}	Gauley & New River drainages.	Known to occur in the Lower Cherry River Composite and North Fork Cherry River. Riparian areas

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
					would not be affected by projects.
Pearl dace	<i>Margariscus margarita</i>	G5/S3S4	Small, clear, cold streams; often near springs over fine gravel substrates ⁴⁹ ; frequently occupies bogs and ponds created by beaver dams.	In WV restricted to the Potomac and Monongahela Rivers; most abundant in Shavers Fork of the Cheat River and the two eastern-most tributaries of the Potomac River. ²⁵	Unlikely based on known range. Riparian areas would not be affected by projects.
New River shiner	<i>Notropis scabriceps</i>	G4/S2	Pools or slow runs in small or medium-sized streams, usually over bedrock or gravel substrates.	An endemic species with patchy distribution in the northern tributaries of the New River and definitely located within boundaries of the MNF. Has almost disappeared from the Gauley River drainages, but can still be found in the eastern tributaries. Is still fairly common in the Greenbrier River waters. ^{24, 25}	Possible based on known range. Riparian areas would not be affected by projects.
Cheat minnow	<i>Pararhinichthys bowseri</i>	G1G2/ S1S2(SOC)	Most often found in deep runs over gravel/rubble substrate. ²⁰	Found only in the Monongahela River drainages of the Ohio River Basin in WV and in waters on the Appalachian Plateau and Allegheny Mt. Provinces.	Unlikely based on known range. Riparian areas would not be affected by projects.
Appalachia darter	<i>Percina gymnocephala</i>	G4/S3	Pools and runs of mid-sized to large streams and rivers.	New River, Greenbrier and Gauley Rivers, East Fork of the Greenbrier River and Laurel Creek, Gauley drainage. ²⁵	Likely based on known range. Riparian areas would not be affected by projects.
Kanawha minnow	<i>Phenacobius teretulus</i>	G3G4/S1 (SOC)	Endemic to New (upper Kanawha) River drainage. Juveniles and adults typically occupy riffles and runs of gravel, rubble and boulder in cool to warm medium to large streams ⁴⁹ . Apparently has a preference for soft water ¹⁹ .	Upper Gauley River & New River tributaries. Pocahontas, Webster and Greenbrier Counties. May only inhabit the east and west forks of the Greenbrier River.	Likely based on known range. Riparian areas would not be affected by projects.
Mollusks					
Elktoe	<i>Alasmidonta marginata</i>	G4/S2(SOC)		Present in Greenbrier River, Cloverlick down through Hosterman to the mouth of the Greenbrier and into the New River.	Unlikely based on known range. Riparian areas would not be affected by projects.

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence																											
Organ cavesnail	<i>Fontigens tartarea</i>	G2/S2	Small freshwater cave snail. Inhabits cave streams under flat rocks. ⁴³ ₃₀	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr> <td>Bazzle</td> <td>Private</td> <td>Harman</td> </tr> <tr> <td>Bowden</td> <td>FS</td> <td>Bowden</td> </tr> <tr> <td>Bowden/Bear Heaven</td> <td>FS</td> <td>Bowden</td> </tr> <tr> <td>Dreen</td> <td>Private</td> <td>Mingo</td> </tr> <tr> <td>Harper</td> <td>Private</td> <td>Mozark Mt.</td> </tr> <tr> <td>Martha's</td> <td>Private</td> <td>Hillsboro</td> </tr> <tr> <td>Piddling Pit</td> <td>Private</td> <td>Edray</td> </tr> <tr> <td>Simmons-Mingo</td> <td>Private</td> <td>Mingo</td> </tr> </tbody> </table>	Cave	Ownership	Quad	Bazzle	Private	Harman	Bowden	FS	Bowden	Bowden/Bear Heaven	FS	Bowden	Dreen	Private	Mingo	Harper	Private	Mozark Mt.	Martha's	Private	Hillsboro	Piddling Pit	Private	Edray	Simmons-Mingo	Private	Mingo	Absent. No caves within project area.
Cave	Ownership	Quad																														
Bazzle	Private	Harman																														
Bowden	FS	Bowden																														
Bowden/Bear Heaven	FS	Bowden																														
Dreen	Private	Mingo																														
Harper	Private	Mozark Mt.																														
Martha's	Private	Hillsboro																														
Piddling Pit	Private	Edray																														
Simmons-Mingo	Private	Mingo																														
Green floater	<i>Lasmigona subviridis</i>	G3/S2(SOC)	Fine gravel and sand in backwater and slower water. Patchy occurrence in small to large rivers away from fast current and large boulders.	Currently in Greenbrier River & Clover Creek. Past record from New River drainage. Any Greenbrier River tributary is potential habitat. Two sites on west fork of Greenbrier above Durbin. From Cass south on Greenbrier is good potential. ^{14, 26}	Unlikely. Not near known locations. Riparian habitat would not be affected by these projects.																											
Insects																																
A tiger beetle	<i>Cicindela ancocisconensis</i>	G3/S3	Habitat specialist. Prefers open sand or a matrix of sand and cobble along permanent streams or medium-sized rivers. Usually found along rocky mountain streams and small rivers in partially shaded areas such as sand banks and sand bars. Apparently prefers to breed in sandy loam and adults are usually on sandy patches. ⁵¹	Known from South branch of the Potomac (Redman Run, Big Bend)), shirk gap, Elk River, and the Cheat bridge on the Shavers Fork. ⁵²	Possible, but riparian areas would not be affected by these projects.																											
Barren's tiger beetle	<i>Cicindela patruela</i>	G3/S2S3	Terrestrial habitats include: bare rock/talus and woodland-conifer, woodland-hardwood mix. Specialized to sandy/coarse gravel or eroding sandstone. Open mixed or deciduous (mainly oak) woodlands where open ground exists, such as along trails, outcrops or on ridge summit openings dominated by lichen and dry mosses. ⁵¹	Known from North Fork Mountain Trail and Brushy Run Road in Onego. ⁵²	Possible. Not near known locations. Not observed during site visits.																											

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence																																																						
A cave beetle	<i>Pseudanopthalmus fuscus</i>	G2G3/S2	Usually near damp or wet places under rocks or rotting wood near cave streams. ³⁵ ³⁰	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr> <td>Blue Springs</td> <td>Private</td> <td>Hillsboro</td> </tr> <tr> <td>Bolling</td> <td>Private</td> <td>Denmar</td> </tr> <tr> <td>Fox</td> <td>Private</td> <td>Droop</td> </tr> <tr> <td>Higginbotham's</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>McClung</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>Piddling Pit</td> <td>Private</td> <td>Edray</td> </tr> </tbody> </table>	Cave	Ownership	Quad	Blue Springs	Private	Hillsboro	Bolling	Private	Denmar	Fox	Private	Droop	Higginbotham's	Private	Williamsburg	McClung	Private	Williamsburg	Piddling Pit	Private	Edray	Absent. No caves within project area.																																	
Cave	Ownership	Quad																																																									
Blue Springs	Private	Hillsboro																																																									
Bolling	Private	Denmar																																																									
Fox	Private	Droop																																																									
Higginbotham's	Private	Williamsburg																																																									
McClung	Private	Williamsburg																																																									
Piddling Pit	Private	Edray																																																									
Timber Ridge cave beetle	<i>Pseudanopthalmus hadenoecus</i>	G1/S1	Twilight zone or deeper in caves; on moist soil, often near streams or drip areas. Probably do burrow some; often found under rocks or debris. ³¹	Occurs in Mystic Cave, Pendleton Co., Onego Quad (right on Proclamation Boundary). ³⁰	Absent. No caves within project area.																																																						
A cave beetle	<i>Pseudanopthalmus hypertrichosis</i>	G3/S3	Damp clay banks in caves. ⁴³ ³⁰	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr> <td>Arbuckle</td> <td>Private</td> <td>Lewisburg</td> </tr> <tr> <td>Blue Springs</td> <td>Private</td> <td>Hillsboro</td> </tr> <tr> <td>Bolling</td> <td>Private</td> <td>Denmar</td> </tr> <tr> <td>Cass</td> <td>Private</td> <td>Cass</td> </tr> <tr> <td>Crawford#1</td> <td>Private</td> <td>Valley Head</td> </tr> <tr> <td>Devils Kitchen</td> <td>Private</td> <td>Mingo</td> </tr> <tr> <td>Dreen</td> <td>Private</td> <td>Mingo</td> </tr> <tr> <td>Friels</td> <td>Private</td> <td>Hillsboro</td> </tr> <tr> <td>Grimes</td> <td>Private</td> <td>Cass</td> </tr> <tr> <td>Linwood</td> <td>Private</td> <td>Mingo</td> </tr> <tr> <td>Martens</td> <td>Private</td> <td>Lobelia</td> </tr> <tr> <td>Martha's</td> <td>Private</td> <td>Hillsboro</td> </tr> <tr> <td>McClung</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>Piddling Pit</td> <td>Private</td> <td>Edray</td> </tr> <tr> <td>Simmons-Mingo</td> <td>Private</td> <td>Mingo</td> </tr> <tr> <td>Simmons-Mingo</td> <td>Private</td> <td>Mingo</td> </tr> <tr> <td>Tub</td> <td>Private</td> <td>Hillsboro</td> </tr> </tbody> </table>	Cave	Ownership	Quad	Arbuckle	Private	Lewisburg	Blue Springs	Private	Hillsboro	Bolling	Private	Denmar	Cass	Private	Cass	Crawford#1	Private	Valley Head	Devils Kitchen	Private	Mingo	Dreen	Private	Mingo	Friels	Private	Hillsboro	Grimes	Private	Cass	Linwood	Private	Mingo	Martens	Private	Lobelia	Martha's	Private	Hillsboro	McClung	Private	Williamsburg	Piddling Pit	Private	Edray	Simmons-Mingo	Private	Mingo	Simmons-Mingo	Private	Mingo	Tub	Private	Hillsboro	Absent. No caves within project area.
Cave	Ownership	Quad																																																									
Arbuckle	Private	Lewisburg																																																									
Blue Springs	Private	Hillsboro																																																									
Bolling	Private	Denmar																																																									
Cass	Private	Cass																																																									
Crawford#1	Private	Valley Head																																																									
Devils Kitchen	Private	Mingo																																																									
Dreen	Private	Mingo																																																									
Friels	Private	Hillsboro																																																									
Grimes	Private	Cass																																																									
Linwood	Private	Mingo																																																									
Martens	Private	Lobelia																																																									
Martha's	Private	Hillsboro																																																									
McClung	Private	Williamsburg																																																									
Piddling Pit	Private	Edray																																																									
Simmons-Mingo	Private	Mingo																																																									
Simmons-Mingo	Private	Mingo																																																									
Tub	Private	Hillsboro																																																									
Dry Fork Valley cave beetle	<i>Pseudanopthalmus montanus</i>	G1/S1(SOC)	Twilight zone or deeper in selected caves, in or on moist soil, often near streams or drip areas, often under rocks or debris.	Known from only four WV caves in Tucker and Randolph Co. The only MNF cave is Cave Hollow/Arbogast Cave, Tucker Co. ³⁰	Absent. No caves within project area.																																																						
A beetle (unnamed)	<i>Pseudanopthalmus sp. 2</i>	G1/S1		Bowden cave ⁵²	Absent. No caves within project area.																																																						
Gandy Creek cave springtail	<i>Pseudosinella certa</i>	G1/S1	Clay banks, damp places on or near organic debris in caves. ³³	Occurs within 5 miles of the Proclamation Boundary in Stillhouse Cave, Randolph Co., Sinks of Gandy quad. ³⁰	Absent. No caves within project area.																																																						

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence																																																			
A springtail	<i>Pseudosinella gisini</i>	G3G4/S3	Found in damp places on or near bits of organic material in caves. ³³ ₃₀		Absent. No caves within project area.																																																			
				<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Allison</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Arbuckle</td><td>Private</td><td>Lewisburg</td></tr> <tr><td>Buckeye Creek</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Clyde Cochrane Sinks</td><td>Private</td><td>Droop</td></tr> <tr><td>Friars Hole</td><td>Private</td><td>Droop</td></tr> <tr><td>Friels</td><td>Private</td><td>Hillsboro</td></tr> <tr><td>Fuells Fruit</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Grimes</td><td>Private</td><td>Cass</td></tr> <tr><td>Higginbotham's</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Ludington</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>McClung</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>My Cave</td><td>Private</td><td>Mingo</td></tr> <tr><td>Piddling Pit</td><td>Private</td><td>Edray</td></tr> <tr><td>Rapp's</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>The Hole</td><td>Private</td><td>Anthony</td></tr> <tr><td>Tub</td><td>Private</td><td>Hillsboro</td></tr> </tbody> </table>	Cave	Ownership	Quad	Allison	Private	Williamsburg	Arbuckle	Private	Lewisburg	Buckeye Creek	Private	Williamsburg	Clyde Cochrane Sinks	Private	Droop	Friars Hole	Private	Droop	Friels	Private	Hillsboro	Fuells Fruit	Private	Williamsburg	Grimes	Private	Cass	Higginbotham's	Private	Williamsburg	Ludington	Private	Williamsburg	McClung	Private	Williamsburg	My Cave	Private	Mingo	Piddling Pit	Private	Edray	Rapp's	Private	Williamsburg	The Hole	Private	Anthony	Tub	Private	Hillsboro	
Cave	Ownership	Quad																																																						
Allison	Private	Williamsburg																																																						
Arbuckle	Private	Lewisburg																																																						
Buckeye Creek	Private	Williamsburg																																																						
Clyde Cochrane Sinks	Private	Droop																																																						
Friars Hole	Private	Droop																																																						
Friels	Private	Hillsboro																																																						
Fuells Fruit	Private	Williamsburg																																																						
Grimes	Private	Cass																																																						
Higginbotham's	Private	Williamsburg																																																						
Ludington	Private	Williamsburg																																																						
McClung	Private	Williamsburg																																																						
My Cave	Private	Mingo																																																						
Piddling Pit	Private	Edray																																																						
Rapp's	Private	Williamsburg																																																						
The Hole	Private	Anthony																																																						
Tub	Private	Hillsboro																																																						
Appalachian Grizzled skipper	<i>Pyrgus wyandot</i>	G2/S1	Shale barrens, pastures and powerlines on south to west facing shale slopes always with much bare rock or soil. ⁵¹	Distribution based on available natural heritage records from Greenbrier, Hampshire, Hardy, Kanawha, Mineral and Pendleton counties. Greenbrier Mountain ⁵²	Absent. No caves within project area.																																																			
A springtail	<i>Sinella agna</i>	G2G3/S1	Damp places in caves on or near bits of organic material. ³³ ₃₀		Absent. No caves within project area.																																																			
				<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Dreen</td><td>Private</td><td>Mingo</td></tr> <tr><td>Harper</td><td>Private</td><td>Mozark Mt.</td></tr> <tr><td>Just</td><td>Private</td><td>Mingo</td></tr> <tr><td>My Cave</td><td>Private</td><td>Mingo</td></tr> <tr><td>Piddling Pit</td><td>Private</td><td>Edray</td></tr> </tbody> </table>	Cave	Ownership	Quad	Dreen	Private	Mingo	Harper	Private	Mozark Mt.	Just	Private	Mingo	My Cave	Private	Mingo	Piddling Pit	Private	Edray																																		
Cave	Ownership	Quad																																																						
Dreen	Private	Mingo																																																						
Harper	Private	Mozark Mt.																																																						
Just	Private	Mingo																																																						
My Cave	Private	Mingo																																																						
Piddling Pit	Private	Edray																																																						
Diana fritillary	<i>Speyeria diana</i>	G3/S2S3	Inhabits mountainous areas in WV; prefers moist and well-shaded forest covers with rich soils; utilizes small openings and roadsides in search of nectar plants but will not stray far from woods; usually found nectaring along woodland edges. Nectar sources: milkweeds, thistles, butterfly weed, wild bergamot, Joe-pye-weed and ironweed. Larval host – woodland violets. ³⁷	Found in the southern third of the state, south from lower Pocahontas Co., and west to Kanawha and Lincoln Co.; may also occur occasionally in other surrounding counties, as well as the southern counties, with no records to date. ³⁷	Possible, but project area is not near known locations. Since the species has not been recorded on the southern half of the Forest, it's presence in the project area would probably be as a transient. Projects may increase availability of nectaring habitat.																																																			
Invertebrates																																																								

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence																					
Dry Fork Valley cave pseudoscorpion	<i>Apochthonius paucispinosus</i>	G1/S1	Damp leaf litter in caves	Bennett Cave, Mozark Mountain Quad, Tucker Co. (within Proclamation Boundary) ³⁰	Absent. No caves within project area.																					
Cheat Valley Cave Isopod	<i>Caecidotea cannula</i>	G2/S1(SOC)	Found under flat rocks in subterranean streams and pools in caves. May also be found in springs flowing out of caves.	Only known to occur in southern Tucker and northern Randolph Counties. MNF caves are Bowden cave* and Cave Hollow/Arbogast cave.	Absent. No caves within project area.																					
Greenbrier Valley cave isopod	<i>Caecidotea holsingeri</i>	G3/S3	The most common and widespread troglobitic isopod in WV. In cave stream gravel, under rocks, on decaying wood in streams, and occasionally in drip pools.	Only MNF cave known to harbor the species is Bowden cave*, Randolph Co. Also found in one cave in Virginia and one in Maryland.	Absent. No caves within project area.																					
An isopod	<i>Caecidotea simonini</i>	G1/S1	Cave pools. ³³	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr> <td>Flower Pot</td> <td>Private</td> <td>Whitmer</td> </tr> <tr> <td>Stillhouse</td> <td>Private</td> <td>Sinks of Gandy</td> </tr> </tbody> </table>	Cave	Ownership	Quad	Flower Pot	Private	Whitmer	Stillhouse	Private	Sinks of Gandy	Absent. No caves within project area.												
Cave	Ownership	Quad																								
Flower Pot	Private	Whitmer																								
Stillhouse	Private	Sinks of Gandy																								
An isopod	<i>Caecidotea sinuncus</i>	G1/S1	Under flat rocks in cave streams ³³	Within Proclamation Boundary, Blowhole, Keel spring, and Mystic caves, Onego Quad, Pendleton Co. ³⁰	Absent. No caves within project area.																					
An Underground crayfish	<i>Cambarus nerterius</i>	G2G3/S1	WV's only cave crayfish. Generally in subterranean streams, but small specimens have been collected from dry streambeds (but nearly saturated humidity). ^{28, 29}	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr> <td>Buckeye Creek</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>Clyde Cochrane Sinks</td> <td>Private</td> <td>Droop</td> </tr> <tr> <td>Ludington</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>Matt's Black</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>McClung</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>My Cave</td> <td>Private</td> <td>Mingo</td> </tr> </tbody> </table>	Cave	Ownership	Quad	Buckeye Creek	Private	Williamsburg	Clyde Cochrane Sinks	Private	Droop	Ludington	Private	Williamsburg	Matt's Black	Private	Williamsburg	McClung	Private	Williamsburg	My Cave	Private	Mingo	Absent. No caves within project area.
Cave	Ownership	Quad																								
Buckeye Creek	Private	Williamsburg																								
Clyde Cochrane Sinks	Private	Droop																								
Ludington	Private	Williamsburg																								
Matt's Black	Private	Williamsburg																								
McClung	Private	Williamsburg																								
My Cave	Private	Mingo																								
Hoffmaster's cave flatworm	<i>Macrocotyla hoffmasteri</i>	G2G3/S3	In first order and small second order streams of caves. ²⁷	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr> <td>Bazzle</td> <td>Private</td> <td>Harman</td> </tr> <tr> <td>Harper</td> <td>Private</td> <td>Mozark Mt</td> </tr> <tr> <td>Levisay</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>McClung</td> <td>Private</td> <td>Williamsburg</td> </tr> <tr> <td>Mystic</td> <td>Private</td> <td>Onego</td> </tr> <tr> <td>Piddling Pit</td> <td>Private</td> <td>Edray</td> </tr> </tbody> </table>	Cave	Ownership	Quad	Bazzle	Private	Harman	Harper	Private	Mozark Mt	Levisay	Private	Williamsburg	McClung	Private	Williamsburg	Mystic	Private	Onego	Piddling Pit	Private	Edray	Absent. No caves within project area.
Cave	Ownership	Quad																								
Bazzle	Private	Harman																								
Harper	Private	Mozark Mt																								
Levisay	Private	Williamsburg																								
McClung	Private	Williamsburg																								
Mystic	Private	Onego																								
Piddling Pit	Private	Edray																								
A cave obligate planarian	<i>Phagocata angusta</i>	G1G3/SU	A sub-aquatic, subterranean obligate.	WV Heritage records from Tucker Co. ⁵¹	Absent. No caves within project area.																					

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence																																																												
Greenbrier Valley cave millipede	<i>Pseudotremia fulgida</i>	G2G3/S2	Mud/clay banks in caves; sometimes associated with organic debris. ³⁰	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Allison's</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Arbuckle</td><td>Private</td><td>Lewisburg</td></tr> <tr><td>Blue Springs</td><td>Private</td><td>Hillsboro</td></tr> <tr><td>Clyde Cochrane Sinks</td><td>Private</td><td>Droop</td></tr> <tr><td>Durbin</td><td>Private</td><td>Durbin</td></tr> <tr><td>Friars Hole</td><td>Private</td><td>Droop</td></tr> <tr><td>Friels</td><td>Private</td><td>Hillsboro</td></tr> <tr><td>Higginbotham's</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Hughes Creek</td><td>Private</td><td>Lobelia</td></tr> <tr><td>Ludington</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Martha's</td><td>Private</td><td>Hillsboro</td></tr> <tr><td>McClung</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Overholt Blowing</td><td>Private</td><td>Hillsboro</td></tr> <tr><td>Piddling Pit</td><td>Private</td><td>Edray</td></tr> <tr><td>Poor Farm</td><td>Private</td><td>Hillsboro</td></tr> <tr><td>Poor Farm</td><td>Private</td><td>Denmar</td></tr> <tr><td>Rapp's</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Steam</td><td>Private</td><td>Hillsboro</td></tr> <tr><td>The Hole</td><td>Private</td><td>Anthony</td></tr> </tbody> </table>	Cave	Ownership	Quad	Allison's	Private	Williamsburg	Arbuckle	Private	Lewisburg	Blue Springs	Private	Hillsboro	Clyde Cochrane Sinks	Private	Droop	Durbin	Private	Durbin	Friars Hole	Private	Droop	Friels	Private	Hillsboro	Higginbotham's	Private	Williamsburg	Hughes Creek	Private	Lobelia	Ludington	Private	Williamsburg	Martha's	Private	Hillsboro	McClung	Private	Williamsburg	Overholt Blowing	Private	Hillsboro	Piddling Pit	Private	Edray	Poor Farm	Private	Hillsboro	Poor Farm	Private	Denmar	Rapp's	Private	Williamsburg	Steam	Private	Hillsboro	The Hole	Private	Anthony	Absent. No caves within project area.
Cave	Ownership	Quad																																																															
Allison's	Private	Williamsburg																																																															
Arbuckle	Private	Lewisburg																																																															
Blue Springs	Private	Hillsboro																																																															
Clyde Cochrane Sinks	Private	Droop																																																															
Durbin	Private	Durbin																																																															
Friars Hole	Private	Droop																																																															
Friels	Private	Hillsboro																																																															
Higginbotham's	Private	Williamsburg																																																															
Hughes Creek	Private	Lobelia																																																															
Ludington	Private	Williamsburg																																																															
Martha's	Private	Hillsboro																																																															
McClung	Private	Williamsburg																																																															
Overholt Blowing	Private	Hillsboro																																																															
Piddling Pit	Private	Edray																																																															
Poor Farm	Private	Hillsboro																																																															
Poor Farm	Private	Denmar																																																															
Rapp's	Private	Williamsburg																																																															
Steam	Private	Hillsboro																																																															
The Hole	Private	Anthony																																																															
Germany Valley cave millipede	<i>Pseudotremia lusciosa</i>	G1/S1	Mud/clay banks in caves; sometimes associated with organic debris. ³⁰	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Hell Hole</td><td>Private</td><td>Onego</td></tr> <tr><td>Schoolhouse</td><td>Private</td><td>Upper Tract</td></tr> <tr><td>Seneca Caverns</td><td>Private</td><td>Onego</td></tr> <tr><td>Stratosphere Balloon</td><td>Private</td><td>Onego</td></tr> </tbody> </table>	Cave	Ownership	Quad	Hell Hole	Private	Onego	Schoolhouse	Private	Upper Tract	Seneca Caverns	Private	Onego	Stratosphere Balloon	Private	Onego	Absent. No caves within project area.																																													
Cave	Ownership	Quad																																																															
Hell Hole	Private	Onego																																																															
Schoolhouse	Private	Upper Tract																																																															
Seneca Caverns	Private	Onego																																																															
Stratosphere Balloon	Private	Onego																																																															
South Branch Valley cave millipede	<i>Pseudotremia princeps</i>	G1/S1	Mud/clay banks in caves; sometimes associated with organic debris. ³⁰	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Kenny Simmons</td><td>Private</td><td>Moatstown</td></tr> <tr><td>Mystic</td><td>Private</td><td>Onego</td></tr> <tr><td>Peacock</td><td>Private</td><td>Petersburg</td></tr> <tr><td>Smoke hole</td><td>Private</td><td>Upper Tract</td></tr> </tbody> </table>	Cave	Ownership	Quad	Kenny Simmons	Private	Moatstown	Mystic	Private	Onego	Peacock	Private	Petersburg	Smoke hole	Private	Upper Tract	Absent. No caves within project area.																																													
Cave	Ownership	Quad																																																															
Kenny Simmons	Private	Moatstown																																																															
Mystic	Private	Onego																																																															
Peacock	Private	Petersburg																																																															
Smoke hole	Private	Upper Tract																																																															
Culver's planarian	<i>Sphalloplana culveri</i>	G1/S1	In small streams under rocks and pieces of wood in caves. ³³	Within Proclamation Boundary in Harper Cave, Mozark Mt. Quad, Tucker Co. ³⁰	Absent. No caves within project area.																																																												
Culver's cave isopod	<i>Stygobromus culveri</i>	G1G2/S1	Seep and drip pools or in small streams in caves. ³⁰	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Flower Pot</td><td>Private</td><td>Whitmer</td></tr> <tr><td>Red Run</td><td>FS</td><td>Mozark Mountain</td></tr> <tr><td>Stillhouse</td><td>Private</td><td>Sinks of Gandy</td></tr> </tbody> </table>	Cave	Ownership	Quad	Flower Pot	Private	Whitmer	Red Run	FS	Mozark Mountain	Stillhouse	Private	Sinks of Gandy	Absent. No caves within project area.																																																
Cave	Ownership	Quad																																																															
Flower Pot	Private	Whitmer																																																															
Red Run	FS	Mozark Mountain																																																															
Stillhouse	Private	Sinks of Gandy																																																															

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence																																																									
Greenbrier cave amphipod	<i>Stygobromus emarginatus</i>	G3/S3	In caves under gravel in streambeds and occasionally in pools. Most abundant in smallest trickles of water. Primarily in tiny first and second order headwater cave streams. ^{27, 35} ³⁰		Absent. No caves within project area.																																																									
				<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Bazzle</td><td>Private</td><td>Harman</td></tr> <tr><td>Big Springs</td><td>FS</td><td>Parsons</td></tr> <tr><td>Bonner Pit</td><td>Private</td><td>Mozark Mtn</td></tr> <tr><td>Bowden</td><td>FS</td><td>Bowden</td></tr> <tr><td>Clay Pit</td><td>Private</td><td>Mingo</td></tr> <tr><td>Dreen</td><td>Private</td><td>Mingo</td></tr> <tr><td>Flower Pot</td><td>Private</td><td>Whitmer</td></tr> <tr><td>Harper</td><td>Private</td><td>Mozark Mtn</td></tr> <tr><td>Levisay</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Linwood</td><td>Private</td><td>Mingo</td></tr> <tr><td>Martha's</td><td>Private</td><td>Hillsboro</td></tr> <tr><td>My Cave</td><td>Private</td><td>Mingo</td></tr> <tr><td>Piddling Pit</td><td>Private</td><td>Edray</td></tr> <tr><td>Poor Farm</td><td>Private</td><td>Denmar</td></tr> <tr><td>Rapp's</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Sharps</td><td>Private</td><td>Mingo</td></tr> <tr><td>The Hole</td><td>Private</td><td>Anthony</td></tr> <tr><td>Upper Martha's</td><td>Private</td><td>Hillsboro</td></tr> </tbody> </table>	Cave	Ownership	Quad	Bazzle	Private	Harman	Big Springs	FS	Parsons	Bonner Pit	Private	Mozark Mtn	Bowden	FS	Bowden	Clay Pit	Private	Mingo	Dreen	Private	Mingo	Flower Pot	Private	Whitmer	Harper	Private	Mozark Mtn	Levisay	Private	Williamsburg	Linwood	Private	Mingo	Martha's	Private	Hillsboro	My Cave	Private	Mingo	Piddling Pit	Private	Edray	Poor Farm	Private	Denmar	Rapp's	Private	Williamsburg	Sharps	Private	Mingo	The Hole	Private	Anthony	Upper Martha's	Private	Hillsboro	
Cave	Ownership	Quad																																																												
Bazzle	Private	Harman																																																												
Big Springs	FS	Parsons																																																												
Bonner Pit	Private	Mozark Mtn																																																												
Bowden	FS	Bowden																																																												
Clay Pit	Private	Mingo																																																												
Dreen	Private	Mingo																																																												
Flower Pot	Private	Whitmer																																																												
Harper	Private	Mozark Mtn																																																												
Levisay	Private	Williamsburg																																																												
Linwood	Private	Mingo																																																												
Martha's	Private	Hillsboro																																																												
My Cave	Private	Mingo																																																												
Piddling Pit	Private	Edray																																																												
Poor Farm	Private	Denmar																																																												
Rapp's	Private	Williamsburg																																																												
Sharps	Private	Mingo																																																												
The Hole	Private	Anthony																																																												
Upper Martha's	Private	Hillsboro																																																												
Pocahontas cave amphipod	<i>Stygobromus nanus</i>	G1/S1	Mud bottoms of small streams and seep pools in caves. ³³	Occurs within Proclamation Boundary in Pocahontas Co., Edray Quad – Piddling Pit cave. ³⁰	Absent. No caves within project area.																																																									
Minute cave amphipod	<i>Stygobromus parvus</i>	G1G2/S1	Found in mud-bottomed, drip and seep pools in caves; tolerant of substrate, but prefers standing water. ³⁴ ³⁰		Absent. No caves within project area.																																																									
				<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Bonner</td><td>Private</td><td>Mozark Mt.</td></tr> <tr><td>Cassell</td><td>Private</td><td>Cass</td></tr> <tr><td>Crawford #2</td><td>Private</td><td>Valley Head</td></tr> <tr><td>Piddling Pit</td><td>Private</td><td>Edray</td></tr> </tbody> </table>	Cave	Ownership	Quad	Bonner	Private	Mozark Mt.	Cassell	Private	Cass	Crawford #2	Private	Valley Head	Piddling Pit	Private	Edray																																											
Cave	Ownership	Quad																																																												
Bonner	Private	Mozark Mt.																																																												
Cassell	Private	Cass																																																												
Crawford #2	Private	Valley Head																																																												
Piddling Pit	Private	Edray																																																												
WV blind cave millipede	<i>Trichopetalum krekeleri</i>	G1/S1	In selected caves, under rocks, around organic debris or on damp silt banks near streams.	Known from only 5 WV caves. The only MNF cave is Bowden cave*, Randolph Co.	Absent. No caves within project area.																																																									

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence																																				
Grand Caverns blind cave millipede	<i>Trichopetalum weyeriense</i>	G3Q/S2	Damp areas in caves on organic debris. ³³ ³⁰	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Arbuckle</td><td>Private</td><td>Lewisburg</td></tr> <tr><td>Cass</td><td>Private</td><td>Cass</td></tr> <tr><td>Dreen</td><td>Private</td><td>Mingo</td></tr> <tr><td>Higginbotham's</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>Kenny Simmons</td><td>Private</td><td>Moatstown</td></tr> <tr><td>Linwood</td><td>Private</td><td>Mingo</td></tr> <tr><td>Ludington</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>McClung</td><td>Private</td><td>Williamsburg</td></tr> <tr><td>My Cave</td><td>Private</td><td>Mingo</td></tr> <tr><td>Mystic</td><td>Private</td><td>Onego</td></tr> <tr><td>The Hole</td><td>Private</td><td>Anthony</td></tr> </tbody> </table>	Cave	Ownership	Quad	Arbuckle	Private	Lewisburg	Cass	Private	Cass	Dreen	Private	Mingo	Higginbotham's	Private	Williamsburg	Kenny Simmons	Private	Moatstown	Linwood	Private	Mingo	Ludington	Private	Williamsburg	McClung	Private	Williamsburg	My Cave	Private	Mingo	Mystic	Private	Onego	The Hole	Private	Anthony	Absent. No caves within project area.
Cave	Ownership	Quad																																							
Arbuckle	Private	Lewisburg																																							
Cass	Private	Cass																																							
Dreen	Private	Mingo																																							
Higginbotham's	Private	Williamsburg																																							
Kenny Simmons	Private	Moatstown																																							
Linwood	Private	Mingo																																							
Ludington	Private	Williamsburg																																							
McClung	Private	Williamsburg																																							
My Cave	Private	Mingo																																							
Mystic	Private	Onego																																							
The Hole	Private	Anthony																																							
Luray Caverns blind cave millipede	<i>Trichopetalum whitei</i>	G2G3Q/S1	Damp areas in caves on or near organic debris. ³³ ³⁰	<table border="1"> <thead> <tr> <th>Cave</th> <th>Ownership</th> <th>Quad</th> </tr> </thead> <tbody> <tr><td>Hellhole</td><td>Private</td><td>Onego</td></tr> <tr><td>Stratosphere Balloon</td><td>Private</td><td>Onego</td></tr> <tr><td>Trout</td><td>Private</td><td>Sugar Grove</td></tr> </tbody> </table>	Cave	Ownership	Quad	Hellhole	Private	Onego	Stratosphere Balloon	Private	Onego	Trout	Private	Sugar Grove	Absent. No caves within project area.																								
Cave	Ownership	Quad																																							
Hellhole	Private	Onego																																							
Stratosphere Balloon	Private	Onego																																							
Trout	Private	Sugar Grove																																							
Plants																																									
Fraser fir	<i>Abies fraseri</i>	G2	Coniferous tree, generally found above 4500'.	Known from Blister Run, and Beaverdam Run, Randolph Co. According to Heritage Program records, is not native to WV. All known sites in WV are planted. ³⁶	Absent																																				
White monkshood	<i>Aconitum reclinatum</i>	G3/S3	Perennial herb found in mesic northern hardwood forests with acidic bedrock, 2500-4000' elev. Common on NE aspects, especially in coves. In wet but not flooded soil in partial shade, often in a seep at the edge of a road or river where the soil has been worn away (e.g. clay content) by the water moving down the hill. Also along high elevation roads. Most commonly on Cateache soils with Mauch Chunk geology.	Gay Knob Area (Edray), Chestnut Ridge (Paddy Knob), Spruce Knob Roadside 112 (Spruce Knob), & side slope of Laurel Run (Sharp Knob); occurs in Pocahontas, Randolph, Preston, Pendleton, Grant and Tucker Co.	Possible, but not recorded in plant surveys																																				
Arctic bentgrass	<i>Agrostis mertensii</i>	G5/S1	Open riparian at high elevations. Peaty or rocky soil. ^{38,46,47}	Known along the upper Shavers Fork above Cheat Bridge on the Mower tract. ³⁰	Absent. Habitat not present, outside suitable range.																																				
Lillydale onion	<i>Allium oxyphilum</i>	G2Q/S2	Odiferous herb with bulb; endemic to acidic shale or sandstone geology mainly on shale barrens.	Found in White Sulphur Springs, & Greenbrier, Pendleton, & Grant Co.	Absent. Habitat not present, no shale barrens in project area. Not near																																				

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
					known locations.
Spreading rockcress	<i>Arabis patens</i>	G3/S2	Moist, rocky woods, limestone outcrops and shady riverbanks	In the Eastern panhandle; Jordan Run Road, Grant Co.; "Dry Trough" Hampshire Co.; Wardensville, Hardy Co.; and Terrapin Neck, Jeff. Co.	Unlikely based on habitat and proximity to known locations; not recorded in plant surveys. No limestone outcrops in project area.
Cooper's milkvetch	<i>Astragalus neglectus</i>	G4/S1	Annual herb found on drier, limestone-based soils in the eastern part of the state.	Only known site is on Cave Mt., Grant Co., in what is considered a prairie extant community	Absent, no habitat present, not near known site. No suitable limestone habitat in project area.
Lance-leaf grapefern	<i>Botrychium lanceolatum</i>	G5T4/S1	Subarctic and boreal plant of mountain slopes and meadows. Occurs in moist shady woods and margins of swamps. ⁴⁷	Collected in Greenbrier, Pocahontas, Preston, Randolph, and Upshur Co. ³⁸	Unlikely. No suitable high elevation habitat within project area.
Blunt-lobed grapefern	<i>Botrychium oneidense</i>	G4Q/N4/S1	Mostly occurs in low, wet, acid, secondary woods and swamps. It often occurs with <i>B. dissectum</i> which is more common and occurs in more diverse habitats.	Found near Cherry River	Known to be in watershed. Site not included in the proposed actions.
Showy lady's slipper	<i>Cypripedium reginae</i>	G4/S1	June-Sept. Low, downy, perennial herb occurring in swamps and woods	Rare in WV, known to occur on MNF only near White Sulphur Springs, Greenbrier Co. ³⁸	Unlikely. Not near only known site on Forest.
Tall larkspur	<i>Delphinium exaltatum</i>	G3/S2(SOC)	Perennial herb found in open limestone woods, mainly in the mountains in the eastern part of the state.	Found at Smokehole in Pendleton Co., Hardy and Greenbrier Co.	Unlikely. No suitable limestone woods present in project area.
Yellow buckwheat	<i>Eriogonum allenii</i>	G4/S2	Perennial herb found on the most sterile and barest of sites on shale barrens.	Greenbrier Co.; Ugly Mt., Pendleton Co.	Absent. No shale barrens in project area.
Darlington's spurge	<i>Euphorbia purpurea</i>	G3/S2(SOC)	Annual herb with milky juice found in mountain glades and swampy woods (particularly where 2 river points come together, e.g. where Warner Run flows into Gandy Creek). Possibly mountain bogs, riparian areas. Moist to saturated soils.	Known from Blister Swamp, Pocahontas Co.; Terra Alta, Preston Co.; Laurel Fork, Randolph Co.; Tucker Co.; Canaan Valley, Laurel Fork Wilderness (N&S), McGowan Mt., Cunningham Knob, Yokum Knob, Narrow Ridge, Blue Knob	Likely in swampy headwaters of the Cherry River

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
				(Cranberry Glades Bog Area).	
Box huckleberry	<i>Gaylussacia brachycera</i>	G3/S2	Smooth shrub found in acidic sandy soil within submesic forests & on woodland slopes. Under hardwoods, with mixed pine, mt. laurel & other heaths in understory.	Largest population on border of GWNF and MNF in the eastern part of the state. In Greenbrier & Pocahontas Co., North Fork Mt., Redman Run Trail & Smokehole.	Unlikely. Not within known range, no suitable habitat in project area. .
Appalachian oak fern	<i>Gymnocarpium appalachianum</i>	G3/S1	Primarily occurs in rocky maple-birch-hemlock woods on mountain slopes and summits, on moist sandstone, talus slopes or bouldery colluvium. Requires a cool, moist microclimate and typically occurs on north-facing slopes with cold air seepage at elevations above 2,000 ft.; occasionally at lower elevations, particularly on the fringes of its range. ³⁹	Endemic to the Appalachian region, most common in Virginia (the center of its range), where it occurs at 30-100 localities. Pendleton Co. ³⁰	Likely.
Sweet-scented Indian plantain	<i>Hasteola suaveolens</i>	G3/S2	Widely but irregularly distributed in eastern US. Found on riverbanks and floodplains.	Found near Otter Creek cabin ⁵²	Unlikely. Not near known location.
White alumroot	<i>Heuchera alba</i>	G2Q/S2	Erect perennial herb found in dry, open woods in the eastern part of the state. Found on sandy soils with Tuscarora sandstone (e.g. North Fork Mt.), on rock outcrops within the woods (Gay Knob, Edray Quad) & on rock outcrops on roadside (Rd. 112, Spruce Knob, Pendleton Co.).	Found in higher elevations of North Fork Mt., Grant Co.; Spruce Knob, Pendleton Co.; Crouch Knob, Randolph Co.; Cass, Pocahontas Co	Unlikely. Project area is not very high in elevation.
Crested coralroot	<i>Hexalectris spicata</i>	G5/T4T5/S1	July-Aug. A leafless herb occurring in rich woods.	Smoke Hole, Pendleton Co.; approaching the northern limit of its range. ³⁸	Possible in semi-shaded, well drained woodlands in watershed. Although no limestone in project area and the area is not near known location or within known range.
Blue Ridge St. John's wort	<i>Hypericum mitchellianum</i>	G3/S1	Endemic to southern Appalachians. Has been found in seepage areas at high elevations or high elevation balds.	Found near Cheat bridge. ⁵²	Unlikely. Not near only known location on the Forest.
Long-stalked holly	<i>Ilex collina</i>	G3/S3	Deciduous shrub or tree found in riparian areas along high-energy	Selected sites on Cheat, Greenbrier and Gauley RDs.	Occurs within riparian areas of the

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
			streamsides at higher elevations. Moist soil; wet meadows and bogs.	Along Gauley and Cranberry Rivers	North Fork Cherry River. Projects would not affect riparian areas.
Butternut	<i>Juglans cinerea</i>	G3G4/S3 (SOC)	Deciduous shade-intolerant tree found in rich loamy soils, mixed hardwood forests, shade intolerant, regeneration in open fields, riparian zones, along ridges, or in edge habitat. Found in association with hawthorn on Greenbrier River shoreline in Greenbrier Co.	From valley to 3200'. Along streams (Laurel & Shavers Forks), & near the Gay Knob area (USFS Road 201) of Randolph Co.; also found in similar areas in adjacent counties. Also found on Landis Trail of North Fork Mt., Pendleton Co., and in Webster Co.	Possible along North Fork Cherry and other major streams and rivers in the area, but not known to occur in the Project area. Riparian areas would not be affected by these projects.
Thread rush	<i>Juncus filiformis</i>	G5/S2	June-Aug. Perennial grass-like herb occurring in bogs	Canaan Valley, elev. 3,000', Tucker Co.; and near Cheat Bridge, Randolph Co. – the southernmost known localities for this species. ³⁸	Unlikely, project area is outside species range.
Highland rush	<i>Juncus trifidus</i>	G5/S1	Rock crevices and alpine meadows. ⁴⁷	Known only from the rocky cliff tops on North Fork Mountain. Global range is Europe and NE America south to mtns. of Virginia and North Carolina. ^{30, 46}	Unlikely, project area is outside species range.
Turgid gay feather	<i>Liatris turgida</i>	G3/S2	Erect perennial herb in xeric environments associated with clay soils, gravel, shale barrens, & rocky outcrops; can also colonize road cuts. Occurs in shale barrens in WV. Associates include mt. laurel, black gum, red pine, chestnut oak, & sassafras.	(E.g. Slaty Fork TNC Reserve in Monroe Co.) & along roadside (McDowell Co.) White Sulphur Springs, Greenbrier, & Nicholas Co.	Unlikely. No shale barrens or other xeric environments in the project area.
Large-flowered Barbara's buttons	<i>Marshallia grandiflora</i>	G2/S2(SOC)	Smooth perennial aster found on sandy or rocky river banks of larger (3rd to 4th order) streams in mountains. Requires hydrology of flood-scouring and full sun, with little competition. Also found in bedrock crevices and sparsely vegetated shores with small stones.	Along the western slopes of Alleghenies. Shaver's Mt., Cheat Mt., Hopkin's Mt., Shaver's Fork, Cherry River, Horse Ridge, Gun Powder Ridge, Huttonsville; Blue Bend (Greenbrier Co.), along lower Gauley River, Nicholas Co.; Cheat River, Preston Co.	Habitat known to occur along larger streams and rivers in the area, but riparian areas would not be impacted by these projects.
Bog buckbean	<i>Menyanthes trifoliata</i>	G5/S1	April-June. Smooth, perennial marsh herb occurring in bogs and marshy places.	Backbone Mt., Tucker Co.; Cranberry Glades, Pocahontas Co.; historic site at Cranesville,	Possible in marshy headwaters of Cherry River.

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
				Preston Co. ³⁸	
Smokehole bergamot	<i>Monarda fistulosa</i> v. <i>brevis</i>	G5T1/S1(SOC)	Perennial, aromatic herb found only on limestone-derived communities of Cave Mt. ecosystem including the south branch of Potomac side slopes, cedar glades and rock outcrops.	Cave Mountain	Absent. Project area is not within the range or habitat type of this species.
Canada Mountain rice grass	<i>Oryzopsis canadensis</i> = <i>Piptatherum canadense</i>	G5/S1	June-July. A perennial grass occurring on sandy barrens	Summit of Panther Knob, Pendleton Co., elev. 4,500', the southernmost station known for the species. ³⁸	Absent. Habitat not present.
Silver Nailwort	<i>Paronychia argyrocoma</i>	G4/S3	July-Sept. Low perennial herb occurring on White Medina sandstone	New Creek Mt., Grant Co.; Lost River State Park, Hardy Co.; Seneca Rocks, North Fork Mt., Pendleton Co. ³⁸	Absent. Habitat not present. Not within range of species.
Yellow nailwort	<i>Paronychia virginica</i> v. <i>virginica</i>	G4/S1(SOC)	Perennial mat-like, wiry plant found on limestone-based rocky cliffs, sandstone banks, crevices along riverbanks, & cedar glades.	Cave Mtn., Eagle Rock & Ship Rock in the Smokehole, Pendleton Co.	Unlikely. Project area is not within known range.
Canby's Mountain lover	<i>Paxistima canbyi</i>	G2/S2(SOC)	Low evergreen shrub found in dry open woods. Calcareous rocks and slopes in the mountains.	Found only in Potomac and New-Kanawha watersheds in Grant, Pendleton and Greenbrier Co.	Absent. Not within known rang and suitable habitat does not exist is project area.
Swamp lousewort	<i>Pedicularis lanceolata</i>	G5/S2	Aug.-Oct. Herb occurring in swampy places, often calcareous.	Altona Marsh, Jefferson Co.; Buckeye, Dunmore & Minnehaha Springs, Pocahontas Co.; Sweet Springs, Monroe Co.; near Elkins, Randolph Co. – only known colonies in state. ³⁸	Possible in swampy headwaters of Cherry River however, project area is not near known colonies. Limestone habitat not found in project area.
Sword-leaved phlox	<i>Phlox buckleyi</i>	G2/S2	Perennial herb found on shale slopes in eastern woods. Road banks, open woods.	E. Pocahontas Co. near WV55 and WV39, and in Greenbrier Co.	Unlikely. Not near known locations and suitable habitat not found in project area..
Jacob's ladder	<i>Polemonium van-bruntiae</i>	G3/S2	Perennial herb found in swamps and sphagnum bogs and along riparian zones at higher elevations.	Pocahontas and Preston Co. Southernmost population in Cranberry Glades bog. Also, in Canaan Valley, Tucker Co.	Possible along riparian areas.
Tennessee pondweed	<i>Potamogeton tennesseensis</i>	G2/S1	Aquatic herb found in standing or slow-flowing shallows of rivers.	Greenbrier, Pocahontas, Preston, and Webster Co.	Possible in slow-flowing sections of river.

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
Rock skullcap	<i>Scutellaria saxatilis</i>	G3/S2	Perennial herb found on wooded rocky hillsides, moist cliffs, 2,500+'; talus slopes/bluffs; moist openings such as riverbanks or talus.	Greenbrier, Pocahontas & Tucker Co.	Possible, but the proposed projects would not affect riparian zones, rock outcrops, or cliffs.
Robust fire pink	<i>Silene virginica v. robusta</i>	G5T1Q/S1 (SOC)	Narrow endemic perennial herb in dry open woods or riparian areas of Smokehole Rec. Area. Associated with limestone.	Petersburg Gap in Grant and Pendleton Co.	Absent. Not near known range of species. Project area does not include dry, open woods.
Ammon's tortula	<i>Syntrichia ammonsiana</i> or <i>Tortula ammonsiana</i>	G1/S1(SOC)	Moss found on wet, cool rock outcrops on cliff overhangs adjacent to waterfalls. Sandstone walls.	Falls of Hills Creek, Pocahontas Co. ⁴⁰	Unlikely. Not near known location and no suitable habitat in project area.
Appalachian bristle fern	<i>Trichomanes boschianum</i>	G4/S1	Delicate fern occurring on dripping rocks. The gametophytes will probably be found in deep shaded recesses of sandstone and quartzite rocks. In the Appalachians it is more common and widespread than the sporophyte, but is overlooked because it resembles a filamentous alga.	Kanawha State Forest, Kanawha Co.; Webster Springs, Webster Co. This represents a northeastern extension of the range of this species. ³⁸	Unlikely. Not near known location and no suitable habitat in project area.
Kate's Mountain clover	<i>Trifolium virginicum</i>	G3/S3	Perennial, non-stoloniferous clover found on south-facing slopes of very sterile shale barrens and in dry-shale soils.	Eastern portion of the MNF including: Kate's Mt., Greenbrier Co.; Smokehole (above Big Bend campground); Hardy, Nicholas (Devonian shale's), Pendleton Co.	Absent. Habitat not present.
Nodding pogonia	<i>Triphora trianthophora</i>	G3G4/S2	Aug.-Sept. Rich woods, infrequent.	Short Creek, Fayette Co.; Spring Hill, Kanawha Co.; Mt. Lookout, Nicholas Co.; French Creek, Upshur Co.; and Holly River State Park, Webster Co. ³⁸	Possible within project area, but not recorded in surveys
Appalachian blue violet	<i>Viola appalachiensis</i>	G3/S2S3	Short perennial stoloniferous herb (mat-forming). Moist floodplains of high-energy streams, alluvial pond shores, old logging roads, and old mounds of up-rooted cherry trees.	Found on all districts. Grant, Hardy, Nicholas, Pendleton, Pocahontas, Preston, Randolph, Tucker, and Webster Co.	Likely within project area, but not recorded in surveys.
Sand grape	<i>Vitis rupestris</i>	G3/S1	Brushy, shrub-like grape found climbing on calcareous or gravelly banks, river bottoms, streambeds, washes, and scoured boulders and	Found in Grant, Greenbrier, Pendleton and Preston Co	Unlikely. Not near known range. Riparian areas would not be

	Scientific Name	Species Rank	Habitat	MNF Range	Likelihood of Occurrence
			cobbles.		impacted by these projects.
Netted chain fern	<i>Woodwardia areolata</i>	G5/S1	Large fern occurring in swamps and wet woods, chiefly in acid soil.	In WV, known only from Clay, Greenbrier, Mineral, Nicholas, Pocahontas, and Upshur counties. Species is distributed principally in the coastal plain and its occurrence in this state suggests that it is a remnant of the Cretaceous flora that occupied the territory prior to the uplift of the Appalachian Plateau. 38	Possible in wetter areas of the watershed.

Species Rank: US ESA Status/Global Heritage Status/National Conservation Status/ State Status

ESA Status: LE: Legally Endangered
 LT: Legally Threatened

Global Heritage Status: G: Global conservation
 T: Subspecies, varieties and populations

Global Status		State Conservation Status	
GX or TX	Presumed Extinct	SX	Presumed Extirpated
GH or TH	Historical	SH	Historical
G1 or T1	Critically Imperiled	S1	Critically Imperiled
G2 or T2	Imperiled	S2	Imperiled
G3 or T3	Vulnerable	S3	Vulnerable
G4 or t4	Apparently Secure	S4	Apparently Secure
G5 or t5	Secure	S5	Secure
GU or TU	Unrankable	SZ	Zero Occurrences
G? or T?	Not Yet Ranked	SU	Unrankable
		SR	Reported
		S?	Not yet ranked
		B	Breeding
		N	Non-breeding

REFERENCES

1. West Virginia Division of Natural Resources (WVNDR). 1988. Mammals of West Virginia, A Field Checklist. WVDNR, Nongame Wildlife Program, Elkins, WV
2. Stihler, C.W., J.L. Wallace, E.D. Michael and H. Pawelczyk. 1995. Range of (*Glaucomys sabrinus fuscus*), a federally endangered subspecies of the Northern Flying Squirrel, in West Virginia. In: Proc. WV Acad. Sci; Vol. 67, No. 2,3,4:13-20.
3. U.S. Department of the Interior, Fish & Wildlife Service. 1984. A Recovery Plan for the Ozark Big-eared bat and the Virginia Big-eared bat. USFWL, Region III, Twin Cities, MN. 56 p.
4. U.S. Department of the Interior, Fish & Wildlife Service. Agency Draft 1998. Indiana Bat, Revised Recovery Plan. USFWS, Region III, Minneapolis, MN, 61 p.
5. The Nature Conservancy. 1989. Element Stewardship Abstract for Peregrine Falcon. NC Natural Heritage; Dept. of Natural Resources and Community Development; Division of State Parks and Recreation; Box 27687, Raleigh, NC 27611.
6. The Nature Conservancy. 1989. Element Stewardship Abstract for Southern Bald Eagle. NC Natural Heritage; Dept. of Natural Resources and Community Development; Division of State Parks and Recreation; Box 27687, Raleigh, NC 27611.
7. Pauley, Thomas K. 1994. Surveys of the Cheat Mountain Salamander (*Plethodon nettingi*) in the potential impact area of Corridor H Build and Improved Roadway Alternatives.
8. U.S. Fish and Wildlife Service. 1991. Shale Barren Rock Cress (*Arabis serotina*) Recovery Plan. Newton Corner, MA, 40 pp.
9. West Virginia Natural Heritage Program. 1991. Wildlife Resources Section. The Status of Federally Endangered and Threatened Plant Species in West Virginia.
10. The Nature Conservancy. 1992. Element Stewardship Abstract for Rock Vole. WV Natural Heritage; WVDNR; P.O. Box 67; Elkins, WV 26241
11. The Nature Conservancy. 1992. Element Stewardship Abstract for Eastern Small-Footed Myotis. WV Natural Heritage; WVDNR; P.O. Box 67; Elkins, WV 26241
12. The Nature Conservancy. 1992. Element Stewardship Abstract for Allegheny Woodrat. WV Natural Heritage; WVDNR; P.O. Box 67; Elkins, WV 26241.

13. The Nature Conservancy. 1992. Element Stewardship Abstract for Water Shrew. WV Natural Heritage; WVDNR; P.O. Box 67; Elkins, WV 26241.
14. Clayton, J. WVDNR. Personal communication re green floater. Elkins, WV.
15. Brinker, David F. 1998. Intimidation tactics of a rare bird: The fierce northern goshawk. Wonderful West Virginia. June.
16. Green, N.B. and T.K. Pauley. 1987. Amphibians & Reptiles in West Virginia. Pittsburgh, PA; University of Pittsburgh Press. 241 pp.
17. US Fish & Wildlife Service. Small Whorled Pogonia (*Isotria medeoloides*) Recovery Plan. First Revision. USFWS, Region Five, Newton Corner, MA
18. WVDNR. 1996. Element Stewardship Abstract for the Candy Darter. Elkins, WV 26241
19. WVDNR. 1996. Element Stewardship Abstract for the Kanawha Minnow. Elkins, WV 26241
20. WVDNR. 1996. Element Stewardship Abstract for the Cheat Minnow. Elkins, WV 26241
21. Buckelew, Jr., A.R., and G.A. Hall. 1994. The West Virginia Breeding Bird Atlas. University of Pittsburgh Press.
22. Hall, G.A. 1983. West Virginia Birds. Distribution and Ecology. Special Publication of Carnegie Museum of Natural History, Number 7.
23. Pauley, T. 1994. Known status of the Eastern Hellbender (*Cryptobranchus A. alleghaniensis*) and the Green Salamander (*Aenides aeneus*) in the Monongahela National Forest.
24. Cincotta, D.A. WVNDR. 26 Jan. 2000. Letter to Jo Wargo re fish species.
25. Stauffer Jr., J.R., J.M. Boltz, and L.R. White. 1995. The Fishes of West Virginia. Reprinted from Proc. Acad. Nat. Sci. of Phil. 146:1-389
26. Tolin, W. USDA F&W Service. Personal communication re: the green floater, and the Va. northern flying squirrel.
27. Culver, D.C., W.K. Jones, D.W. Fong, and T.C. Kane. 1994. Organ Cave Karst Basin Groundwater Ecology. pp. 451-473. WVDNR Records, Elkins, WV
28. Fitzpatrick, J.F. 1992. Invertebrate Characterization Abstract (Global) *Cambarus nerterius*. WVDNR Nongame Wildlife & Natural Heritage Program files, Elkins, WV
29. Jezerinac, R. F.; G.W. Stocker and D.C. Tarter. 1995. Crayfishes (Decapoda; Cambaridae) of West Virginia. Ohio Biol. Surv. Bull. New Series. Vol. 10 No. 1. X+193p.

30. Element Occurrence Log Sheet. WVDNR Nongame Wildlife & Natural Heritage Program files, Elkins, WV Individual log sheets included: *Apochthonius paucispinosus*; *Caecidotea simonini*; *Cambarus nerterius*; *Gymnocarpium appalachianum*; *Pseudanophthalmus fuscus*; *Pseudanophthalmus hadenoecus*; *Pseudanophthalmus hypertrichosis*; *Pseudosinella certa*; *Pseudosinella gisini*; *Pseudotremia fulgida*; *Pseudotremia lusciosa*; *Pseudotremia princeps*; *Sinella agna*; *Stygobromus culveri*; *Stygobromus emarginatus*; *Stygobromus nanus*; *Stygobromus parvus*; *Trichopetalum weyeriense*; *Trichopetalum whitei*. (19 Jan 2000). *Agrostis mertensii*; *Aenides aeneus*; *Caecidotea sinuncus*; *Fontigens tartarea*; *Juncus trifidus*; *Macrocotyla hoffmasteri*; *Pseudanophthalmus montanus*; *Sphalloplana culveri*. (3/14/00).
31. Schweitzer, D.F. 1991. Invertebrate Characterization Abstract (Global) *Pseudanophthalmus hadenoecus*. WVDNR Nongame Wildlife & Natural Heritage Program files, Elkins, WV
32. Schweitzer, D.F. 1991. Invertebrate Characterization Abstract (Global) *Pseudosinella certa*. WVDNR Nongame Wildlife & Natural Heritage Program files, Elkins, WV
33. Holsinger, J. 14 March 2000. Personal communication.
34. Fitzpatrick, J.F. 1993. Invertebrate Characterization Abstract (Global) *Stygobromus parvus*. WVDNR Nongame Wildlife & Natural Heritage Program files, Elkins, WV
35. Holsinger, J.R. Section V. Biology. WVDNR Records, Elkins, WV
36. Beck, D.E. 1990. *Abies fraseri* Fraser Fir. In: Silvics of North America. Vol. I, Conifers. USDA FS Agr. Handbook 654. pp. 47-51
37. Allen, T.J. 1997. The Butterflies of West Virginia and Their Caterpillars. University of Pittsburgh Press, Pittsburgh, PA 15261
38. Strausbaugh, P.D., and E.L. Core. 1977. Flora of West Virginia. Second Edition. Seneca Books, Inc., Morgantown, WV
39. Pryer. 1997. Plant Characterization Abstract (Global) *Gymnocarpium appalachianum*. WVDNR Nongame Wildlife & Natural Heritage Program files, Elkins, WV
40. Risk, A.C., and J. Kiser. 1991. Report on a survey of the Falls of Hills Creek Scenic Area for *Tortula Ammonsiana*. Dept. of Biological and Environmental Sciences, Morehead State University, Morehead, KY.
41. Stihler, C. 6 January 2000. Letter to Lynette Otto. WVDNR, Elkins, WV.
42. Stihler, C. 1999. Note to J. Wargo. WVDNR, Elkins, WV.
43. Hosinger, J.R., R.A. Baroody, and D.C. Culver. 1976. The Invertebrate Cave Fauna of West Virginia. Bulletin 7. WV Speleological Survey.

44. The Nature Conservancy. Element Stewardship Abstracts for: Shale Barren Rockcress, Hellbender, Indiana Bat, Greenbrier Valley Cave Isopod, Blind Cave Millipede, Organ Cave snail, Cheat Valley Cave Isopod, Dry Fork Valley Cave Beetle, Running Buffalo Clover, Darlington's Spurge, Rock Skullcap, Jacob's Ladder, Kate's Mountain Clover.
45. Stihler, C. WVDNR. Personal communications regarding Allegheny woodrat, Indiana and Virginia big-eared bats, Virginia northern flying squirrel.
46. McDonald, B. March 2000. Personal communication. Natural Heritage Program, WVDNR, Elkins, WV
47. Gleason, H.A. and Conquist A. 1991. The manual of Vascular Plants of Northeastern U.S. and Adjacent Canada. New York Botanical Garden.
48. The Smithsonian Book of North American Mammals. 1999. D.E. Wilson and S. Ruff ed.
49. Lee, D.S., C.R. Gilbert, C.H. Hocutt, R.E. Jenkins, D. E. McAllister and J.R. Stauffer, Jr. 1980. Atlas of North American Freshwater Fishes. North Carolina State museum of Natural History. Publication #1980-12 of the North Carolina Biological Survey.
50. Degraaf, R.M., and D.D. Rudis 1981. Forest habitat for Reptiles and Amphibians of the Northeast. Northeastern Forest Experiment Station. R9-35-9-15-RRWL.
51. NatureServe Explorer: An online encyclopedia of life [web application]. 2001. Version 1.6. Arlington, VA USA: NatureServe. Available: <http://www.natureserve.org/explorer>.
52. Sargent, B., WVDNR, Natural Heritage - Personal communication regarding Natural Heritage database for ETS occurrences in project areas.
- 53.

Chipps, S.R., Perry S.A., and W.B. Perry. 1993. Status of sensitive fish species in selected streams in the Monongahela National Forest. West Virginia University, Morgantown, WV.

Conant, R. 1975. A Field Guide to Reptiles and Amphibians of Eastern and Central North America. Second Edition, Houghton, Mifflin Company, Boston.

Federal Register, Tuesday, November 15, 1994. Part IV, Department of the Interior, Fish and Wildlife. 50 CFR Part 17. Endangered and Threatened Wildlife and Plants; Animal Candidate Review for Listing as Endangered or Threatened Species; Proposed Rule.

Harmon. P.J. Final Report: Rare plant study of the Gauley Ranger District. WV Natural Heritage Program. Div. of Natural Resources, Elkins, WV.

USDA FS – R9 Regional Sensitive Species list. Technical update with database. Signed by B. Jacobs, March, 2000.

USDI Fish and Wildlife Service. Recovery Plans for: Indiana Bat, Appalachian Northern Flying Squirrels, Cheat Mountain Salamander, Virginia Big-eared Bat, Peregrine Falcon, Eastern Cougar, Running Buffalo Clover, Small-Whorled Pogonia, Virginia Spirea, Shale Barren Rock Cress.

Vertebrate Species of Concern in WV: Green salamander, page 41A; Northern goshawk, page 69A; Bald eagle, page 72A; Peregrine falcon, page 73A; Small-footed myotis, page 91A; Virginia Big-eared bat, page 95A