



ENDANGERED AND THREATENED SPECIES HABITAT  
EVALUATION AND  
RARE SPECIES / COMMUNITY ASSESSMENT

NORTHERN VIRGINIA STREAM RESTORATION BANK

*THE GLADE – REACH 5*

FAIRFAX COUNTY, VIRGINIA

Prepared For:

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WSSI Project #20030

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# Endangered and Threatened Species Habitat Evaluation and Rare Species / Community Assessment

The Glade – Reach 5  
Fairfax County, Virginia  
WSSI #20030

February 25, 2009

## Executive Summary

From December 17-19 and 22, 2008, Wetland Studies and Solutions, Inc. (WSSI) conducted an Endangered and Threatened Species Habitat Evaluation and Rare Species/Community Assessment within The Glade-Reach 5 study area. This study was conducted to determine if federally or state-listed endangered or threatened species (ETS), state-rare species, or rare plant communities are present or likely to occur within the study area.

In summary, no ETS, rare species, or rare plant communities were observed within the study area, and due to the lack of potential habitat, it is WSSI's opinion that there is low probability that these resources occur within the study area.

## Introduction

WSSI has prepared an Endangered and Threatened Species Habitat Evaluation and Rare Species/Community Assessment for The Glade – Reach 5. This evaluation assesses the potential for federally listed and state-listed ETS, non-listed state-rare species and rare natural communities whose occurrences are tracked by the Virginia Department of Conservation and Recreation, Division of Natural Heritage (DCR)<sup>1</sup> to occur within the study area, which includes The Glade – Reach 5 study area. The results of this qualitative evaluation are graphically depicted on the Endangered and Threatened Species Habitat Evaluation and Rare Species/Community Assessment Map (Attachment I) and are described in detail below.

The study area includes streams along Reach 5 of The Glade, as well as the adjacent riparian corridor. The study area is located between Soapstone Drive and Acton Court. Exhibit 1 is a vicinity map that depicts the approximate location of the study area and its general location.

The study area is covered mostly by mixed-deciduous forest, as depicted in the February 23, 2004 Natural Color Imagery aerial photograph from Air Survey (Exhibit 2), as well as on Attachment I. The Glade, along with unnamed tributaries of The Glade, flow in a generally southeasterly direction through the study area. Both an asphalt recreational trail and an unpaved horse trail, which cross The Glade multiple times, are located parallel to the stream. The study area is gently to moderately sloping. The topography can be seen in the excerpt from the Vienna, Virginia-Maryland 1994 USGS topographical quadrangle map included as Exhibit 3, and in the background topography

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<sup>1</sup> Although these species and communities are not formally listed as endangered or threatened at either the federal or state-level, DCR considers these resources to be of conservation concern and tracks their status and location in Virginia.



on Attachment 1. The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (Exhibit 4) depicts the FEMA-mapped floodplain associated with The Glade. The Fairfax County-mapped 100-year floodplain is depicted on Attachment I.

The boundaries of jurisdictional wetlands and other waters of the U.S. located within the study area were delineated and survey-located by WSSI as described in The Glade delineation report, dated October 9, 2008.

Exhibit 5 includes ground-level photographs depicting existing conditions on the site. The approximate locations of photographs are depicted on Attachment I.

### Methodology

Prior to conducting field work, WSSI consulted a number of references to determine what ETS could potentially occur on, or in the immediate vicinity of, the study area. These references included the following:

- A letter, dated September 30, 2008, from the DCR regarding recorded occurrences of the wood turtle (*Glyptemys insculpta*) downstream of The Glade study area, according to DCR's Biotics Data System. A copy of this letter is included as Exhibit 6;
- The DCR Natural Heritage Resources Map (Exhibit 7), which depicts the proximity of documented Natural Heritage Resources (NHRs) to the study area (from data provided to WSSI by DCR under a license agreement);
- A Search Report containing a list of state and federal ETS known or expected to occur within a 2-mile radius of the site, obtained from the Virginia Fish and Wildlife Information Service (FWIS), an on-line computer database provided by the Virginia Department of Game and Inland Fisheries (VDGIF). This report indicates that nine state-listed special concern species<sup>2</sup>, including the winter wren (*Troglodytes troglodytes*), northern harrier (*Circus cyaneus*), barn owl (*Tyto alba*), brown creeper (*Certhia americana*), purple finch (*Carpodacus purpureus*), golden-crowned kinglet (*Regulus satrapa*), red-breasted nuthatch (*Sitta canadensis*), hermit thrush (*Catharus guttatus*), and yellow-bellied sapsucker (*Sphyrapicus varius*) have been documented within a 2-mile radius of the site. A copy of the Search Report is included as Exhibit 8; and;
- A letter, dated November 6, 2008, from the VDGIF regarding recorded concurrences of the wood turtle downstream of the study area. A copy of this letter is included as Exhibit 9.

From these references, WSSI compiled a list of ETS that are known to occur, or that could potentially occur, in the vicinity of the study area. These species, their regulatory statuses and habitat preferences are listed in Table 1 of this report and include the wood turtle, winter wren, northern harrier, barn owl, brown creeper, purple finch,

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The special concern status is not an official legal status, and therefore the designated birds under this status are not formally protected by state or federal endangered species laws.



golden-crowned kinglet, red-breasted nuthatch, hermit thrush, and yellow-bellied sapsucker. The references listed above did not indicate the presence or likelihood of occurrence of other ETS, state-rare species, or rare plant communities that occur in Northern Virginia such as the small whorled pogonia (*Isotria medeoloides*), American ginseng (*Panax quinquefolium*), bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*, including *F.p. tundrius*), upland sandpiper (*Bartramia longicauda*), loggerhead shrike (*Lanius ludovicianus ludovicianus*, *L.l. migrans*), and Henslow's Sparrow (*Ammodramus henslowii*), state-rare diabase plants, upland depression swamps, and northern hardpan basic oak-hickory forests. Thus, these species are not addressed in detail in this report; furthermore, WSSI's field studies confirmed the lack of habitat for or presence of any of these other species.

From December 17- 19 and 22, 2008, Eric Calladine<sup>3</sup>, Jason Beeler CPESC-IT<sup>4</sup>, Sean D. Sipple, PWS, PWD, CT<sup>5</sup>, Jean Tufts, WPIT<sup>6</sup>, Nicki Foremsky<sup>7</sup>, Brian Petty<sup>8</sup> and William S. Sipple<sup>9</sup> traversed the entire study area. The study area was inspected for suitable habitat for the ETS determined by the literature and database searches to potentially occur in the vicinity of the study area. While conducting the habitat evaluation, WSSI also searched for individuals of these species in appropriate habitat, if present, and any observations of these species were noted. Many of these species, however, are seasonal in occurrence or exhibit levels of behavior and activity that vary with the seasons, and therefore, these species may not be readily observable throughout the year. For these reasons, all species considered by this report may not have been present at the time of this investigation, and exhaustive searches for these species were not conducted at the time of this habitat evaluation. More intensive surveys of suitable habitat during the appropriate season would be required to maximize the chance for locating individuals of these species.

On December 22, 2008, Sean D. Sipple and Jason Beeler conducted a survey and supplemental habitat evaluation for the state-threatened wood turtle (*Glyptemys insculpta*) within Reach 5 of The Glade study area to determine the extent of suitable wood turtle habitat and whether this species occupies aquatic winter-phase habitat within the site. WSSI staff traversed the entire study area, including aquatic and terrestrial habitats<sup>10</sup>. Aquatic and terrestrial areas were inspected to identify and map specific habitat features within the study area and to classify them according to quality categories. Only representative habitat features (or lack of) were photographed. For the purpose of this report, WSSI has defined the habitat quality categories as follows:

- **Optimal** - Aquatic winter-phase habitat is considered optimal when it contains in-stream habitat features such as undercut banks, debris jams, and root wads. Such features must be common, persistent and in areas deep enough not to completely freeze during the winter. Terrestrial

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<sup>7</sup> Reston Association- Watershed Manager

<sup>8</sup> Reston Association

<sup>9</sup> Ecologist and Principal of William S. Sipple Wetland and Environmental Training and Consulting

<sup>10</sup> All survey participants are authorized by VDGIF to collect wood turtles through inventory, assessment and distributional studies under TEND permit #031061 as sub-permittees.



habitat is considered optimal when it consists of a forested floodplain easily accessible to wood turtles, contains potential plant species for foraging, and contains areas suitable for nesting and basking. Areas suitable for nesting include (but are not limited to) sandy floodplain deposits, gravel roads, and easements. Areas suitable for basking include sand bars, accessible stream banks, and exposed substrate and woody debris within the stream.

- **Marginal** – Aquatic winter-phase habitat is considered marginal when habitat features are uncommon, not persistent or are in areas prone to freezing during the winter. Features that are non-persistent or shallow and prone to freezing are considered marginal. Terrestrial habitat is considered marginal when it consists of a sparsely-forested or early succession floodplain with limited accessibility to wood turtles, contains few potential plant species for foraging, and contains few areas suitable for nesting and basking.
- **Unsuitable** – Aquatic winter-phase habitat is considered unsuitable when it lacks optimal or marginal in-stream habitat features. Terrestrial habitat is considered unsuitable when it consists of a mowed, maintained, actively grazed, or recently disturbed floodplain with no accessibility to wood turtles, lacks potential plant species for foraging, and lacks areas suitable for nesting and basking.

In addition to the habitat evaluation, an exhaustive systematic search for the wood turtle was conducted within The Glade and an unnamed tributary to The Glade. WSSI systematically searched for wood turtles and recorded any observations of reptiles, amphibians, and other aquatic wildlife, including freshwater mussels and fish. A total of 5 contact hours of searching was performed within the study area.

The aquatic search method involved a combination of techniques authorized by the TEND permit, including physical examination of aquatic substrates; observation using waterscoping; probing of habitat features with nets, sticks, and hands; and observation of stream banks. Surveys were performed during late morning and early afternoons (during highest daily air/water temperature). While conducting the search, WSSI also recorded physical data such as air temperature, water temperature, relative humidity, and wind speed.

## Results

Table 1 below summarizes the ETS that are known to occur or could potentially occur within the study area based on the literature and database searches. The potential for each of the ETS to occur within the study area is discussed in more detail in the following text.

**Table 1. Listed Endangered, Threatened, and Rare Species Summary Table, The Glade - Reach 5, Fairfax County, VA.**

NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE ON SITE
Wood Turtle ( <i>Glyptemys insculpta</i> )	ST	Clear perennial streams in forested floodplains and nearby fields, wet meadows, and farmlands.	Marginal aquatic winter-phase and terrestrial habitat present. Low potential for occurrence within study area due to marginal habitat and negative search results.
Winter Wren ( <i>Troglodytes troglodytes</i> )	SS	In Virginia, nests primarily in conifer and mixed hardwood-conifer forests at higher elevations in the mountains.	Not known to nest in Fairfax County and Fairfax County is outside the normal breeding distribution of this species. Uncommon transient and winter visitor throughout Virginia. May occur as a migrant or winter visitor in forested habitats within the study area.
Northern Harrier ( <i>Circus cyaneus</i> )	SS	Nests in a variety of open habitats, including marshy meadows; wet, lightly grazed pastures, old fields, freshwater and brackish marshes, and upland grasslands. No breeding records are known from Virginia away from the Eastern Shore or marshes of the Chesapeake Bay. Forages in large open fields, oldfield communities and marshes.	Fairfax County is outside the normal breeding distribution of the species. May occur in the study area during migration or winter, but not expected to occur regularly.
Barn Owl ( <i>Tyto alba</i> )	SS	Nests in silos, barns, and abandoned buildings, or large natural tree cavities. Forages in open fields and grasslands.	Suitable habitat not present within study area. Presumed absent.
Brown Creeper ( <i>Certhia americana</i> )	SS	In Virginia, nests primarily in old-growth coniferous and mixed hardwood coniferous forests in the extreme north and at higher elevations of the mountains. Recorded breeding at Huntley Meadows, Fairfax County from 1984 to the early 1990s, but no breeding season records there since the 1990s.	Only known to nest in Fairfax County at Huntley Meadows Park from 1984 to 1990, but no breeding season records have been there since the early 1990s. Uncommon to common transient and winter visitor throughout Virginia. May occur as a migrant or winter visitor in forested habitats within the study area.
Purple Finch ( <i>Carpodacus purpureus</i> )	SS	In Virginia, known to nest only in high elevation coniferous and mixed forests in northwest Highland County and the Mount Rogers area. In non-breeding season uses a wide range of forested habitats as well as orchards. Common visitor to suburban bird feeders.	Fairfax County is outside the known breeding distribution of this species in Virginia. Common transient and winter resident in Virginia Piedmont and Coastal Plain. May occur within study area in appropriate season.



**Table 1. Listed Endangered, Threatened, and Rare Species Summary Table, The Glade - Reach 5, Fairfax County, VA.**

NAME	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE ON SITE
Golden-crowned Kinglet ( <i>Regulus satrapa</i> )	SS	In Virginia, known to nest only in coniferous woodlands dominated by spruce, fir and hemlock at high elevations in the mountains.	Fairfax County is outside the normal breeding distribution of this species. Common transient and winter visitor throughout Virginia. May only occur as a migrant or winter visitor in forested habitats within the study area.
Red-breasted Nuthatch ( <i>Sitta canadensis</i> )	SS	In Virginia, nests in coniferous and mixed hardwood and coniferous forests in high elevation in the mountains.	Not known to nest in Fairfax County. Uncommon and irruptive transient and winter visitor in the Piedmont and Coastal Plain of Virginia. May occur irregularly as a migrant or winter visitor within the study area.
Hermit Thrush ( <i>Catharus guttatus</i> )	SS	In Virginia, known to nest only in coniferous woodlands at high elevations in the mountains.	Fairfax County is outside the normal breeding distribution of this species. Common transient and winter visitor throughout Virginia. May only occur as a migrant or winter visitor in forested habitats within the study area.
Yellow-bellied Sapsucker ( <i>Sphyrapicus varius</i> )	SS	In Virginia, known to nest only in mixed hardwood and coniferous forests in high elevations in the mountains.	Fairfax County is outside the normal breeding distribution of this species. Common transient and winter visitor throughout Virginia. May only occur as a migrant or winter visitor in forested habitats within the study area.

ST = State-listed Threatened  
SS = State-listed Special Concern

## Wood Turtle

Northern Virginia is at the southern boundary of the wood turtle's range, and according to Tom Akre (2002), the wood turtle occurs in Virginia almost exclusively in the upper Potomac and Shenandoah River watersheds, where it was known historically from nine counties. It is most common in mountain tributaries of the Shenandoah River from Rockingham County north, becoming less common and more sparsely dispersed downstream along the Potomac River into northeastern Loudoun and northern/eastern Fairfax Counties. Due to its rarity, the wood turtle is listed as Threatened by the State of Virginia. The wood turtle is now considered secure from near-term local extirpation in only three counties in Virginia, all located west of the Blue Ridge Mountains (i.e., Frederick, Shenandoah and Rockingham).

### Habitat Requirements

Wood turtle habitat requirements include a relatively undisturbed floodplain, a free-flowing perennial stream, and adequate nesting and basking areas. Long-term persistence of wood turtles is dependent upon a clean aquatic environment, forested floodplains and associated habitats, and protection from humans (Mitchell et al., 2004). Aquatic habitats are required for mating, feeding, and hibernation, while terrestrial habitats are used for egg laying, thermoregulation, and foraging. The wood turtle is also known to occupy forested wetlands and marshy fields along the stream systems it inhabits, and some individuals may spend considerable time in upland areas, including



successional fields, pastures, and agricultural areas (Ernst et al., 1994). However, these habitats must be moist enough not to create desiccation or dehydration stress (Mitchell, 1994).

From fall into spring, the wood turtle generally occurs along clear, moderate to fast-moving perennial streams (often within deciduous forests) where it hibernates in undercut stream banks, in burrows, under root masses, in thick leaf packs, occasionally in debris piles near water, or lying on the bottom. Aquatic habitat with pockets of deeper, but flowing water with overhanging banks and snags suitable for overwintering are features necessary for the wood turtle to survive the aquatic winter-phase of its life cycle. Wood turtles do not generally occur in lentic water bodies, and in winter, are almost exclusively found in and around clear, well oxygenated streams with short or no freeze-over periods (Akre, 2002).

In Virginia, wood turtles emerge from their overwintering stream hibernacula in March, when water temperatures reach 15°C (59°F). Upon emergence, they begin to forage, mate, and search for nesting sites. Their nesting season is from late May through early July. Wood turtles strongly prefer to nest in areas that are generally very sandy, bare, well exposed to solar radiation, and close to water, but elevated (Akre, 2002). The turtles remain active from April to October, even in cold weather, and return to streams to hibernate during late fall when stream temperature remains below 6°C (43°F). In summer, it is primarily terrestrial, and many individuals oversummer in the floodplains of their wintering streams, though some disperse much further overland and sometimes wander across different watersheds.

#### Potential Occurrence within the Study Area

During the time of the survey, water temperature was 1 °C, which is favorable for locating wood turtles in the streams since wood turtles emerge from their hibernacula at water temperatures of 15 °C. Air Temperature was 2 °C. The wind speed was estimated at 15 miles per hour. The relative humidity was 44%.

Based on our habitat evaluation, much of the study area along The Glade provides marginal terrestrial and winter-phase habitat for wood turtles (Attachment I). Other areas such as non-perennial streams do not contain enough water during the over-wintering period to provide winter-phase habitat for wood turtles (Photo #1). Therefore, a systematic search for the presence of wood turtles was not conducted in these streams during this study. Terrestrial wood turtle habitat within the study area consists of a mature forested floodplain containing potential plant species for foraging (Photo #2), such as greenbriars (*Smilax rotundifolia*), honeysuckles (*Lonicera* spp.), and grapes (*Vitis* spp.). Although mature forest is present for foraging, the streams within the study area are incised and provide little accessibility for wood turtles to access the floodplain, thus these areas are considered marginal. Marginal winter-phase wood turtle habitat is present in 22 areas (Data Sites 1-22; Attachment I) and includes 16 undercut banks (Photos #2,4,5,7), 15 rootwads (Photos #5-6), 6 snags (Photos #7-8), 4 logjams (Photos #9-10), and 4 leafpacks (Photos #11-12). In addition to these habitat features, less suitable habitat features were observed, but not recorded. These features included transient logs likely to be displaced following storm events and rootwads or undercut banks that were located above ordinary high water and would not be continuously submerged to provide overwintering habitat. Table 1, below contains the number of observations of each habitat type.



**Table 1: Wood Turtle Overwintering Habitat Features**

MAPPED DATA SITES = 22	In-stream Habitat Feature Type						TOTAL
	Root Wad	Undercut Bank	Log or Log Jam	Leaf Packs	Tree Fall/ Snag	Hole	
# FEATURES OBSERVED	15	16	4	4	6	0	45
PERCENT	33	36	9	9	13	0	100
Number of Sites With Multiple Habitat Features (MHF)							17
Percent of Observed Sites With MHF							77

Although water temperatures were favorable for locating wood turtles in the streams and terrestrial and winter-phase wood turtle habitat is present within the study area, no wood turtles were observed during this investigation.

The absence of wood turtles is likely due to factors such as degraded water quality and the proximity to a viable wood turtle population. It has been documented that much of The Glade has poor water quality, which is likely due to the extent of development in the watershed (WSSI 2008a; WSSI 2008b; Virginia Save Our Streams 2002-2008). Nutrients, pesticides, and other chemical pollutants that enter this stream through runoff can have a negative effect on wood turtles, which are a pollution intolerant species (Harding and Bloomer, 1979 and Mitchell, 1994). The relatively highly impervious watershed and non-point source pollutant run-off is likely having some impact on the quality of these streams. Thus, terrestrial and winter-phase wood turtle habitat is only marginal and, based on the distance to known occurrences, it is not surprising that we did not find any wood turtles during this study.

Based on the results of this study, and the lack of conclusive evidence of wood turtles anywhere in The Glade watershed, it is WSSI's opinion that the probability that the study area supports wood turtles is low.

### Winter Wren

Historically, in Virginia and throughout much of the eastern U.S., the winter wren (*Troglodytes troglodytes*) has been a declining breeding species. However current broadscale population trends indicate stable or increasing populations (Hejl, et al. 2002a). Although widespread throughout its winter range, the winter wren is a rare resident during the breeding season in the coastal plain and piedmont regions of Virginia. Typically known to breed at high elevations in the mountain and valley regions of the state, the winter wren is rare to uncommon at elevations below 3,500 feet in elevation (VDGIF, 2008a). The winter wren was listed as state species of special concern in Virginia in January 1992 (VDGIF, 2008a). The special concern status is not an official

legal status, and thus, the winter wren is not formally protected by state or federal endangered species laws.

#### Habitat Requirements

Throughout its range, the winter wren may be found in a wide variety of habitats, including deciduous riparian hardwood forests and mixed-conifer hardwood forests. In Virginia, however, high-quality breeding habitat is restricted to high elevations of the mountain and valley regions, particularly in spruce-fir forests near streams with dense undergrowth of thickets, uprooted trees, piles of slash, and dead logs from which they use as singing perches. Wintering habitats include a wider variety of habitat than that of nesting habitat. During winter, the winter wren has been found to inhabit younger-aged coniferous forests that include areas with clearcuts, tangles, fallen logs, uprooted trees, or along stream banks that provide cover (VDGIF, 2008a).

#### Potential Occurrence within the Study Area

Based on the DGIF computerized Fish and Wildlife Information System (FWIS), the last confirmed nesting site (Collection #63959) was recorded during 1998 in the southeastern portion of Fairfax County near Fort Washington National Park (VDGIF, 2008a). Given that Fairfax County is typically outside of the normal breeding distribution for this species and that the study area lacks high-quality habitat, it is WSSI's opinion that this species is not likely to nest within the study area. Although, given its wide distribution throughout its wintering range, it is probable that the winter wren is likely to occur as a migrant or winter visitor in forested habitats within the study area. Due to the lack of high-quality nesting habitat, it is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this species during the breeding season or wintering months as these birds are uncommon to the coastal plain and piedmont regions of Virginia.

### Northern Harrier

Throughout its range, the northern harrier (*Circus cyaneus*) is widespread, but uncommon to rare, local resident along the eastern shore of Virginia. Because only 5 to 10 pairs are believed to breed annually within the state, the northern harrier is thought by many to be considered a state endangered species. Although rare, the northern harrier has been listed as a state species of special concern since 1992 (VDGIF, 2008b). Despite its designation as a state species of special concern, the northern harrier is protected under the Migratory Bird Treaty Act and is therefore formally protected by state or federal endangered species laws.

#### Habitat Requirements

Northern harrier habitat can be generally characterized as open wetlands, both freshwater and brackish marshes, including wet meadows, lightly grazed pastures, old fields, and riparian woodlands. Successful breeding populations in the northeastern portion of the U.S. are associated with large tracts of undisturbed wetland habitats with thick vegetative growth (Macwhirter and Bildstein, 1996). In Virginia, the northern harrier inhabits non-forested land for nesting and foraging including marshes, prairies and grasslands (VDGIFb, 2008).



### Potential Occurrence within the Study Area

Breeding populations are rare in Virginia, and uncommon in preferred habitats along the eastern shore of the state. According to the DGIF computerized Fish and Wildlife Information System (FWIS) database, no nesting northern harriers have been documented within 15 miles of the study area. Due to the lack of habitat (*i.e.*, the entire area is forested), it is WSSI's opinion that this species is not expected to nest within the study area. Furthermore, it is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this species during breeding season or wintering months as these birds are uncommon to rare in forested habitats and are typically restricted to large, undisturbed, open wetland habitats along the eastern shore of the state (VSO, 2007).

### Barn Owl

The barn owl (*Tyto alba*) is an uncommon to rare resident throughout Virginia. Between 1976 and 1985, there were 111 known barn owl nest sites in Virginia, but in 1986, only 43 of those nest sites supported active breeding pairs. For this reason, it was recommended to list the barn owl as threatened in Virginia (Watts and Whalen, 2004). An artificial nest box program in the state resulted in an increase in known barn owl nest sites, and in January 1993, this species was designated a state special concern species (VDGIF, 2008c). The special concern status is not an official legal status, and thus, the barn owl is not formally protected by state or federal endangered species laws.

### Habitat Requirements

The barn owl nests in areas of open country where it hunts for rodents and other small prey in densely grassed fields such as coastal marshes, lightly grazed pastures, and hay fields. Cultivated fields, with the exception of small grain fields, do not provide suitable foraging habitat due to low prey populations and dense protective cover. Barn owls require secure nest sites in close proximity to extensive complexes of such open habitats. Studies in coastal Virginia and New Jersey have shown that barn owls occupy home ranges encompassing several hundred hectares that contain nearly 250 acres (100 hectares) or grassland foraging habitat (Watts and Whalen, 2004). A 1986 study of nesting barn owls in the Richmond area determined that the home range of barn owls may vary from 1,025 to 2,100 acres (414 to 851 hectares) (VDGIF, 2007). The species is often closely associated with human activities, often nesting in barns and silos, wooden water tanks, duck blinds, abandoned buildings, nest boxes, church steeples, and other artificial sites. Barn owls may nest in densely populated metropolitan areas (*e.g.*, they have been known to nest in the New York Yankees baseball stadium), providing they support sufficient populations of prey species such as rats and mice (Marti et al., 2005).

### Potential Occurrence within the Study Area

According to the DGIF computerized Fish and Wildlife Information System (FWIS) database no nesting barn owls have been documented within 10 miles of the study area. Due to minimal secure nesting sites and the lack of extensive open foraging habitat, it is WSSI's opinion that barn owls are not likely to regularly occur within the study area. In addition, barn owls are uncommon to rare permanent residents in the



coastal plain and piedmont regions (VSO, 2007). Therefore, it is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this species due to the lack of nesting habitat within the study area and that no known nesting barn owls have been documented in the vicinity of the study area.

### Brown Creeper

Although the brown creeper (*Certhia americana*) is widespread throughout its range, it is one of the most inconspicuous songbirds and is the only treecreeper in North America (Hejl et al. 2002b). Records indicate that brown creepers are rare within their breeding range of Virginia, and are common to uncommon transients and winter residents in coastal plain and piedmont areas. The brown creeper was listed as a state species of special concern on January 1, 1993 (VDGIF, 2008d). The special concern status is not an official legal status, and thus, the brown creeper is not formally protected by state or federal endangered species laws.

#### Habitat Requirements

Brown creeper nesting habitat can be generally characterized as coniferous forests and mixed-coniferous forests that include numerous large snags and live trees with high canopy cover. Wintering habitat is similar to that of breeding, with the exception that brown creepers are found in a variety of wooded habitats such as forested suburban and urban areas and orchards (Hejl et al., 2002b). Typically associated with higher elevations in the mountain and valley region of Virginia, the brown creeper has been known to nest in middle-aged to mature dense coniferous forests, deciduous or mixed woodlands, and wooded swamps with standing dead trees with loose bark (VDGIFd, 2008). Wintering habitat in Virginia includes pole-sized stands of loblolly and short-leaf pines (*Pinus taeda* and *Pinus echinata*, respectively).

#### Potential Occurrence within the Study Area

Based on the DGIF fish and wildlife database search, the brown creeper was known to nest at Huntley Meadows Park, Fairfax County from 1984 to the early 1990s, but there has been no record of breeding pairs there since the early 1990s (VSO, 2007). Due to the lack of high-quality habitat within the study area (*i.e.*, coniferous forest), and based on the absence of any recent records from DGIF fish and wildlife database search, it is WSSI's opinion that the brown creeper is unlikely to nest within the study area. Given its wide distribution throughout its winter range, it is probable that the brown creeper may occur as a migrant or winter visitor in forested habitats within the study area.

It is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this species during the breeding season due to the lack of nesting habitat. The brown creeper is an uncommon transient and winter resident of coastal plain and piedmont regions; however, in the event that this species overwinters in the study area, it is WSSI's opinion that these birds will be capable of seeking refuge and foraging habitat within adjacent forested areas.

### Purple Finch

The purple finch (*Carpodacus purpureus*) is widespread, but a rare to uncommon summer resident within its known nesting locations of higher elevations, atop Mount



Rogers, and in Highland County, Virginia. Within its wintering range the purple finch is a common transient of the piedmont and an uncommon transient in the coastal plain regions of the state. Due to limited habitat and a low number of breeding birds in the state, this species was given the designation as a state species of special concern (VDGIF, 2008e).

#### Habitat Requirements

Typical nesting habitat for the purple finch can be generally characterized as moist or cool coniferous forests. They are frequently found breeding in mixed coniferous-deciduous forests, along edges of bogs, and within riparian corridors (Wootton, 1996). Within Virginia, this species has been found to breed along edges of coniferous forests, in ornamental conifers of residential areas, and in parks and open mixed woodlands (VDGIF, 2008e). Wintering habitats are likely dictated by the availability of food, where in Virginia purple finches prefer large tracts of deciduous woodlands with trees that provide winter fruits and buds (VDGIF, 2008e).

#### Potential Occurrence within the Study Area

According to the DGIF computerized Fish and Wildlife Information System (FWIS) database, no nesting purple finches have been documented within 10 miles of the study area. In addition, Fairfax County is outside the known breeding distribution of this species. Given its wide distribution throughout its wintering range, it is probable that the purple finch may occur as a migrant or winter visitor in forested habitats within the study area.

Due to the absence of high-quality nesting habitat within the study area, and based on the absence of any recent records from DGIF, it is WSSI's opinion that the purple finch is unlikely to nest within the study area. Furthermore, it is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this species during the breeding season due to the lack of nesting habitat. Although bird count data indicate a decline in winter abundance of purple finches in Virginia (VSO, 2007), in the event that purple finches overwinter in the study area, it is WSSI's opinion that these birds will be capable of seeking refuge and foraging habitat within adjacent forested areas.

#### Golden-Crowned Kinglet

The golden-crowned kinglet (*Regulus satrapa*) thought to formerly breed almost exclusively in remote boreal forests of North America, is expanding its breeding range southward. (Ingold and Galati, 1997). Widespread throughout its wintering range, the golden-crowned kinglet is a common transient and winter resident in the coastal plain and piedmont regions of Virginia. Although an uncommon winter resident in the mountain and valley regions, the golden-crowned kinglet is considered a locally common summer resident and is known to breed in coniferous areas of Mount Rogers and in Highland County, Virginia (VDGIF, 2008f). Golden-crowned kinglets are thought to be locally uncommon to rare elsewhere during the summer, mostly in high elevation areas, but are increasing and expanding their breeding range in Virginia (VSO, 2007). Due to limited habitat and its preferred breeding range in restricted and localized regions of high elevation, the golden-crowned kinglet was given the designation as a state species of special concern. The special concern status is not an official legal status, and thus, the



golden-crowned kinglet is not formally protected by state or federal endangered species laws.

#### Habitat Requirements

Within their breeding range, the golden-crowned kinglet generally inhabits remote boreal and subalpine spruce-fir forests of high elevation areas. With an expanding breeding range, golden-crowned kinglets have been found to inhabit coniferous-deciduous forests, pine plantations, and deciduous forests. Both closed and open canopy forests as well as edges of clearings promote favorable conditions for nesting. In Virginia, the golden-crowned kinglet is only known to nest in coniferous woodlands dominated by spruce, fir and hemlock at high elevations in the mountains (VDGIF, 2008f). In West Virginia, nests were found in mixed spruce-northern hardwood forests and pine plantations (Ingold and Galati, 1997).

#### Potential Occurrence within the Study Area

Based on the DGIF fish and wildlife database search, a single nesting record (Collection #65581) was confirmed greater than 5 miles from the study area in Fairfax County, within the Accotink Creek watershed, in 1999 (VDGIF, 2008f). No recent breeding season records have been documented there since 1999. Due to the lack of high-quality habitat within the study area, and given Fairfax County is outside the normal breeding distribution of this species and the absence of any recent records indicated from DGIF, it is WSSI's opinion that the golden-crowned kinglet is unlikely to nest within the study area. Given its wide distribution throughout its wintering range, it is probable that the golden-crowned kinglet may occur as a migrant or winter visitor in forested habitats within the study area. It is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this species during the breeding season as the study area lacks the preferred breeding habitat. Furthermore, in the event that golden-crowned kinglets overwinter in the study area, it is WSSI's opinion that these birds will be capable of seeking refuge and foraging habitat within adjacent forested areas.

#### **Red-Breasted Nuthatch**

The red-breasted nuthatch (*Sitta canadensis*) is widespread and considered a locally common transient and winter visitor within its known nesting locations of high elevation areas. With the exception of Mount Rogers and in Highland County, Virginia, the red-breasted nuthatch is locally uncommon to rare, summer resident, of high elevation areas within the state. Within its wintering range the red-breasted nuthatch is uncommon and highly irregular transient of the coastal plain and uncommon to locally common and highly irregular transient in the piedmont regions of the state (VSO, 2007). Due to limited habitat and its breeding range restricted to local high elevation areas of the mountains and valley region of Virginia, this species was given the designation as a state species of special concern on January 1, 1992 (VDGIF, 2008g).

#### Habitat Requirements

Typical nesting habitat for the red-breasted nuthatch includes mature and diverse coniferous forests dominated by spruce, fir, pine, hemlock, larch (*Larix* spp.), and cedar (*Thuja* spp.). Breeding populations within the eastern portion of the continent are more tolerant of mixed-forest habitats and occur over wide ranges of forest types, including



pure coniferous stands to mixed stands that are significantly deciduous (Ghalambor and Martin, 1999). Preferred nesting habitats are in high elevation areas of Virginia, and include coniferous forests and occasionally mixed-woodlands. Although uncommon to locally common winter resident within the piedmont region and highly irregular transient, the red-breasted nuthatch favors mature conifers found in residential areas (VDGIF, 2008g).

#### Potential Occurrence within the Study Area

Based on the DGIF computerized Fish and Wildlife Information System (FWIS) database no nesting red-breasted nuthatches have been confirmed within 15 miles of the study area. In addition, Fairfax County is outside the known breeding distribution of this species. Records indicate that nesting habitat is localized in high elevation areas near Mount Rogers and in Highland County, Virginia (VDGIF, 2008g). Given its wide distribution throughout its wintering range, it is probable that the red-breasted nuthatch may occur as a migrant or winter visitor in forested habitats within the study area.

Due to the absence of high-quality nesting habitat within the study area, and based on the absence of any recent records from DGIF, it is WSSI's opinion that the red-breasted nuthatch is unlikely to nest within the study area. Furthermore, it is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this species during the breeding season or wintering months as these birds are highly irregular transients and winter residents to piedmont and coastal plain regions of Virginia.

#### Hermit Thrush

Of the thrushes, the hermit thrush (*Catharus guttatus*) is one of the most widely distributed forest-nesting migratory birds in North America (Jones and Donovan, 1996). In the coastal plains and piedmont regions of Virginia, it is a widespread, but rare, resident during the breeding season. Considered a common transient and winter resident statewide, the thrush is listed as a state species of special concern (VDGIF, 2008h). The special concern status is not an official legal status, and thus, the hermit thrush is not formally protected by state or federal endangered species laws.

#### Habitat Requirements

Described as an interior forest bird that favors internal forest edges, its typical foraging habitat includes small clearings within wooded areas created by disturbances such as logging, and along margins of ponds and meadows within forested areas (Jones and Donovan, 1996). The hermit thrush frequently inhabits woodland edges, brushy pastures and cool north facing slopes in mountainous regions. In Virginia, the highest quality breeding habitat occurs in conifer and mixed hardwood-conifer forests in the mountain and valley regions at higher elevations greater than 4,000 feet (VDGIF, 2008h). The hermit thrush prefers to winter in wooded swamps, where it can seek shelter in areas with thick hummocks and well stocked feeding areas consisting of shrubs and vines with persistent fruit (VDGIF, 2008h).

#### Potential Occurrence within the Study Area

Although widespread and considered a casual breeder in the coastal plain and piedmont regions of Virginia, the study area lacks optimal nesting habitat associated with



this species. Based on the DGIF computerized Fish and Wildlife Information System (FWIS), the last known nesting record was (Collection #65587) within the Difficult Run watershed, Fairfax County from 1999, but there is no record of breeding pairs since that time. Due to the lack of high-quality habitat within the study area, and based on the absence of any recent records from DGIF fish and wildlife database search, it is WSSI's opinion that the hermit thrush is unlikely to nest within the study area.

Additionally, it is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this species during the breeding season. Given its wide distribution throughout its wintering range, it is probable that the hermit thrush may occur as a migrant or winter visitor in forested habitats within the study area. In the event that this species overwinters in the study area, it is WSSI's opinion that these birds will be capable of seeking refuge and foraging habitat within adjacent forested areas.

### Yellow-Bellied Sapsucker

The yellow-bellied sapsucker (*Sphyrapicus varius*) is widespread, common to uncommon transient and winter resident statewide and considered a rare local summer resident in high elevations above 3,500 feet (VDGIF, 2008i). Known breeding areas are all from the mountain and valley region of Virginia and include Amherst, Augusta, Bath, Giles, Grayson, Highland, and Madison counties (VSO, 2007). The yellow-bellied sapsucker is listed as a state species of special concern, however the special concern status is not an official legal status, and thus, the yellow-bellied sapsucker is not formally protected by state or federal endangered species laws.

#### Habitat Requirements

Yellow-bellied sapsucker habitat can be generally characterized by mixed hardwood-coniferous forests, especially near water and small clearings, and occasionally orchards and woodlots (VDGIF, 2008i). Typically yellow-bellied sapsuckers favor early-successional tree species, including birch (*Betula* sp.), aspen (*Populus* sp.), and maple (*Acer* sp.) for both nesting and feeding (Walters et al. 2002). In Virginia, the yellow-bellied sapsucker is known to winter in floodplain forests and mature conifer stands, and commonly along forest edges and semi-open habitats. It is uncommon to find them in deep, dense wooded areas during the winter (VDGIF, 2008i).

#### Potential Occurrence within the Study Area

Although widespread throughout its winter distribution, the yellow-bellied sapsucker is only known to breed in Virginia within high elevations of the mountain and valley region. Based on the DGIF computerized Fish and Wildlife Information System (FWIS), the last known nesting record was (Collection #50216) near Fountainhead Regional Park, Fairfax County from 1996, but there are no breeding season records since that time. Due to the lack of high-quality habitat within the study area, and based on the absence of any recent records from DGIF fish and wildlife database search, it is WSSI's opinion that the yellow-bellied sapsucker is unlikely to nest within the study area.

Additionally, it is WSSI's opinion that the stream restoration efforts within the study area will have no direct effect on this species during the breeding season. Given its wide distribution throughout its wintering range, it is probable that the yellow-bellied



sapsucker may occur as a migrant or winter visitor in along forest edges habitats within the study area. In the event that this species overwinters in the study area, it is WSSI's opinion that these birds will be capable of seeking refuge and foraging habitat within adjacent forested areas.

### Conclusions

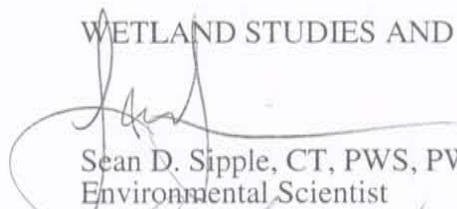
In summary, no ETS, rare species, or rare plant communities were observed within the study area, and due to the lack of potential habitat, it is WSSI's opinion that there is low probability that these resources occur within the study area.

### Limitations

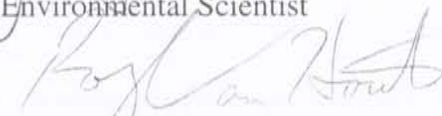
This study is based on examination of the conditions on the study site at the time of our review and does not address conditions in the future. Such conditions change over time. Therefore, our conclusions may vary from future observations. Our ETS Habitat Evaluation and Rare Species/Community Assessment and report have been prepared in accordance with generally accepted guidelines for the conduct of such evaluations. We make no other warranties; either expressed or implied, that other wildlife species will not be observed in the project site during future Endangered and Threatened Species Habitat Evaluation and Rare Species / Community Assessment wildlife surveys.

If you have any questions regarding this report, please contact me at (703) 679-5681 or [ecalladine@wetlandstudies.com](mailto:ecalladine@wetlandstudies.com).

WETLAND STUDIES AND SOLUTIONS, INC.



Sean D. Sipple, CT, PWS, PWD, AE  
Environmental Scientist



Roy Van Houten, AWB, CWCP  
Wildlife Biologist

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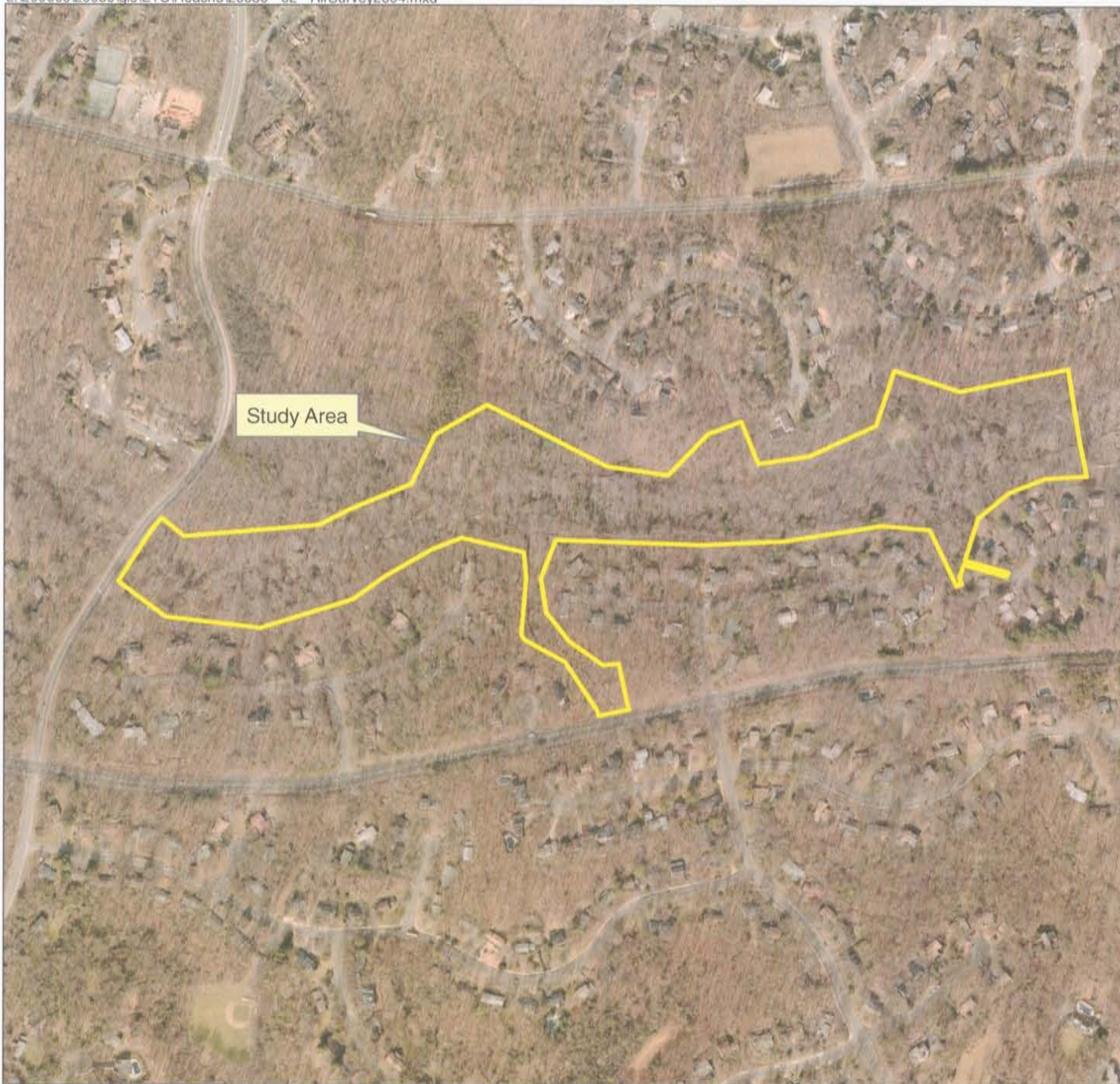
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**Vicinity Map**  
**Glade Reach 5**  
**WSSI #20030**  
**Scale: 1" = 2000'**





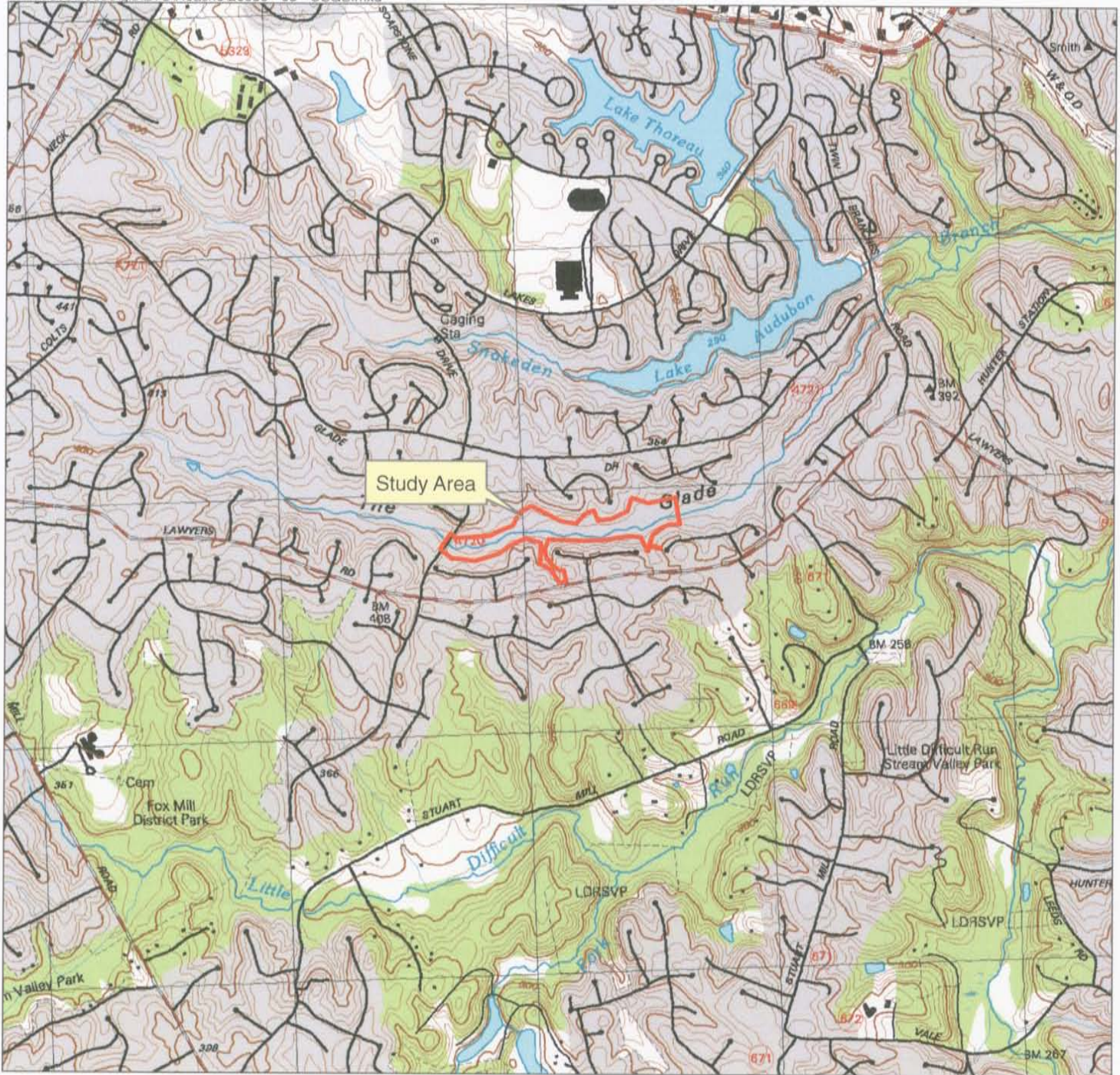


February 2004 Natural Color Imagery  
Glade Reach 5  
WSSI #20030  
Scale: 1" = 500'



Photo Source: Air Survey



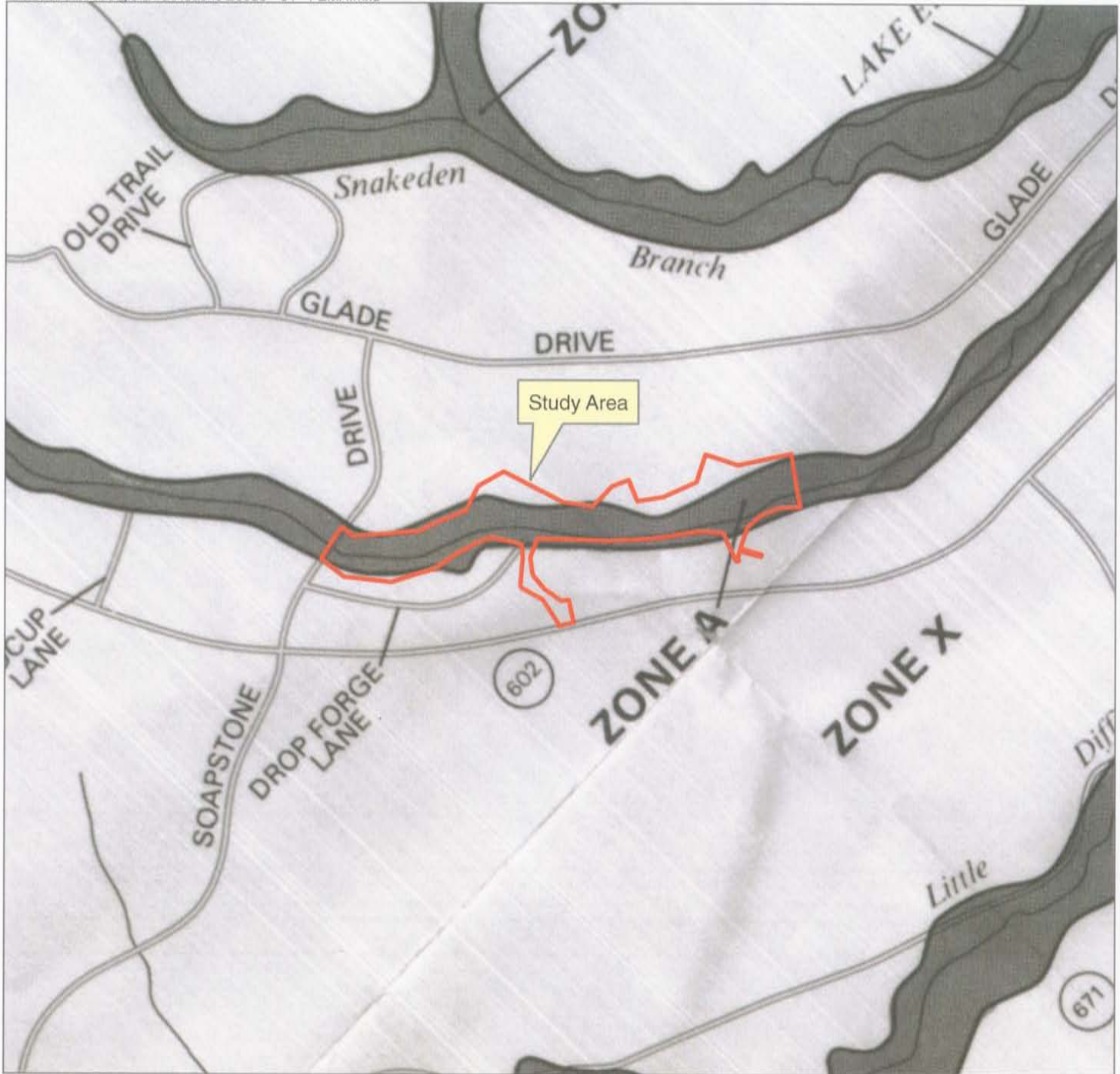


**USGS Quad Map**  
**Vienna, VA-MD 1994**  
**Glade Reach 5**  
**WSSI #20030**  
**Scale: 1" = 2000'**

Latitude: 38°55'22" N  
 Longitude: 77°20'22" W  
 Hydrologic Unit Code (HUC): 020700081004  
 Stream Class: III  
 Name of Watershed: The Glade







FEMA Flood Insurance Rate Map  
Panel 515525 0050D Revised 3/5/1990  
Glade Reach 5  
WSSI #20030  
Scale: 1" = 1000'





EXHIBIT 5  
SITE PHOTOGRAPHS-TAKEN ON 12/22/2008  
THE GLADE – REACH 5  
WSSI #20030



1. Wood turtle (*Glyptemys insculpta*) Data Site #1 (log jam) along The Glade on the eastern portion of the study area.



2. Wood turtle Data Site #5 (undercut bank and rootwad) along The Glade on the eastern portion of the study area.



**EXHIBIT 5**  
**SITE PHOTOGRAPHS-TAKEN ON 12/22/2008**  
**THE GLADE – REACH 5**  
**WSSI #20030**



3. Wood turtle Data Site #9 (rootwad and snag) along The Glade on the central portion of the study area.



4. Wood turtle Data Site #13 (undercut bank, rootwad, and snag) along The Glade on the western portion of the study area.



**EXHIBIT 5**  
**SITE PHOTOGRAPHS-TAKEN ON 12/22/2008**  
**THE GLADE – REACH 5**  
**WSSI #20030**



5. Wood turtle Data Site #17 (undercut bank, leafpack, and snag) along The Glade on the western portion of the study area.



6. Looking upstream at an unnamed tributary to The Glade on the western portion of the study area. This stream did not contain flowing water during the time of our December 15, 2008 fieldwork. Due to the lack of flowing water during the over-wintering period for the wood turtle, it is WSSI's opinion that this stream does not provide suitable winter-phase habitat to support a population of wood turtles.



EXHIBIT 5  
SITE PHOTOGRAPHS-TAKEN ON 12/22/2008  
THE GLADE – REACH 5  
WSSI #20030



7. Wood turtle Data Site #22 (undercut bank and rootwad) along The Glade on the western portion of the study area.



8. Looking upstream at the floodplain of The Glade on the western portion of the study area. The Glade in this area provides floodplain access for wood turtles (*Glyptemys insculpta*) to forage, nest and bask. The mixed-hardwood forest along The Glade in this area lacks the preferred nesting habitat for winter wren, northern harrier, barn owl, brown creeper, purple finch, golden-crowned kinglet, red-breasted nuthatch, hermit thrush, and yellow-bellied sapsucker. Given the widespread distribution of these species, it is probable that many of the birds may occur as migrants or winter visitors in forested habitats of the study area. In the event that these birds overwinter in the study area, it is WSSI's opinion that they will be capable of seeking refuge and foraging habitat within adjacent forested areas.



L. Preston Bryant, Jr.  
Secretary of Natural Resources



Joseph H. Maroon  
Director

COMMONWEALTH of VIRGINIA  
DEPARTMENT OF CONSERVATION AND RECREATION

217 Governor Street  
Richmond, Virginia 23219-2010  
(804) 786-7951 FAX (804) 371-2674

September 30, 2008

Sean Sipple  
Wetland Studies and Solutions, Inc.  
5300 Wellington Branch Drive  
Gainesville, VA 20155

Re: #20030, The Glade

Dear Mr. Sipple:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

Biotics documents the presence of natural heritage resources in the project area. However, due to the scope of the activity and the distance to the resources, we do not anticipate that this project will adversely impact these natural heritage resources.

However, downstream from the project site Difficult Run has been designated by the VDGIF as being "Threatened and Endangered Species Waters". The species associated with this T & E waters is the wood turtle (*Glyptemys insculpta*, G4/S2/NL/LT).

Due to the legal status of the wood turtle, DCR recommends coordination with the VDGIF to ensure compliance with protected species legislation. Also, to minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to applicable state and local erosion and sediment control/storm water management laws and regulations.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

In addition, our files do not indicate the presence of any State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

New and updated information is continually added to Biotics. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

A fee of \$90.00 has been assessed for the service of providing this information. Please find enclosed an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, **DCR - Division of Natural Heritage, 217 Governor Street Richmond, VA 23219**. Payment is due within thirty days of the invoice date. Please note the change of address for remittance of payment as of July 1, 2008. Late payment may result in the suspension of project review service for future projects.

The Virginia Department of Game and Inland Fisheries maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters, which may contain information not documented in this letter. Their database may be accessed from [http://www.dgif.virginia.gov/wildlife/info\\_map/index.html](http://www.dgif.virginia.gov/wildlife/info_map/index.html) , or contact Shirl Dressler at (804) 367-6913.

Should you have any questions or concerns, feel free to contact me at (804) 692-0984. Thank you for the opportunity to comment on this project.

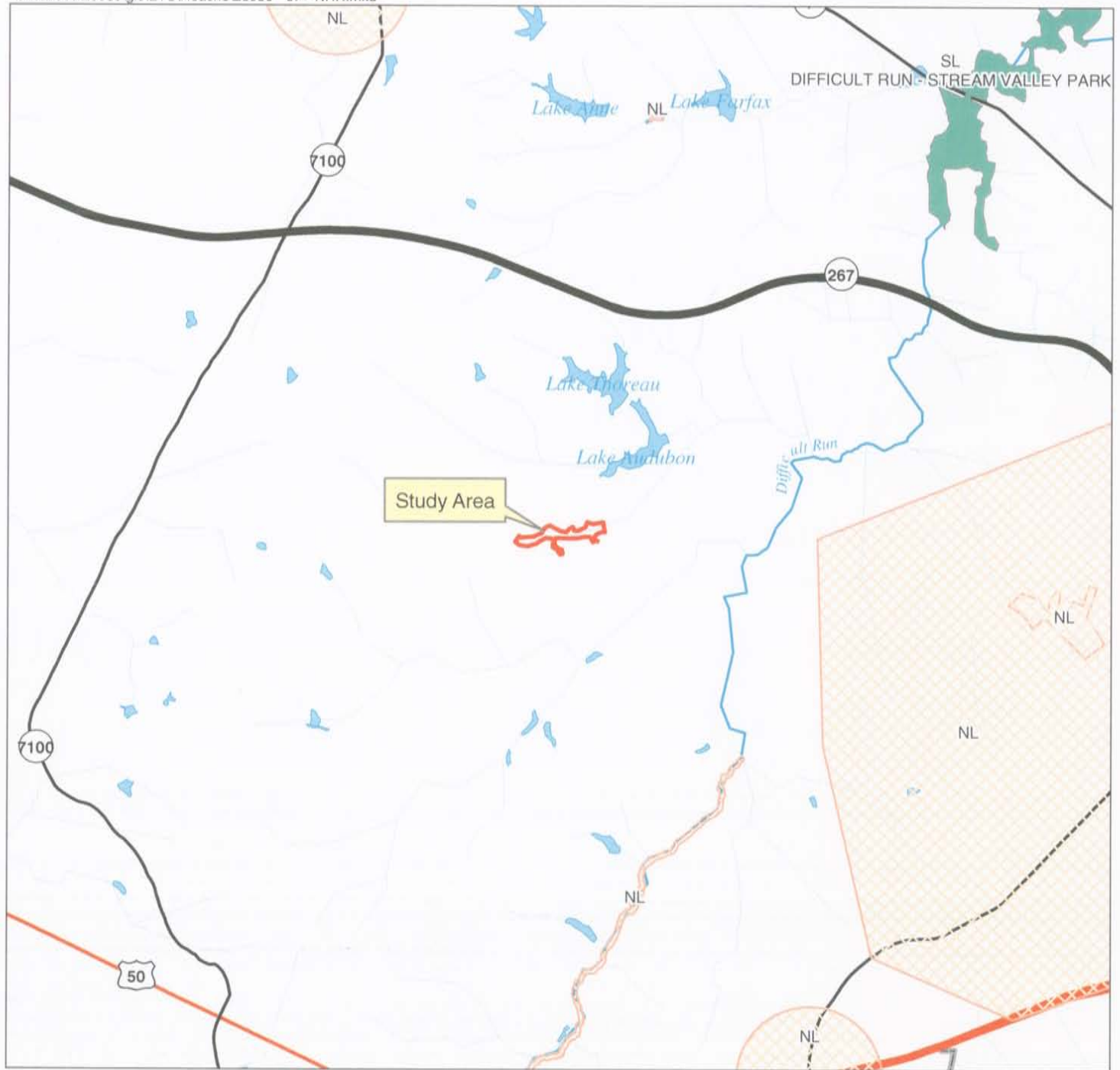
Sincerely,



Kristal McKelvey  
Coastal Zone Locality Liaison

cc: Amy Ewing, VDGIF





# DCR - Natural Heritage Resources Map

Glade Reach 5

WSSI #20030

Scale: 1" = 1 mile

- Conservation Site
- General Location of Natural Heritage Resource
- Karst Feature
- Stream Conservation Unit (SCU)
- NL No state/federally listed species present
- SL State listed species present
- FL Federally listed species present





# Virginia Department of Game and Inland Fisheries

9/4/2008 4:29:45 PM

## Fish and Wildlife Information Service

### VaFWIS Initial Project Assessment Report

Compiled on

9/4/2008, 4:29:45 PM

[Help](#)

Known or likely to occur within a **2 mile radius of 38,55,50.**

**77,20,51.**

**in 059 Fairfax County, VA**

568 Known or Likely Species ordered by Status Concern for Conservation  
(displaying first 40) (40 species with Status\* or Tier I\*\*)

BOVA Code	Status*	Tier**	Common Name	Scientific Name	Confirmed	Database(s)
060006	SE	II	Floater, brook	Alasmidonta varicosa		BOVA
030062	ST	I	Turtle, wood	Glyptemys insculpta		BOVA
040129	ST	I	Sandpiper, upland	Bartramia longicauda		BOVA
040293	ST	I	Shrike, loggerhead	Lanius ludovicianus		BOVA
040379	ST	I	Sparrow, Henslow's	Ammodramus henslowii		BOVA
100155	FSST	I	Skipper, Appalachian grizzled	Pyrgus wyandot		BOVA
040093	FSST	II	Eagle, bald	Haliaeetus leucocephalus		BOVA
040292	ST		Shrike, migrant loggerhead	Lanius ludovicianus migrans		BOVA
100248	FS	I	Fritillary, regal	Speyeria idalia idalia		BOVA
100154	FS	II	Butterfly, Persius duskywing	Erynnis persius persius		BOVA
060029	FSSS	III	Lance, yellow	Elliptio lanceolata		BOVA
040372	SS	I	Crossbill, red	Loxia curvirostra		BOVA
040306	SS	I	Warbler, golden-winged	Vermivora chrysoptera		BOVA
010032	SS	II	Sturgeon, Atlantic	Acipenser oxyrinchus		BOVA
040029	SS	II	Heron, little blue	Egretta caerulea caerulea		BOVA
040213	SS	II	Owl, northern saw-whet	Aegolius acadicus		BOVA



040304	SS	II	Warbler, Swainson's	Limnothlypis swainsonii		BOVA
040266	SS	II	Wren, winter	Troglodytes troglodytes	Yes	CBC,BOVA
030063	CC	III	Turtle, spotted	Clemmys guttata		BOVA
040094	SS	III	Harrier, northern	Circus cyaneus	Yes	CBC,BOVA
040036	SS	III	Night-heron, yellow-crowned	Nyctanassa violacea violacea		BOVA
040204	SS	III	Owl, barn	Tyto alba pratincola	Yes	BBA,CBC,BOVA
060071	SS	III	Lampmussel, yellow	Lampsilis cariosa		BOVA
030012	CC	IV	Rattlesnake, timber	Crotalus horridus		BOVA
040264	SS	IV	Creeper, brown	Certhia americana	Yes	CBC,BOVA
040180	SS	IV	Tern, Forster's	Sterna forsteri		BOVA
040364	SS		Dickcissel	Spiza americana		BOVA
040032	SS		Egret, great	Ardea alba egretta		BOVA
040366	SS		Finch, purple	Carpodacus purpureus	Yes	CBC,BOVA
040285	SS		Kinglet, golden-crowned	Regulus satrapa	Yes	CBC,BOVA
040112	SS		Moorhen, common	Gallinula chloropus cachinnans		BOVA
040262	SS		Nuthatch, red-breasted	Sitta canadensis	Yes	CBC,BOVA
040189	SS		Tern, Caspian	Sterna caspia		BOVA
040278	SS		Thrush, hermit	Catharus guttatus	Yes	CBC,BOVA
040314	SS		Warbler, magnolia	Dendroica magnolia		BOVA
040335	SS		Warbler, mourning	Oporornis philadelphia		BOVA
050045	SS		Otter, northern river	Lontra canadensis lataxina		BOVA
060076	SS		Lampmussel, eastern	Lampsilis radiata radiata		BOVA
040225		I	Sapsucker, yellow-bellied	Sphyrapicus varius	Yes	CBC,BOVA
040319		I	Warbler, black-throated green	Dendroica virens		BOVA

To view **All 568 species** [View 568](#)

\* FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; FS=Federal Species of Concern; SC=State Candidate; CC=Collection Concern; SS=State

### Special Concern

\*\* I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

### Anadromous Fish Use Streams

N/A

### Colonial Water Bird Survey

N/A

### Threatened and Endangered Waters ( 1 records )

[View Map of All Threatened and Endangered Waters](#)

Record ID	Stream Name	Designation <sup>1</sup>	T&E Waters Species			View Map
			Different Species	Highest TE <sup>*</sup>	Highest Tier <sup>**</sup>	
TE-51	Difficult Run	S	1	ST	I	Yes

<sup>1</sup> S = State Listed species present; F/S = Federal and State listed species present

### Cold Water Stream Survey (Trout Streams) Summary of Recent Observations

N/A

### Public Holdings:

N/A

audit no. 199712 9/4/2008 4:29:45 PM Virginia Fish and Wildlife Information Service  
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# COMMONWEALTH of VIRGINIA

L. Preston Bryant, Jr.  
Secretary of Natural Resources

Department of Game and Inland Fisheries

Robert W. Duncan  
Executive Director

November 6, 2008

Jennifer D. Feese  
Environmental Scientist  
Wetland Studies and Solutions, Inc.  
5300 Wellington Branch Drive, Suite 100  
Gainesville, Virginia 20155

RE: ESSLOG #25732, The Glade ( $\pm$  125 acres), WSSI #20030, Reston, Fairfax County, VA—  
subscriber confirmation.

Dear Ms. Feese:

This letter is in response to your request for information related to the presence of threatened or endangered species in the vicinity of the above referenced project.

**I concur with your findings from the Virginia Fish and Wildlife Information Service. Though there are a number of species listed as "likely to occur" on the Project Review Reports, there are currently no known documentations of threatened or endangered species in the project area. However, this project area is within Glade Run, which is a tributary to a portion of Difficult Run that is designated a Threatened and Endangered Species' Water. This designation is due to documented occurrences of the *state threatened* wood turtle (*Glyptemys insculpta*). Therefore, the applicant should coordinate with the VDGIF Environmental Services Section (804-367-6913) concerning potential impacts to this resource.**

Information about fish and wildlife species was generated from our agency's computerized Fish and Wildlife Information System, which describes animals that are known or may occur in a particular geographic area. Field surveys may be necessary to determine the presence or absence of some of these species on or near the proposed area. Also, additional sensitive animal species may be present, but their presence has not been documented in our information system.

Endangered plants and insects are under the jurisdiction of the Virginia Department of Agriculture and Consumer Services, Bureau of Plant Protection. Questions concerning sensitive plant and insect species occurring at the project site should be directed to Keith Tignor at (804) 786-3515.

The Virginia Department of Conservation and Recreation, Natural Heritage Program, maintains a database of natural heritage resources, including the habitat of rare, threatened, or endangered plant

Jennifer D. Feese

ESSLog #25732

11/6/2008

Page 2

and animal species, unique exemplary natural communities, and significant geologic formations, that may contain information not documented in this letter. Their database may be accessed from <http://www.dcr.state.va.us/dnh/nhrinfo.htm>, or by contacting S. Rene Hypes at (804) 371-2708.

This letter summarizes the likelihood of the occurrence of endangered or threatened animal species at the project site. If you have any questions in this regard, please contact me at (804) 367-1185.

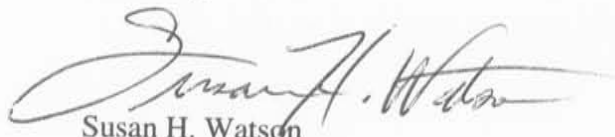
Please note that this response does not constitute consultation or management recommendations regarding endangered or threatened wildlife, or any other environmental concerns. These issues are analyzed by our Environmental Services Section, in conjunction with interagency review of applications for state and federal permits. If you have any questions in this regard, please contact the Environmental Services Section at (804) 367-6913.

*Please note that the data used to develop this response are continually updated. Therefore, if significant changes are made to your project or if the project has not begun within 6 months of receiving this letter, then the applicant should request a new review of our data.*

The Fish and Wildlife Information Service, the system of databases used to provide the information in this letter, can now be accessed via the Internet! The Service currently provides access to current and comprehensive information about all of Virginia's fish and wildlife resources, including those listed as threatened, endangered, or special concern; colonial birds; waterfowl; trout streams; and all wildlife. Users can choose a geographic location and generate a report of species known or likely to occur around that point. From our main web page at [www.dgif.virginia.gov](http://www.dgif.virginia.gov), choose the hyperlink to "Virginia Fish and Wildlife Information Service." For more information about the service, please contact Shirl Dressler at (804) 367-6913.

Thank you for your interest in the wildlife resources of Virginia.

Sincerely,



Susan H. Watson  
Information Specialist

cc: R.T. Fernald, VDGIF  
R. Hypes, VDCR-NH



LEGEND

APPROXIMATE STUDY AREA

PERENNIAL STREAM  
(BASED ON FAIRFAX COUNTY RPA MAPS)

NON-PERENNIAL STREAM (BASED ON FAIRFAX COUNTY  
RPA MAPS AND WSSI'S SITE OBSERVATIONS)

JURISDICTIONAL WETLAND AREAS

FAIRFAX COUNTY-MAPPED 100-YEAR FLOODPLAIN

POTENTIAL WOOD TURTLE IN-STREAM HABITAT  
FEATURES

Table 1: Wood Turtle Overwintering Habitat Features							
MAPPED DATA SITES = 22	In-stream Habitat Feature Type						TOTAL
	Root Wad	Undercut Bank	Log or Log Jam	Leaf Packs	Tree Fall/ Snag	Hole	
# FEATURES OBSERVED	15	16	4	4	6	0	45
PERCENT	33	36	9	9	13	0	100
Number of Sites With Multiple Habitat Features (MHF)							17
Percent of Observed Sites With MHF							77

NOTES:

1. Wetland Studies and Solutions, Inc. (WSSI) conducted a habitat evaluation for Endangered and Threatened Species (ETS), defined as those species formally listed as Endangered or Threatened on the state or federal level, on Reach 5 of The Glade study area. Additionally an assessment for the potential occurrence of non-listed Natural Heritage Resources (NHRs), "special concern" species and natural communities that are considered rare and whose occurrences are tracked by Virginia Department of Conservation and Recreation, Division of Natural Heritage (DCR) was performed. This evaluation included all areas within the study area.

From December 17-22, 2008, WSSI conducted an ETS Habitat Evaluation and Rare Plant Species/Community Assessment on Reach 5 of The Glade study area (WSSI #20030). Fieldwork was conducted by WSSI environmental scientists Jean M. Tufts, WPIT, Sean D. Sipple, PWS, PWD, CT, AE, Eric J. Calladine, WPIT and environmental compliance specialist Jason Beeler CPESC-IT, ecologist William S. Sipple, and Reston Association staff Nicki Foremsky and Brian Pety.

2. Topographic and February 2004 Natural Color Imagery information from Air Survey Corp., topographic and floodplain information from Fairfax County digital data, and easement boundary information from WSSI were used as a base for this attachment. The contour interval (C.I.) obtained from Air Survey Corp. is 0.5 feet and the C.I. from Fairfax County digital data is 5 feet. This information is based in the NAD 83 coordinate system, and vertical datum of NGVD 29.

3. Waters of the U.S. (including wetlands) are shown on this attachment. WSSI previously delineated the jurisdictional waters of the U.S. (including wetlands) on The Glade (WSSI #20030) project and the results are described in our October 9, 2008 wetland delineation report. A jurisdictional determination from the U.S. Army Corps of Engineers is pending.

4. The waters of the U.S. are shown on this exhibit because the state-threatened wood turtle is associated with streams and wetlands. Based on our habitat evaluation, many of the unnamed tributaries to The Glade within the study area lack suitable aquatic wood turtle habitat. These streams do not contain enough water during the over-wintering period to provide winter-phase habitat for wood turtles. Therefore, a systematic search for the presence of wood turtles was not conducted in these streams during this study. However, there are areas along The Glade that provide marginal terrestrial and winter-phase habitat for wood turtles. Terrestrial wood turtle habitat consists of a mature forested floodplain containing potential plant species for foraging, such as greenbrier (*Smilax rotundifolia*), honeysuckles (*Lonicera* spp.), and grapes (*Vitis* spp.). Although mature forest is present for foraging, the streams within the study area are incised and provide little accessibility for wood turtles to access the floodplain, thus these areas are considered marginal. Marginal winter-phase wood turtle habitat includes 22 mapped data sites (Table 1). Although persistent, such features are uncommon, and in areas that may completely freeze during the winter. In addition to these habitat features, less suitable habitat features were observed, but not recorded. These features included transient logs likely to be displaced following storm events and rootwads or undercut banks that were located above ordinary high water and would not be continuously submerged to provide overwintering habitat.

Although water temperatures were favorable for locating wood turtles in the streams and terrestrial and winter-phase wood turtle habitat is present within the site, no wood turtles were observed during this investigation. The absence of wood turtles is likely due to factors such as lack of habitat, degraded water quality, and the distance to a viable wood turtle population. It has been documented that much of The Glade has poor water quality, which is likely due to the developed nature of the watershed. Nutrients, pesticides, and other chemical pollutants that enter this stream through runoff can have a negative effect on wood turtles, which are a pollution intolerant species. Based on the results of this study, and the lack of conclusive evidence of wood turtles anywhere in The Glade watershed, it is WSSI's opinion that the probability that the study area supports wood turtles is low.

5. Nine state listed bird species of special concern, including the winter wren (*Troglodytes troglodytes*), northern harrier (*Circus cyaneus*), barn owl (*Tyto alba*), brown creeper (*Certhia americana*), purple finch (*Carpodacus purpureus*), golden-crowned kinglet (*Regulus satrapa*), red-breasted nuthatch (*Sitta canadensis*), hermit thrush (*Calharius guttatus*), and yellow-bellied sapsucker (*Sphyrapicus varius*), have been documented within a 2-mile radius of the project area, as described in this report. It is WSSI's opinion that either no appropriate nesting habitat is present within the study area, or Fairfax County is outside the normal breeding distribution of these species, and therefore the stream restoration efforts within the study area will have no direct effect on these species during the breeding season or wintering months as they will be capable of seeking refuge and foraging habitat in adjacent forested areas. These species however, may occur as a migrant or winter visitor in forested habitats within the study area due to their widespread geographic distribution. The special concern status is not an official legal status, and therefore the designated birds under this status are not formally protected by state or federal endangered species laws.

6. Other ETS, state-rare species, or rare plant communities that occur in Northern Virginia such as the small whorled pogonia (*Isotria medeoloides*), American ginseng (*Panax quinquefolium*), bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*, including *F.p. tundrius*), upland sandpiper (*Bartramia longicauda*), loggerhead shrike (*Lanius ludovicianus ludovicianus*, *L.l. migrans*), Henslow's Sparrow (*Ammodramus henslowii*), state-rare diabase plants, upland depression swamps, and northern hardpan basic oak-hickory forests were not addressed in detail in this report due to information provided by the DCR and DGI regarding the potential for their occurrence in the area; furthermore, WSSI's field studies confirmed the lack of habitat for or presence of any of these species.

REVISIONS				App. By		SCALE: 1" = 100'
No.	Date	Description	Rev. By			
						DATE: January 2009
Horizontal Datum: VCS NAD83						
Vertical Datum: NGVD 29						
Boundary and Topo Source: Fairfax County Digital Data; Air Survey Corporation						
Design	Draft	Approved				
SDS	SDS	MH				
Sheet #  1 of 1						
Computer File Name: I:\2009\2009\cad\65-EN\W\ETS\Reach5_ETSMap1.dwg						