Status of Rare Plant Survey Portsmouth Bypass, SCI-823-0.00 PID 19415

PREPARED FOR: ODOT, Office of Environmental Services

PREPARED BY: Rob Hook

DATE: August 1, 2003

Introduction

Pursuant to coordination with the US Fish and Wildlife Service (USFWS) and the Ohio Department of Transportation (ODOT) Office of Environmental Services, CH2MHILL was authorized to conduct a field survey for the federally endangered Small Whorled Pogonia (*Isotria medeoloides*) and threatened Virginia Spiraea (*Spiraea virginiana*) for the Portsmouth Bypass project. The methodology for this program was based on habitat characteristics provided in USFWS and other publications, including physical habitat conditions, predominant vegetation types, and associated species, in association with field data from ecological survey for the project. Throughout its range, the Small Whorled Pogonia (SWP) generally occurs in acidic forests with somewhat open canopies and sparse subcanopies. The species is typically associated with forests dominated by oaks, Eastern hemlock, and beech. The methodology for this work and coordination with the USFWS is attached in **Appendix A.**

The authorized methodology estimated that a maximum of 35 SWP plots would be conducted. The approved sampling methodology was approved on June 18th, 2003. Work proceeded immediately. By June 24th, 2003 a total of 16 SWP sample plots had been completed. On June 27th, 2003, representatives of OES, USFWS and CH2M HILL visited the known Hocking County habitat of the SWP. During May 2003, two specimens of the SWP were present at that site in vegetative state as reported by the ODNR. These plants had senesced by June 27 and could not be found. Therefore, it was agreed by all parties that the current study would continue through the remainder of June and early July 2003 only to define those woodlands with potential habitat for the SWP (as identified by the presence of target associate species, all of which would remain vegetatively identifiable through that period). The SWP survey would be completed in spring 2004 by revisiting the identified potential habitats to determine the presence or absence of the SWP.

Investigations of forest habitats continued from June 30 through July 3, and July 16. During this time, an additional 12 plots were documented, for a total of 28 plots. Of these, 10 SWP plots have been identified that are recommended for re-survey based on the abundance of

associate species. These will be completed in the growing season of 2004. This work will be completed under the existing contractual arrangement.

The Virginia Spiraea (VS) is known to occur along periodically flood-scoured streams with sandstone bedrock, damp rocky banks and along sand/gravel bars with riparian debris. In Ohio, Virginia spiraea is known from a single site in western Scioto County, along a remote, undisturbed streambed. Virginia spiraea is a perennial shrub species that flowers in June and July. The current study period is prime for identification of this species. The specified work is complete. No specimens of the Virginia spiraea were encountered. Pursuant to the coordination conducted, this data should be adequate for the USFWS to make an absence determination relative to the Virginia spiraea and the Portsmouth Bypass project.

Appendix B contains a photolog generated during the fieldwork.

Appendix C contains study maps that depict the location of sample plots and a map of woodlands mapped during previous field work that occurs on low pH soil types (suitable for SWP).

Appendix D contains the data forms generated during the field work described in this Technical Memo, as well as a list of plants identified in addition to those listed in the draft Ecological Survey Report. These additional species will be incorporated into the plant list for the final ESR.

Methods

Field studies were conducted on June 20, 23, 24, 27 and 30, and July 1, 2, 3 and 16.

Areas of the Hill and Valley Alignments were selected for study based on the extent of suitable soils and successional, pine or mature woodlands as determined during fieldwork for the ecological survey. Actively logged areas were eliminated. As agreed to by ODOT and USFWS, lower and middle slope positions were emphasized, as upper slopes are generally considered too dry for the species.

The survey focused on woodlands (mature, successional and pine woodlands) which fall on acidic soil types, as mapped in the Scioto County soil survey. The soil types included Steinsburg, Brownsville, and Tilsit soils. This definition included approximately 90% of the 900 acres of woodlands (excluding active logging areas) along the alignments. Using the project GIS, "target" points were initially located each half kilometer along the centerline of each alignment where they pass through these habitats. The primary purpose of the target points was to guide the field team along the alignment centerlines in the field at the selected habitats using GPS, not as *a priori* plot locations.

The team searched the target habitats for known associate species to indicate potential habitat for the SWP and to locate the best possible survey plot locations. For this study, the associate species used are listed in Table 1. This list is selected from the associate species lists provided in the USFWS recovery plan (1992). The total list of associate species as provided in the recovery plan includes canopy species. Many of the canopy species are either absent or common throughout the Portsmouth Bypass study area, and therefore provide little focus to the study. Also, several of the subcanopy and ground layer species are common, such as Virginia creeper (*Parthenocissus quinquefolia*), and therefore do not

necessarily indicate any particular habitat conditions. The less ubiquitous, ground layer and subcanopy species were chosen based on the rationale that they would indicate more specific habitat conditions at the ground layer.

TABLE 1
Target Associate Species

SCIENTIFIC NAME	COMMON NAME
Isotria verticillata	Large whorled pogonia
Vaccinium pallidum (vacillans)	Sweet lowbush blueberry
Mitchella repens	Partridge berry
Acer rubrum (seedlings)	Red maple
Gaultheria procumbens	Wintergreen
Medeola virginiana	Indian cucumber root
Thelypteris noveboracensis	New York fern
Goodyera pubescens	Rattlesnake plantain
Maianthemum canadense	Canada mayflower
Lycopodium spp (except *L. complanatum)*	Clubmosses
Hamamelis virginiana	Witch hazel

Field notes were further used as possible to focus the study on those sites where known associate species or potentially suitable habitats was found. Of particular interest were oak and/or beech woods, although woodlands that contained other mesic species such as tulip poplar and sugar maple were also checked. Woodlands that could not be eliminated based on previous field notes were included in the survey.

In each identified area/segment, a meandering search was conducted along the alignment to search for the SWP, or populations of the associate species that might indicate a suitable habitat. On each date, a minimum of 8 hours was dedicated to active search in the meandering surveys.

Where a substantial population (that is, more than a few individuals) of associate species were found, a plot was established and recorded. Plots were also recorded in a few areas to document forest conditions, even though associates were not abundant. Two persons searched each one-quarter acre minimum plot for the SWP for a minimum of 15 minutes. Plots were expanded whenever the associate populations extended beyond the plot boundary. For example, associates often followed along a topographic contour – the search would continue along that contour. A list of species present in three strata (canopy - greater than 4-inch dbh, subcanopy - less than 4-inch dbh and greater than one meter high, and ground layer) was assembled during the search. The diameter-at-breast-height of several of the trees in the plot was estimated as an indicator of forest age, and the total percent canopy closure in each stratum recorded. At each plot, the physical characteristics recorded included the slope position (upper, middle, lower), the slope aspect (north, northeast, east,

southeast, south, southwest, west, northwest), slope angle, and soil characteristics in the upper 6 to 12 inches including color, texture, and depth of litter. The center of each plot was marked with a pink, numbered flag and located using handheld GPS (Garmin III-plus), generally accurate to within 15 meters.

The standard procedure for the VS was to search and document the conditions of each perennial stream crossing (as identified from the project GIS) relative to the preferred habitat conditions of the VS, as described in USFWS and other publications. Each site was also located with GPS and photographed. A species list and canopy closure was also documented, similar to the SWP, and a sketch of the site prepared on the data form.

Results

1. Small Whorled Pogonia

The attached maps show the areas that were surveyed. A total of 28 plots were documented during the course of the study to characterize the forest in the project area relative to the habitat requirements of the SWP. Meandering surveys were conducted through woodland areas that could not be eliminated based on field notes from the ecological survey, or were found to be generally unsuitable due to current logging operations or dense subcanopy or ground layer vegetation. While a portion of the woodland could be eliminated based on previous fieldwork, most (approximately 700 acres) of the standing woodland along both alignments was visited. Much of the woodland south of SR 139 has been subject to recent logging and/or grazing. Logging also occurs in some woodlands to the north, although somewhat less extensively. Woodland throughout the study area had been affected by ice damage during a storm in mid February 2003. Damage was extensive in some areas, which allowed for dense subcanopy and ground layer vegetation.

No populations of the SWP were found. There are no sites in the Portsmouth Bypass study area similar to the conditions of the known SWP site in Hocking County, which is strongly dominated by eastern hemlock (*Tsuga canadensis*), partridge berry (*Mitchella repens*) and Indian cucumber root (*Medeola virginiana*). While evergreens (pines) occur in the Portsmouth Bypass area, they largely occur at upper slope positions. Deeper stream valleys are dominated by deciduous trees.

All of the associate plant species were found in the study area with the exception of winterberry (*Gaultheria procumbens*) and Canada mayflower (*Maianthemum canadense*). The most widespread of the associates were the Lowbush blueberry (*Vaccinium vacillans*) and the New York fern (*Thelypteris noveboracensis*), followed by Indian cucumber root. Rattlesnake plantain (*Goodyera pubescens*) was relatively common, although more sparse than the other species at any one location. Partridgeberry and clubmosses other than *Lycopodium complanatum* (namely, *Lycopodium lucidulum*) were found at only one site each.

Five populations of the Large Whorled Pogonia (*Isotria verticillata*, LWP) were located, three along or near the Hill Alternative (plots 2, 3, 18) and two along or near the Valley Alternative (plots 14, 21). All of the identified LWP populations are located in the northern half of the study area, north of SR 139. Not listed as an associate species of the SWP, the recovery plan states "...colonies of the large whorled pogonia often occur near colonies of the small whorled pogonia..." and that "...the two species have also been reported to grow

mixed together." In its vegetative state, LWP is similar in appearance to the SWP. The LWP populations were identified based on vegetative characteristics, as all of the specimens that were found were sterile. The primary differentiating character is that the LWP has a reddish stem, while that of the SWP is typically white or greenish-white. ODOT-OES and USFWS visited two of the identified populations on June 27 to confirm their identification.

The LWP sites were comparable in their species composition and canopy closure, and typically contained several of the SWP associate species. The sites were not consistently associated with a logging road or other long term opening. The dominant plant community that was associated with the LWP populations is well represented in other areas of the alignments, although the pogonias were not found in these other areas. The elevations in the project area range from approximately 525 feet in the Little Scioto River floodplain to approximately 1075 in the most northern hills, based on the project topographic mapping (NAD 1983 datum). The LWP populations occurred between elevations 785 to 885. Hills with elevations above 800 are considerably more extensive in the northern half of the study area than the southern half. Also consistent between the LWP populations was a tendency to occur on western (from NW to SW) facing slopes with a slope angle of 10 to 20 degrees (18 to 36%).

Several other plots also contained a number of associate species in abundance, mostly in the northern half of the study area. These other plots occurred on middle slopes with a northern to western aspect and at slope angles up to 30 degrees (58%).

2. Virginia Spiraea

The eight perennial stream crossing sites associated with the Hill and valley Alternatives were surveyed for the VS. No specimens were encountered. Interestingly, neither of the Little Scioto River crossing sites appears suitable for the VS. While the river appears to have desirable habitat characteristics at some locations (for example, bedrock banks at the Dixon Mill Bridge), at both proposed crossing locations, the river has a high bank/high floodplain composed entirely of silt. The stream bottom is also composed almost entirely of silt, with highly unstable, unvegetated sand and silt bars in the river at the crossings. The preferred habitat conditions for VS were not found at either proposed river crossing.

Based on descriptions of the known habitat of this species from ODNR and USFWS, several of the mid-size perennial streams appeared to have some of the habitat characteristics suitable for this species. VS is typically associated with streams with bedrock bottom/banks and/or gravel bars, where it is established in the gravel deposits or in fissures in the bedrock. Notably, the streams at points sv1 (Long Run), sv3 (Shell Creek), sv7 (Schoumberg Hollow just upstream of the confluence with the Little Scioto River) and sv8 (Dan White Hollow) each has a bedrock bottom with sandstone outcrops along at least one bank, canopy gaps, and apparently stable cobble/gravel bars that support vegetation. The general character of these streams matches that provided in the recovery plan, that is, scour sufficient to fell heavier trees creating gaps and to remove overshadowing shrubs and herbs, at least at some locations. Additionally, a number of the associate species listed for the Ohio population were found along these streams, including *Amphicarpa bracteata, Betula nigra, Boehmeria cylindrica, Carpinus caroliniana, Glyceria striata, Pilea pumila, Polygonum* spp., *Platanus occidentalis, Toxicodendron radicans, Ulmus* spp., and *Vitis riparia.* However, these streams may not be large (wide) enough to maintain an open canopy for sufficient time to

allow for establishment of the VS. Most are narrow enough to allow a completely closed canopy above them. Most are also subject to pressures of logging, agriculture, and land development in their watersheds near the crossing sites that may also reduce the likelihood of the species.

Recommendations for Further Study

1. Small Whorled Pogonia

As suggested by the USFWS in coordination for this project, further SWP surveys in the project area should be conducted during the normal anthesis period, typically May, of 2004. The exact timing of fieldwork should be coordinated with the ODNR personnel who are monitoring the known SWP site to determine when the plant will be most likely visible and identifiable.

Based on the conditions found during the current study, including the occurrence of the LWP as well as the abundance of associate ground species present, the lower and middle slopes near the plots listed in Table 2 are recommended for investigation during 2004.

TABLE 2
Recommended Sites for Future Small Whorled Pogonia Surveys

Plot Number	Large Whorled Pogonia present	Hill Alternative	Valley Alternative
2	Yes	X	
3	Yes	X	
14	Yes		X
15	No	X	X
17	No	X	
18	Yes	X	
19	No	X	
21	Yes		X
22	No		X
27	No		X

2. Virginia Spiraea

No additional studies for the VS are recommended. While several of the streams in the study area may meet the habitat requirements of the spiraea, the study was conducted during the prime flowering period for this woody plant. As no populations were identified, it is likely that this species does not occur in the study area.

Appendix A

Correspondence

CH2M HILL
One Dayton Centre
Suite 1100
One South Main Street
Dayton, OH 45402
Tel 937.228.4285
Fax 937.228.7572

CH2MHILL

June 10, 2003

Mac Vance
ODOT - Office of Environmental Services
1980 West Broad Street
Columbus, OH 43223

Subject: Miscellaneous Environmental Related Services Agreement
PID No. 75131/Agreement No. 11978
Task Order No. POL (OES)/CH-03-09-01
Modification #1
Portsmouth Bypass - Small Whorled Pogonia and Virginia Spiraea Survey

Dear Mr. Vance:

In response to your request, please accept this package as the cost proposal for the task order associated with a field survey for the Small Whorled Pogonia and the Virginia Spiraea, both federally listed plants, at the Portsmouth Bypass project (SCI-823-0.00/PID 19415).

The total cost associated with this task order is $48,345.00.

The attached cost estimate and Technical Approach Summary have been generated through consultation with ODOT-OES (John Baird) and USFWS (Sarena Selbo). On May 20th, an on-site meeting was held. Based on that meeting, a technical memo was generated outlining possible sampling methodologies. The methodology in this proposal is based on the "Survey based on Professional Judgement of Quality Habitat", with modifications to address USFWS comments.

We look forward to working with you. Please do not hesitate to call Rob Miller at 614.734.7144 with any questions or concerns.

Sincerely,

CH2M HILL Ohio, Inc.

Marie S. Keister

Marie S. Keister
Assistant Vice President

Cc: Noel Alcala, ODOT-OES

Technical Approach Summary
Small Whorled Pogonia and
Virginia Spiraea Survey
Portsmouth Bypass (SCI-823-0.00)
Miscellaneous Environmental Related Services Agreement
POL(OES)/CH-03-09-01
June 10, 2003

Introduction

Pursuant to coordination with the US Fish and Wildlife Service and the attached Request for Proposal, CH2MHILL proposes to conduct a field survey for the federally endangered Small Whorled Pogonia and threatened Virginia Spiraea for the Portsmouth Bypass project. The methodology for this program is based on habitat characteristics provided in USFWS and other publications, including physical habitat conditions, predominant vegetation types, and associated species, in association with field data from ecological survey for the project.

The Small Whorled Pogonia generally occurs in acidic forests with somewhat open canopies. The survey will focus on woodlands (mature and successional) which fall on acidic soil types, as mapped in the county soil survey. Using the project GIS, plots will initially be located approximately one each kilometer along the centerline of each alignment where they pass through this habitat. The sampling density will be approximately one per 15 acres of suitable habitat; the total number of plots is estimated to be 20. Additional plots will be established if populations of associated ground layer species (Table 1 below) are identified between the pre-determined plot locations. The coordinates of target sampling plots will be determined in advance, although the actual site of the plot will be adjusted to the most suitable habitat, as needed, and recorded in the field using GPS. The maximum number of Small Whorled Pogonia plot samples will be 35.

In Ohio, the Virginia Spiraea is known to occur along periodically flood-scoured streams with sandstone bedrock and along sand/gravel bars with riparian debris. The target survey areas for this species will be each location where one of the alignments crosses a perennial stream, as identified during the ecological survey field studies.

Sampling Methodology

For this study, the associate species for the Small Whorled Pogonia will be the following, based on literature obtained from the world wide web:

TABLE 1
Ground Layer Associate Species.

SCIENTIFIC NAME	COMMON NAME
Vaccinium pallidum (vacillans)	Sweet lowbush blueberry
Mitchella repens	Partridge berry
Acer rubrum (seedlings)	Red maple
Gaultheria procumbens	Wintergreen
Medeola virginiana	Indian cucumber root
Thelypteris noveboracensis	New York fern

TABLE 1
Ground Layer Associate Species.

SCIENTIFIC NAME	COMMON NAME
Goodyera pubescens	Rattlesnake plantain
Maianthemum canadense	Canada mayflower
Lycopodium spp	Clubmosses

The standard procedure at each one-quarter acre plot (approximately 60-foot diameter circle) for the Small Whorled Pogonia will be:

1. Flag the center of the plot and locate it with a handheld GPS unit. Label the flag with the plot number.
2. Complete a data form for each site, including:
    a. Slope position (lower, middle, upper), slope aspect, and slope angle near the center of the plot or at the associate/target species population.
    b. Description of a soil sample to characterize the texture and color of the upper 12 inches of soil within the plot.
    c. Visual estimate of percent canopy closure.
    d. A list of species present within the plot by stratum (canopy, subcanopy [shrubs, small trees], and ground layer) based on a minimum 20-minute search.
3. If rare species are located, flag the location anonymously and record the position with the GPS unit.
4. Photograph a typical view within each plot, and any rare species populations identified.

As possible, travel between adjacent plots will be generally along the centerline of the alternatives to note plant communities and habitat conditions between the plot sites.

The standard procedure for the Virginia Spiraea will be to document the conditions of each stream crossing relative to the preferred habitat conditions of the Virginia Spiraea, as described in USFWS and other publications. Each site will also be photographed.

Schedule

Surveys for the Small Whorled Pogonia will be completed before June 30 to meet the flowering period. The area of sampling will depend on the receipt of notice to proceed. Survey for the Virginia Spiraea may extend to the second week of July. CH2MHILL will coordinate the notification process. If needed, CH2MHILL will generate a draft notification letter for ODOT-OES approval and provide TranSystems with a list of property owners to notify. Proper notification must be in place before sampling can occur.

Reporting

At the completion of sampling, a summary report will be prepared. This report will include: Introduction/Background, Methods, Results and plot location mapping. The report will include data forms and photographs for each sampling plot/site.

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
6950 Americana Parkway, Suite H
Reynoldsburg, Ohio 43068-4127

(614) 469-6923/FAX (614) 469-6919

June 13, 2003

Timothy M. Hill
Office of Environmental Services
Ohio Department of Transportation
1980 West Broad St.
Columbus, OG 43223

Re: SCI-823-0.00 (Portsmouth Bypass) PID 19415

Dear Mr. Hill:

This is in response to your May 28, 2003, letter requesting U.S. Fish and Wildlife Service (Service) review of potential sampling methods for **small whorled pogonia** (*Isotria medeoloides*), a Federally listed threatened species. On May 20, 2003, a field review with the Ohio Department of Transportation (ODOT), CH2M Hill, and the Service was held to discuss ODOT's development of potential survey strategies. Your resulting letter outlines two options for the survey of small whorled pogonia in the proposed Portsmouth Bypass project area: 1) Comprehensive survey limited to areas of suitable soil and elevation, and 2) Survey based on professional judgement of quality habitat.

Upon receiving your draft letter by email, initial questions were raised by the Service and addressed by ODOT via email. Those questions and responses are included with this letter as an attachment. In that June 6, 2003 email ODOT expressed their decision to move ahead with option 2 (professional judgement method).

We recommend that the survey examines areas throughout both proposed corridors that contain mid-successional habitats of mixed-deciduous or mixed-deciduous/coniferous forests. These areas should include sparse to moderate ground cover in the microhabitat (except when among ferns) and a relatively open understory canopy. The soil in which the shallow-rooted small whorled pogonia grows is usually covered with leaf litter and decaying material. The spectrum of habitats includes dry, rocky, wooded slopes to moist slopes or slope bases crisscrossed by vernal streams. We recommend that areas with common associates such as large whorled pogonia (*Isotria verticillata*), witch hazel (*Hamamelis virginiana*), serviceberry (*Amelanchier arborea*), flowering dogwood (*Cornus florida*), and those listed in Tables 1 and 2 of your May 28, 2003 letter be thoroughly surveyed.

Since you have expressed the need to begin and complete the surveys this season, we are providing our comments after your decision to use the professional judgement survey method. Please be advised that the Service has the ability to request additional surveys if deemed necessary to concur with an ODOT

determination of presence or absence of endangered and threatened species. Thus, the remaining portion of this letter serves to highlight our comments concerning the method you chose for surveying the federally threatened small whorled pogonia.

1. The survey method based on professional judgement will include all wooded areas that have "quality habitat" based on the project team's experience and data received during the initial Ecological Survey. In order to conduct sound science, we recommend that the "quality habitat" criteria be well defined and fully described. This level of detail will enable the Service to better assess the survey protocol and subsequent results.

2. Based on a forest cover map provided to the Service by CH2M Hill, large tracts of mature and immature forest will be excluded from the survey under the professional judgment survey method. Although some of these forested areas will not be surveyed because they may have unsuitable habitat for the small whorled pogonia, the Service recommends that surveys are spaced throughout the entire project area. With the current survey method there is limited sampling along the Valley Alternative and at the southern end of both the Valley and Hill Alternatives.

3. In the June 6, 2003 email ODOT agreed that photographs of the site would be taken if small whorled pogonia was located. We also suggested that flexibility was built into the survey protocol and that surveys would be expanded if additional suitable habitat was located while in the field.

This technical assistance letter is submitted in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the Endangered Species Act, of 1973, as amended, and is consistent with the intent of the National Environmental Policy Act of 1969, the U. S. Fish and Wildlife Service's Mitigation Policy.

If you have questions, or if we may be of further assistance in this matter, please contact Sarena Selbo at extension 17 in this office.

Sincerely,

Mary Knapp

Mary M. Knapp, Ph.D.
Supervisor

cc: ODNR, Div. of Wildlife, SCEA Unit, Columbus, OH
Dave Snyder, FHWA

Field visit, Small Whorled Pogonia site, Hocking County

ATTENDEES: John Baird, ODOT-OES
Serena Selbo, USFWS
Rob Hook, CH2M HILL

FROM: Rob Hook

DATE: June 27, 2003

1. We visited the small whorled pogonia (SWP) site at Camp Oty-okwa, Hocking County on June 27, 2003. Paul Knoop/ODNR had located two individuals at this site in late May. Neither plant was present on our visit. John called him from the field and confirmed that they were identifiable in and among the large population of *Medeola* present. Since we hadn't been able to find them, they had senesced. Therefore, it was concluded that the SWP survey at Portsmouth couldn't be finished this year, and field work next year would be required. Possibly, Paul could tell John Baird when the plant was visible/in flower to help time the Portsmouth field work.
2. We visited two of the populations of Large Whorled Pogonia identified earlier this month at Portsmouth Bypass. Many individuals were found at these locations, some additional found outside the alignments en route (Hill Alternative near Plot 3).
3. It was agreed to continue to survey the alignments over the next two weeks and identify populations of associates (primarily *Medeola*, LWP, NY fern, plus those in the associate species list, such as *Gaultheria, Mitchella*, which have not been previously identified at Portsmouth). These sites will be located and inventoried with plots, and then be the focus of the re-check next year.
4. It was also agreed that additional survey effort should be limited to lower to middle slopes, as the known SWP population is at a low slope position, and the populations of LWP at Portsmouth are all at lower-middle slope positions. Upper slopes are too dry, too dominated by *Smilax*, etc, to be quality SWP habitats.

Appendix B

Photolog

Plot 1, upper slope forest remnant in active logging area.

Plot 2, lower to middle slope, large whorled pogonia found.

Large whorled pogonia at Plot 2.

Plot 4, upper middle slope site.

Plot 5, upper slope site.

Plot 6, dry upper slope site.

Plot 7, upper slope site.

Plot 8, typical oak woodland site.

Plot 9, canopy gap in center with population of New York fern.

Plot 10, a typical steep sided ephemeral stream valley.

Plot 11, mixed deciduous woodland, south-facing slope.

Plot 12, mixed pine/deciduous woodland.

Plot 13, dense fern and understory growth along small intermittent stream.

Plot 14, mid successional woodland with large whorled pogonia population.

Large whorled pogonia at Plot 14.

Plot 15, exposed upper slope with Indian cucumber root under oak/beech canopy.

Typical dense ground layer growth in open upper slope woods.

Plot 17, minimal associate species found.

Plot 18.

Large whorled pogonia at Plot 18.

Plot 20, open understory with no associate ground layer species.

Plot 21, several associates including large whorled pogonia.

Plot 22, upper middle slope with several associate species.

Plot 23, no associate species.

Plot 24. Deep "cove" with tree damage from early 2003 ice storm. No associates.

VS1, Long Run. Note bedrock outcrop on left bank.

A large, stable gravel bar along Long Run at VS1 with upland herbs.

Little Scioto River at VS2, silt banks and bed.

VS3, Shell Creek with bedrock bank (left) and gravel bar (right).

Close-up of bedrock shelf along Shell Creek, VS3.

Hydrangea along bedrock outcrops at VS3 resembles the Virginia spiraea in general aspect and habitat

Little Scioto River at VS4, silt banks and low gradient.

Another view of the Little Scioto at VS4.

Plot 25, steep slope with no associates.

Plot 27, few Indian cucumber root among understory of red maple.

Small perennial stream at VS5. No exposed bedrock, although some scouring is evident.

VS6, small perennial stream similar to VS5; no exposed bedrock, canopy removed, dense bank vegetation.

VS7, a larger perennial stream with exposed bedrock (right) and gravel bars with woody debris.

Another vew of bedrock bottom and banks at VS7.

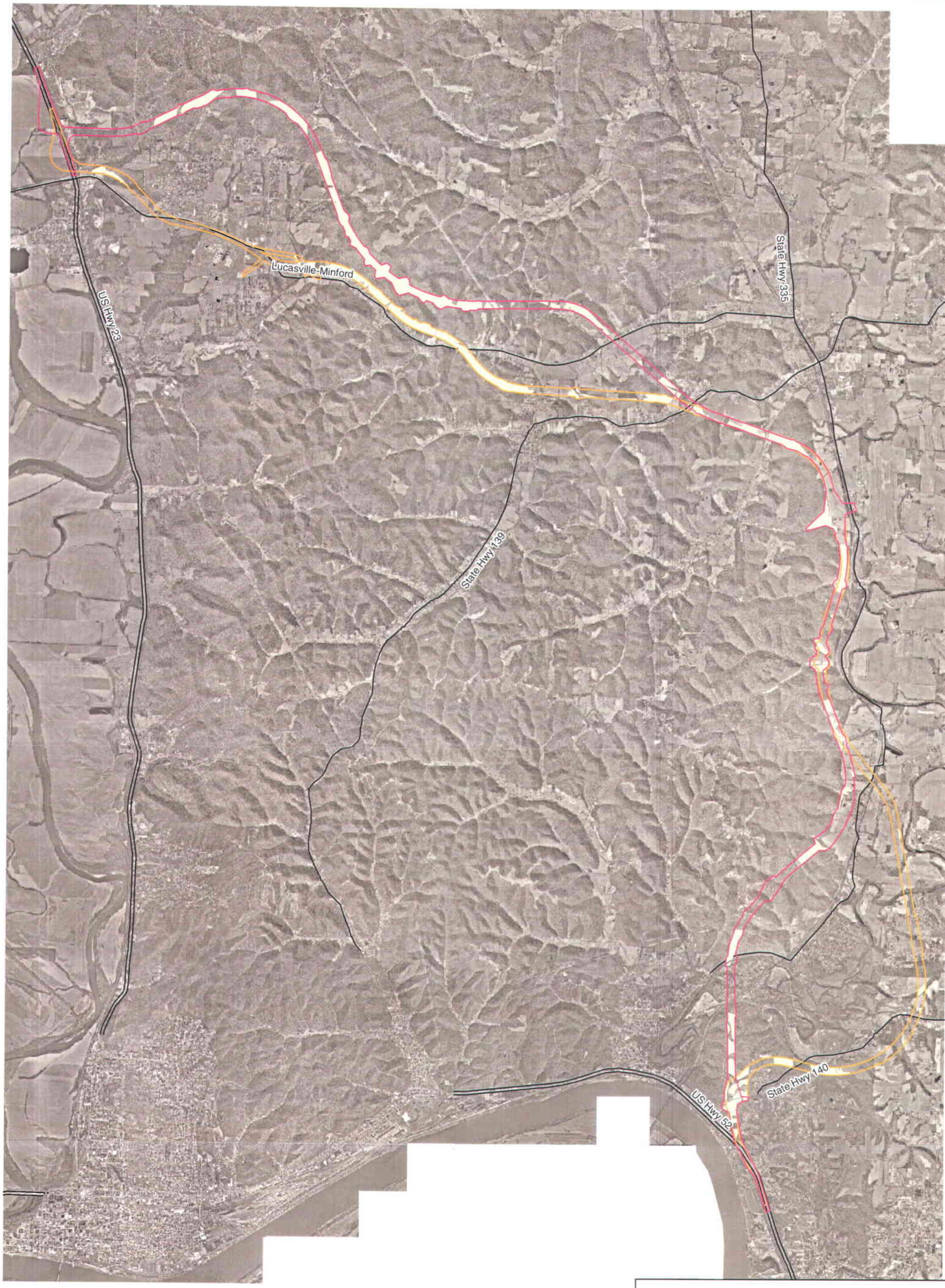
Bedrock bank at VS8.

Typical gravel bar along VS8.

Active logging upslope is opening the canopy at VS8.

Appendix C

Maps



Legend

- Hill Alternative
- Valley Alternative
- Woodland on Acid Soil Types (excluding active logging sites)

Woodlands on Acid Soil Types
Portsmouth Bypass
Scioto County, Ohio

N

0 2,000 4,000 6,000
Feet

CH2MHILL

Rare Species Survey Plots - South Portsmouth Bypass Scioto County, Ohio

N

0 1,000 2,000 4,000 Feet

CH2MHILL

Legend

- Hill Alternative
- Valley Alternative

Rare Plant Survey Sites

- Recommended for future study
- Not recommended for future study
- Pogonia Survey Routes

Habitat Description

- Closed Canopy/open understory
- Open canopy/dense understory
- Active logging
- Pines
- Scrub-shrub
- Agriculture, urban, other open habitats
- Perennial Streams

PLOT22
PLOT23
PLOT16
VS8
VS7
VS4
PLOT24
VS2
PLOT25
VS3
VS5
VS6
PLOT15
State Hwy 139
State Hwy 335
State Hwy 140
US Hwy 52

Rare Species Survey Plots - North
Portsmouth Bypass
Scioto County, Ohio

0 1,000 2,000 4,000 Feet

N

CH2MHILL

Legend

- Hill Alternative
- Valley Alternative

Rare Plant Survey Sites

- Recommended for future study
- Not recommended for future study
- Pogonia Survey Routes

Habitat description

- Closed Canopy/open understory
- Open canopy/dense understory
- Active logging
- Pines
- Scrub-shrub
- Agriculture, urban, other open habitats
- Perennial Streams

PLOT19
PLOT18
PLOT20
PLOT17
PLOT28
PLOT7
PLOT6
PLOT5
PLOT4
PLOT1
PLOT3
PLOT12
PLOT11
PLOT3A
PLOT2
PLOT10
PLOT9
PLOT8
PLOT13
PLOT14
PLOT27
PLOT26
VS1
PLOT21
PLOT22
PLOT23

State Hwy 348
State Hwy 728
US Hwy 23
State Hwy 139

Appendix D

Data Forms and Plant List

Rare plant species survey data form

Date: June 20, 2003 County, State: Scioto Co. Ohio

Project Title: PB

Target Species: ~~Smooth~~ Isotria medeoloides

Plot ID: PL1 Plot size: 1/4 acre

Coordinates: N 38° 52. 153' W 82° 55. 311

Investigator(s): Rob Hook + Stuart Jennings

Survey Begin Time: 10:40 A Survey End Time: 11:10 A

Slope position (U, M, L): upper Slope angle (%): 170

Slope aspect: N NE E SE (S) SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
0.5 - 1	Litter				
0 - 2	A	2.5Y 4-3	—	—	silty clay
2 - 6	B1	2.5Y 6-4	10YR 6-8	L, P, D	silty clay
6 - 12	B2	10YR 5-8	—	—	Sandy

General Site Description/Notes:

- Area is Actively Being Logged; slash is thrown on slope

- Sand stone possible; Large Stone in soil

PLOT ID Pl. #1

Canopy Species — Visual estimate of canopy closure (%): 40 %

Acer saccharum

Acer rubrum — dbh range 18 - 24"

Oxydendrum arboreum

Pinus virginiana

Pinus echinata

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%): 20 %

Oxydendrum arboreum

Smilax rotundifolia

Acer rubrum

PLOT ID #1

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 80% (in Lycopodium) to 40% (out of Lycop)

Lycopodium flabelliforme - Dominant

Quercus rubra

Smilax glauca

Sassafras

Oxydendrum arboreum

Carex hirsutella

Carya cordiformis

Acer rubrum

Vaccinium vacillans

Quercus alba

Rubus sp

Danthonia spic.

Nyssa sylvatica

Coreopsis major

Quercus prinus

Liriod. tulip.

Polystichum acrost.

Cercis canad.

Gerardia (?)

Prenanthes

Polygonatum sp.

Rare plant species survey data form

Date: June 20, 2003 County, State: Scioto Co, OH

Project Title: PB

Target Species: S. var P. Isotria medeoloides

Plot ID: PL2 Plot size: 1/4 acre

Coordinates: N 38°. 52. 001 W 82° 55. 327

Investigator(s): Rob Hook & Stuart Jennings

Survey Begin Time: 11:30 A Survey End Time: 12:20 P

Slope position (U, M, L): Middle Slope angle (%): 18°

Slope aspect: N NE E SE S SW W (NW)

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1-2 in	Litter				
0-4	A	2.5Y 5-4	2.5Y 3-2	L, P, D	silty clay
4-8	B1	10YR 6-6	—	—	silty clay
8-12	B2	10YR-6-8	—	—	Sandstone

General Site Description/Notes:

-NW corner of Cox property.

-Logging on slope opposite this one and other adjacent properties

- Site of previous T. verticillata location

PLOT ID 2 (previous LWP site)

Canopy Species	Visual estimate of canopy closure (%): 70%
Quercus alba	18" dbh
Quercus rubra	20" dbh
Acer rubrum	10" dbh
Nyssa sylvatica	8" dbh
Quercus prinus	18" dbh
Quercus velutina	18"

Subcanopy Species (woodies > 1 meter height and climbing vines)	Visual estimate of canopy closure (%): 40%
Oxydendrum arboreum	
Acer rubrum	
Smilax rotundifolia	
Nyssa sylvatica	

PLOT ID Z

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 40 – 50 %

Oxydendrum arboreum

Panicum sphaerocarpon & P. bicknellii

Sassafras albidum

Vaccinium vacillans

Pinus setotina

Quercus prinus

Amelanchier arbor.

Rhododendron nudiflorum (?)

Hieracium venosum

Solidago caesia (?)

Acer rubrum

Liriodendron tulipifera

☆ Isotria verticillata × 5 ± 20' SW of flag @ fallen log!

(no flowers, leaves not reflexed, hollow, purplish stem) 1 collected photo × 3

— Another pop × 8 ± 12' west/SW of flag

Orchid (hirsute leaf ×2, parallel veins) no flower. Antennaria sp. (?)

Pinus sp.

Castanea dentata × 1

Potentilla sp.

Rare plant species survey data form

Date: June 20, 2003 County, State: Scioto Co. OHio

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: PL3 Plot size: 1/2 Acre

Coordinates: N 38° 52.077 W82° 55.673

Investigator(s): Rob Hook + Stuart Jennings

Survey Begin Time: 1:18 Survey End Time: 1:48

Slope position (U, M, L): Middle Slope angle (%): 35°

Slope aspect: N NE E SE S SW W (NW)

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
0-1in	Litter				
0-2	A	10YR 3-3	—	—	Silty
2-8	B	2.5Y 6-4	—	—	Silty clay
8+	Stone	—	—	—	—

General Site Description/Notes:

- Leaf Litter variable. Deep in patches Good Humous Layer Below.

- good moss cover

1:18 - 1:48

PLOT ID 3

Canopy Species	Visual estimate of canopy closure (%): 60%
Acer rubrum	8", 12"
Quercus prinus	6", 18", 12"
Nyssa sylvatica	6"

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%): 50%

Fagus grandifolia

Sassafras albidum

Oxydendrum arboreum

Amelanchier arbor.

Smilax rotundifolia

PLOT ID 3

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 60%

Oxydendrum arboreum
Quercus prinus
Medeola virg. — abundant
Rhododendron sp.
Sassafras alb.
Acer rubrum
Cyprepedium sp.
Whorled loosestrife
Nyssa syl.
Vaccinium vacillans
Panicum spp.
Amelanchier
Epigaea repens
Smilax glauca
Fagus grand.
Smilax rotund.
Polystichum acrost. (few)
Smilax bona-nox
Dioscorea quaternata
Smilacina (few)
Prenanthes sp.
Liriodendron tulip. (few)

Isotria verticillata
Goodyera
} downslope within 150' of flag

Rare plant species survey data form

Date: 6/20/03 County, State: Scioto Ohio

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: PL4 Plot size: 1/4 acre

Coordinates: N 38° 52.241' W 82° 56.078'

Investigator(s): Rob Hoak + Stuart Jennings

Survey Begin Time: 2:40 Survey End Time: 3:20

Slope position (U, M, L): M Slope angle (%): 30°

Slope aspect: N NE E SE S SW W (NW)

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1.5 in	Litter				
0-8	A	2.5y 3-2			silty clay (strong)

General Site Description/Notes:

Miscellaneous documentation point

PLOT ID 4

Canopy Species — Visual estimate of canopy closure (%): 70%

Quercus rubra
Quercus prinus 14", 10", 18"
Quercus velutina 12"
Nyssa sylvatica 12"
Acer rubrum 18", 6"
Sassafras alb. 3"

Subcanopy Species (woodies > 1 meter height and climbing vines) — Visual estimate of canopy closure (%): 15%

Cornus florida
Sassafras albidum
Oxydendrum arboreum

PLOT ID 4

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 40%

Smilax rotund.
Rubus sp.
Quercus prinus
Polystichum acrost.
Acer rubrum
Nyssa sylvatica
Sassafras albidum
Viola sp. (trilobum?)
Panicum sphaerocarpon
Amelanchier arborum
Parthenocissus quinquefolia
Vitis sp.
Smilacina
Thelypteris noveboracensis (few)
Amelanchier
Dioscorea quat.
Smilax glauca
Liriodendron tulip.
Quercus rubra (?)
Fagus grandifolia (few)
Goodyera
Carex sp.
Amphicarpa (few)
Danthonia spic. ↓
Potentilla sp. ↓
Toxicodendron rad ↓

Rare plant species survey data form

Date: June 20, 2003 County, State: Scioto Co. Ohio

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: PL5 Plot size: 1/4 acre

Coordinates: N 38° 52.370 W 82° 56.374

Investigator(s): Rob Hook + Stuart Jennings

Survey Begin Time: 4:25 pm Survey End Time: 4:40

Slope position (U, M, L): Middle Slope angle (%): 13°

Slope aspect: N NE E SE S SW (W) NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1.5 in	Litter				
2 in	A	10YR 3-2			
3-6	B	2.5YR 5/3			

General Site Description/Notes:

Miscellaneous documentation point

PLOT ID 5

Canopy Species — Visual estimate of canopy closure (%): 70%

Acer rubrum 8", 10", 4"x3

Quercus rubra 12"

Quercus prinus 8", 12"

Subcanopy Species (woodies > 1 meter height and climbing vines) — Visual estimate of canopy closure (%): 15%

Smilax rotundifolia

Acer rubrum

Oxydendrum arboreum

Nyssa sylvatica

PLOT ID 5

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 25%

Vaccinium spp.
Sassafras alb.
Smilax glauca
Acer rubrum
Quercus prinus
Liriodendron tulip.
Lindera benzoin
Prenanthes alba
Polygonatum sp.
Panicum sphaerocarpon
Carex pensylvanica
Prunus serotina
Antennaria?
Carya cordiformis
Amelanchier
Hieracium venosum
Danthonia spicata
Rhododendron sp.
Epigaea repens

Rare plant species survey data form

Date: June 20, 2003 County, State: Scioto, Co Ohio

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: PL 6 Plot size: 1/4 acre

Coordinates: N 38° 52.537 W 82° 56.610

Investigator(s): Rob Hook & Stuart Jennings

Survey Begin Time: 5:15 pm Survey End Time: 5:35

Slope position (U, M, L): upper Slope angle (%): 22°

Slope aspect: (N) NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
2 in	Litter				Maple Leaves Dom.
0-4	A	10yr 4-3	-	-	Silty clay

General Site Description/Notes:

- Large open under story
- Miscellaneous documentation point.

PLOT ID _____

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 30% +

Parnax quinque – x1 – center of plot.
Acer saccharum
Acer rubrum
Sassafras albidum
Polystichum acrostichoides
Smilax rotund.
Panthenocissus quinque
Sanicula sp.
Quercus rubra
Carya sp.
Fraxinus sp.
Podophyllum peltatum
Thelypteris hexagonoptera
Polygonatum spp.
Smilacina racemosa
Rosa multiflora
Ulmus rubra

PLOT ID 6

Canopy Species — Visual estimate of canopy closure (%): 50%

Acer saccharum 10, 10, 8" dbh
Sassafras albidum 8, 8, 8, 10, 10
Acer rubrum 10, 10
Carya (pignut) 10"

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%): 5%

Acer rubrum

Rare plant species survey data form

Date: June 20, 2003 County, State: Scioto Co. Ohio

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: PL 7 Plot size: 1/4 acre

Coordinates:

Investigator(s): Rob Hook + Stuart Jennings

Survey Begin Time: 6:00 pm Survey End Time: 6:15

Slope position (U, M, L): upper Slope angle (%): 280

Slope aspect: N NE E SE (S) SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1 in	Litter				
0-6	A	10YR 3-4	—	—	silty clay

General Site Description/Notes:

- Logging slash on hill side
- Miscellaneous documentation point

PLOT ID 7

Canopy Species — Visual estimate of canopy closure (%): 70%

Quercus alba 12

Acer saccharum 4, 6

Quercus prinus 17 x 3,

Quercus rubra 18 x 2

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%): 10%

Acer rubrum

Smilax rotund.

Acer saccharum

PLOT ID _____ 6 — 615

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 20%

Poath. quinquefolia
Sassafras albidum
Smilax glauca
Ulmus rubra
Polystichum acrost.
Smilax bona nox
Sanicula sp.
Polygonatum biflorum
Trillium
Liriodendron
Poaceae sp.
Solidago caesia (?)
Coreopsis maculata

Rare plant species survey data form

Date: June 23, 2003 County, State: Scioto Co, Ohio

Project Title: PB

Target Species: Isotria Medeoloides

Plot ID: PL 8 Plot size: 1/4 acre

Coordinates: N 38° 51.804 W 82° 55.623

Investigator(s): Rob Hock + Stuart Gunnburg

Survey Begin Time: 10:15 AM Survey End Time: 10:40

Slope position (U, M, L): Middle Slope angle (~~%~~): 17°

Slope aspect: N NE E SE (S) SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1 in	Litter	—	—	—	wt. oak, poplar maple
0-2	A	10YR 3-3	—	—	silty clay w/Rocks
2-6	B	10YR 5-6	—	—	Sandy loam w/Rocks

General Site Description/Notes:

- open understory with good mix of old + young trees. Pine Blow down west of site

PLOT ID 8 10:15 – 10:40

Canopy Species — Visual estimate of canopy closure (%): 60%

Carya Sp.	12" x 2
Acer saccharum	6" x 2
Quercus alba	18" x 4

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%): 20%

- Acer rubrum
- Amelanchier arbor.
- Acer saccharum

PLOT ID 8

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 30%

Quercus alba
Prenanthes alba
Acer rubrum
Parthenocissus quinquefolia
Carya ovata
Vaccinium vacillans
Goodyera (fine)
Monotropa uniflora (x2)
Polygonatum
Acer saccharum
Smilax rotundifolia
Cornus florida
Amphicarpa bracteata
Fraxinus americana
Sassafras albidum
Smilacina racemosa
Vaccinium stamineum
Smilax glauca
Panicum sphaerocarpon
Cunilla origanoides
Solidago caesia (?)
Carya (mockernut?)
Podophyllum pelt.
Panicum boscii
Carpinus (?) seed.
Gillenia stipulata
Danthonia spicata
Hieracium venosum

Rare plant species survey data form

Date: June 23, 2003 County, State: Scioto Co, Ohio

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: PL 9 Plot size: 1/4 acre

Coordinates: N 38° 51. 815 W 82° 55. 741

Investigator(s): Rob Hook + Stuart Gemmingen

Survey Begin Time: 10:45 AM Survey End Time: 11:05

Slope position (U, M, L): middle Slope angle (%): 20°

Slope aspect: N NE (E) SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1 in	Litter	–	–	–	needles, oak, maple
0-2	A	10YR 3-3	–	–	silty clay
2-6	B	10YR 5-6	–	–	Sandy loam

General Site Description/Notes:

- Pine Blow down or ice damage site
- Oak/pine stand.
- Lady Slipper very prevalent - good population

PLOT ID 9

Canopy Species — Visual estimate of canopy closure (%): 40% (some blowdown)

Q. alba 30"

P. Strobus 8"

P. virginiana 10", 12", 10" downhill

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%): 50%

Nyssa sylvatica

Sassafras albidum

Oxydendrum arboreum

Fagus grandifolia

Pinus strobus

denser pine understory uphill

PLOT ID 9

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 60%

Fagus grandifolia

Sassafras

Vaccinium spp.

Quercus velutina (?) marilandica?

Quercus alba & Q rubra

Acer rubrum

Pinus strobus

Smilax rotund.

Oxydendrum arbor

Parthenocissus quinquefolia

Smilax glauca

Cypripedium

Nyssa sylv.

Quercus prinus (few)

Gitlenia stipulata

Hieracium (?)

Houstonia (very few)

Amelanchier

Rubus sp.

Rare plant species survey data form

Date: June 23, 2003 County, State: Scioto Co, Ohio

Project Title: PB

Target Species: Isotria Medeoloides

Plot ID: PL 10 Plot size: 1/4 acre

Coordinates: N 38°.51. 862 W 82°55. 910

Investigator(s): Rob Hook + Stuart Summers

Survey Begin Time: 11:25 AM Survey End Time: 11:45

Slope position (U, M, L): Lower Slope angle (%): 30°

Slope aspect: N NE E SE S SW (W) NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1-4 in	Litter				-variable depth-
0-4	A	2.5Y 4-3	—	—	Silty clay
4-8	B	2.5Y 5-3	7.5YR 4-6	S.P.R.	Silty clay

General Site Description/Notes:

- Steep valley - "typical"
- ephemeral Creek runs through valley
- Fern + moss adourn the slopes

PLOT ID 10

Canopy Species	Visual estimate of canopy closure (%): 70%
Quercus prinus	20"
Acer saccharum	6" several
Quercus alba	20", 14"
Fagus grandifolia	24"
Liriodendron	8"

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%): 40%

Acer saccharum
Liriodendron tulip.
Smilax rotundifolia

PLOT ID _____

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 50%

Polystichum acrostichoides
Dantonia spic.
Smilax rotundifolia
Eupatorium rugosum (?)
other grass (?)
Smilacina
Acer saccharum
Viola sp.
Fraxinus americana
Amphicarpa bracteata
Solidago caesia (?)
Toxicodendron rad.
whorled loosestrife
Carya sp.
Acer rubrum
Antennaria?
Vaccinium vacillans
Sassafras
Krigia biflora
Nyssa sylvatica
Panicum sp.
Uvularia perfoliata
Heuchera amer.
Aster cord/divar.

Rare plant species survey data form

Date: June 23, 2003 County, State: Scioto Co, Ohio

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: PL11 Plot size: 1/4 acre

Coordinates: N38°52.008 W82°56.244

Investigator(s): Rob Hook + Stuart Hammons

Survey Begin Time: 12:25 pm Survey End Time: 12:45

Slope position (U, M, L): middle Slope angle (%): 20°

Slope aspect: N NE E SE S (SW) W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
0-2	Litter	—	—	—	oak, maple
2-4	A	10YR3-2	—	—	silty clay
4-8	B	10YR 5-6	—	—	sandy loam

General Site Description/Notes:

- Tiered slope (multiple ledges)
- good Habitat For Snakes & other Reptiles
- Large Boulders in area.

PLOT ID 11

Canopy Species	Visual estimate of canopy closure (%): 60%	
Quercus prinus	18"	(several
Acer rubrum	10", 6"	Beeches
Quercus velutina	18", 24"	along slope)
Quercus alba	18"	
Carya sp.	4"	
Q. rubra	12"	

Subcanopy Species (woodies > 1 meter height and climbing vines)	Visual estimate of canopy closure (%): 30%
Acer rubrum	
Sassafras albidum	
Nyssa sylvatica	
Cornus florida x1	
Acer rubrum	
Amelanchier	
Acer saccharum	

PLOT ID 11

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 30%

Sassafras
Quercus prinus
Amphicarpa
Fagus grandifolia
Dioscorea
Monotropa uniflora
Oxydendrum
Nyssa
Panicum spp.
Acer rubrum
opposite-composite?
Amelanchier
Danthonia
Ipomoea sp.
Lindera (few)
Hieracium venosum?
Cunila origanoides
Vaccinium vacillans
~~Oxy~~ Toxicodendron radicans
Parthenocissus quinque.
Vitis sp.
Solidago caesia (?)
Gillenia stipulata
Pinus (virg?)
Desmodium sp

Rare plant species survey data form

Date: June 23, 2003 County, State: Scioto Co. Ohio

Project Title: PB

Target Species: Isotrema medeoloides

Plot ID: PL 12 Plot size: 1/4 acre

Coordinates: N 38° 52.062 W 82° 56.245

Investigator(s): Rob Hook & Stuart Gurney

Survey Begin Time: 1:05 pm Survey End Time: 1:25

Slope position (U, M, L): middle Slope angle (~~%~~): 17°

Slope aspect: N NE E SE S SW W (NW)

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1 in	Litter				
0 - 6	A	2.5y 4-3	–	–	Sandy Silty loam

General Site Description/Notes:

- gently tiered slope
- good population of New York Fern.

PLOT ID 12

Canopy Species — Visual estimate of canopy closure (%): 50-60%

Fagus grandifolia	20", 18"
Acer rubrum	18"
Nyssa sylvatica	6"
Acer saccharum	12
Quercus alba	24"

Subcanopy Species (woodies > 1 meter height and climbing vines) — Visual estimate of canopy closure (%): 20%

- Acer saccharum
- Lindera
- Oxydendrum
- Liriodendron tulip.

PLOT ID 12

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 30%

Thelypteris novabor. — nice patch in gap in center of plot

Eupatorium rugosum (?)

Dioscorea (searched beneath for SWP)

Arisaema

Viola sp.

Amelanchier

Oxydendrum

Quercus alba

Liriodendron tulip.

Fagus grand.

Carpinus/ostrya

Acer rubrum

Goodyera +1

Podophyllum

Lindera benz.

Polystichum acrostichoides

Smilacina

Aster cord/divar.

Rubus sp.

Collinsonia canadensis

Smilax rotund.

Carya sp.

Uvularia

Thelypt. hexagon.

Acer saccharum

Thalictrum

Carex sp.

Parthenocissus

Sanicula canad.

Nyssa

Trillium sp.

Prunus serotina

Sassafras

Hydrangea arborescens

Lonicera japonica

Quercus velutina (?) (few)

Panax quinque. (+1)

Galium sp.

Rare plant species survey data form

Date: June 23, 2003 County, State: Scioto Co, Ohio

Project Title: PB

Target Species: Isotrema Macleaiides

Plot ID: PL13 Plot size: 1/4 acre

Coordinates: N 38° 51. 543' W 82° 55. 374

Investigator(s): Rob Hock + Stuart Lemmon

Survey Begin Time: 3:45 pm Survey End Time: 4105

Slope position (U, M, L): Lower Slope angle (%): 23°

Slope aspect: (N) NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
2 in	Litter				
0-3	A	10YR 3-2	-	-	silty

General Site Description/Notes:

-Typical "Farm gully"

PLOT ID 13 Typical damp hollow

Canopy Species — Visual estimate of canopy closure (%): 60%

Acer saccharum 20", 10, 10

Quercus rubra 20"

Liriondendron 14"

Subcanopy Species (woodies > 1 meter height and climbing vines) — Visual estimate of canopy closure (%): 40%

Lindera benz.

Acer saccharum

PLOT ID 13

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 75%

Arisaema

Uvularia

Menispermum

Adiantum pedatum

Laportea

Polystichum acrost.

Asarum canadense

Trillium sp.

Sanicula

Parthenocissus quinquef.

Geranium maculatum

Osmunda cinnamomea

Acer saccharum

Thelypteris hexagonoptera

Actaea alba

Desmodium sp.

Smilax rotund.

Athyrium thelypteroides

Sanguinaria

Euonymus obovatus

Caulophyllis mac.

Prenanthes sp.

Disporum maculatum

Polemonium

Circaea

Viola sp.

Viburnum dentatum (few)

~~Erechtites~~

Podophyllum

Rare plant species survey data form

Date: June 23, 2003 County, State: Scioto Co. Ohio

Project Title: Portsmouth Bypass

Target Species: Isotria medeloides

Plot ID: PL 14 Plot size: 1/2 acre

Coordinates: N 38° 51.433 W 82° 55.293

Investigator(s): Rob Hook + Stuart Clemmens

Survey Begin Time: 4:25 pm Survey End Time: 5:15

Slope position (U, M, L): Lower Slope angle (%): 18°

Slope aspect: N NE E SE S SW (W) NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1-2 in	Litter	—	—	—	oak, maple, elm, Tulip
0-2	A	10YR 3-2	—	—	silty clay
2-6	B	10YR-5-6	—	—	silty clay

General Site Description/Notes:

- Fern (New York fern) Hugging Road side to South
- Large whorled Pogonia (?) in Large amounts
  - ↳ small individuals than what we have seen thus far

PLOT ID 14

Canopy Species — Visual estimate of canopy closure (%): 70%

Nyssa syl. 6"
Oxydendrum 6"
Liriodendron t. 4", 6", 10"
Acer saccharum 12", 8"

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%): 20%

Liriodendron tulip.
Nyssa sylv.
Smilax rotund.

PLOT ID 14

Ground Layer (non-woody plants and woodies < 1 meter height)
Visual estimate of total ground cover (%): 30-40%

Goodyera - several within plot.
Thelypt. noveboracensis
Smilax rotund.
Quercus rubra
Quercus prinus
Panicum spp.
Sassafras alb.
Acer rubrum
Lindera benz.
Lycopodium lucidulum
Carya sp.
Dioscorea quat.
Oxydendrum arbor.
Quercus alba
Toxicodendron radicans
Prenanthes sp.
Desmodium sp.
Nyssa sylv.
Rubus sp.
Smilacina racemosa
40' North of flag — Isotria verticillata x 9 (smaller but leaves not reflexed reddish stem)
Antennaria?
Hieracium venosum
Potentilla sp.
Vaccinium vacillans

20+ indiv. spreading irregularly north along contour ± 130' from flag

New York fern extends north of LWP area along trail beyond alignment limits searched for LWP/SWP - none.

under dense small tree canopy

Rare plant species survey data form

Date: June 24, 2003 County, State: Scioto Co, Ohio

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: PL 15 Plot size: ¼-½ acre

Coordinates: N 38° 45. 201 W 82° 52. 404

Investigator(s): Rob Hook & Stuart Cummings

Survey Begin Time: 8:40 A Survey End Time: 9:00 A

Slope position (U, M, L): Middle Slope angle (%): 30°

Slope aspect: N NE E SE S SW W (NW)

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
2 in	Litter	—	—	—	Good Hummus
0-2	A	10YR 3-2	—	—	Silty clay
2-6	B	2.5y 5-4	—	—	Silty clay

General Site Description/Notes:

- Very Steep slope !! Near Route 140
- Possible wind / ice damage
- Difficult to keep ones Balance on this slope

PLOT ID 15

Canopy Species — Visual estimate of canopy closure (%): 90%

Fagus grandefolia 30", 10", 10", 12", 12", 6", 6"

Quercus prinus 24"

Nyssa sylvatica 6" — ice/wind damaged area

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%): 20%

Acer saccharum

Viburnum acerifolium

Oxydendrum arboreum

Vitis sp.

Fagus grandifolia

PLOT ID 15

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 30% - 40%

Medeola virginiana - in plot - expanding (nice crop) East around/up slope to 100' from flag

Acer rubrum

Smilax rotundifolia

Epifagus virg.

Azalea sp.

Polystichum acrostichoides

Nyssa sylvatica

Fagus grand.

Prunus serotina

Polygonatum

Lonicera japonica (lowend - steep slope)

Cornus florida - small, scattered.

Fraxinus seedlings

Lindera (few)

Juncus sp.

Aesculus glabra

Amelanchier (few)

Quercus seedlings.

Arisaema

Panicum sp (upslope)

(M.V. Also located 2-300' south of plot)

Rare plant species survey data form

Date: June 29, 2003 County, State: Scioto Co. Ohio

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: PL16 Plot size: 1/4 acre

Coordinates: N38° 49.371 W82° 51.310

Investigator(s): Rob Hoot & Staff

Survey Begin Time: 5:00 Survey End Time: 5:20

Slope position (U, M, L): upper Slope angle (%): 17°

Slope aspect: N NE E SE (S) SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1 in	Litter	–	–	–	oak, elm, Beech, maple
0-3	A	10YR 3-2	–	–	silty clay
3-6	B	10YR 5-4	–	–	silty clay/stones

General Site Description/Notes:

- Active Logging in Area

PLOT ID 16

Canopy Species — Visual estimate of canopy closure (%): 60

Quercus prinus 18, 18, 10 — active logging around the area
Quercus alba 24
Quercus velutina 24
Acer saccharum 8, 12
Carya ovata

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%): 40

Smilax rotund.
Acer saccharum
Acer rubrum
Fagus grandifolia
Asimina triloba
Quercus prinus
Sassafras albidum

PLOT ID _____

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 30-50%

Smilax

Prunus serotina

Quercus spp.

Carya sp.

Rubus sp.

Panicum boscii

Parthenocissus quinquefolia

Vitis sp.

Fraxinus

Acer rubrum

Cornus florida

Sassafras

Desmodium sp.

Polystichum acrostichoides

Brachyletrum erectum

Podophyllum

Aesculus glabra

Vaccinium vacillans

Toxicodendron rad.

Smilax glauca

Nyssa sylvatica

Smilacina

Rare plant species survey data form

Date: 6/30/03 County, State: Scioto OH

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: 17 Plot size: 1/4 acre

Coordinates: N 38° 53.611' W 82° 57.301'

Investigator(s): Hook/Olson

Survey Begin Time: 11:20 Survey End Time: 12:00

Slope position (U, M, L): M Slope angle (~~%~~): 30°

Slope aspect: (N) NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1"	Litter				(oak leaves)
0-3		2.5Y 3/2			silt loam
3+		2.5Y 4/3			silt loam
stony below 6		"			

General Site Description/Notes:

oak tending to yellow poplar downslope.

Very steep sided "cove" at lower end of slope. w/ N.Y fern. (40% slope angle)

Mederla pop. just NW of plot downslope

Bottom of "cove" – below plot

(Athyrium thelypteroides) Understory

Silvery spleenwort. Acer saccharum

Caprifoliaceae

Cinnamonfern.

Carya sp.

Disporum

Arisaema

Trillium

Hydrangea arborescens

Polygonatum

Lindera

Circaea

Thalictrum

Osmorhiza

Uvularia

June 30, 2003

PLOT ID 17

Canopy Species — Visual estimate of canopy closure (%): 60

Liriodendron tulipifera	tulip poplar
Carya ovata	pignut hickory
Acer saccharum	sugar maple
Quercus rubra	n. red oak

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%): 50

Acer saccharum	sugar maple
Lindera benzoin	spice bush
Asimina triloba	paw paw

June 30, 2003

PLOT ID 17

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 35 %

Arisaema triphyllum jack-in-the pulpit
Galium circaezans bedstraw.
Disporum (maculatum?). ~~fea~~ fairy bells
Podophyllum peltatum mayapple.
Uvularia perfoliata bell flower
Toxicodendron radicans poison ivy
Polystichum achrostichoides Christmas ferm.
Collinsonia canadensis horse balm
Prenanthes alba. lions tooth
Actaea sp (pachypoda). Dolls eyes
Viburnum acerifolium maple-lvd viburnum.
Smilax rotundifolia round-lvd briar
Acer saccharum sugar maple.
Carex plantiginea (bluish film)
Iris cristata dwarf crested iris
Parthenocissus quinquefolia virginia creeper
Thelypteris hexagonoptera. beech fern.
Panicum (hairy nodes) ~~brosqa~~ boscii Bosc's panicum.
Geranium sp. (maculatum) wild geranium.
Carex sp. (thin "W" shaped blade.) ?
Medeola virginiana cucumber root.
~~Thalictrum~~ Anemonella sp. Rue
Menispermum canadense moonseed
Athyrium thelypteroides silvery spleenwort
Adiantum pedatum maidenhair fern.
Botrychium virginianum virginia grape fern
Dioscorea quaternata wild yam.

Rare plant species survey data form

Date: 6/30/03 PB County, State: Scioto OH

Project Title:

Target Species: Isotria medeoloides

Plot ID: 18 Plot size: 1/2 acre

Coordinates: N 38° 53.875' W 82° 57.822'

Investigator(s): Hawk/Olson

Survey Begin Time: 1:55 Survey End Time: 2:40

Slope position (U, M, L): M Slope angle (%): 10°-20°

Slope aspect: N NE E SE S (SW) W (NW)

Soil description to 12 inches: (See also opposing slope on block)

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
<1"	Litter				
0-3	A	10YR3/2			silt loam
3+					stony

General Site Description/Notes:

Selective cut ongoing - plot in undisturbed area, above steep sided valley.

LWP site NW of PL #8 marker ± 150' on SW slope across valley

LWP site - SW slope

GL
25%
TOTAL

Isotria verticillata
Medeola
Fagus
Oxydendrum
Sassafras
Acer rubrum
Amelanchier
Smilax rotund.
Vaccinium vac.
Iris
Hieracium
Krigia bifl.
Liriodendron

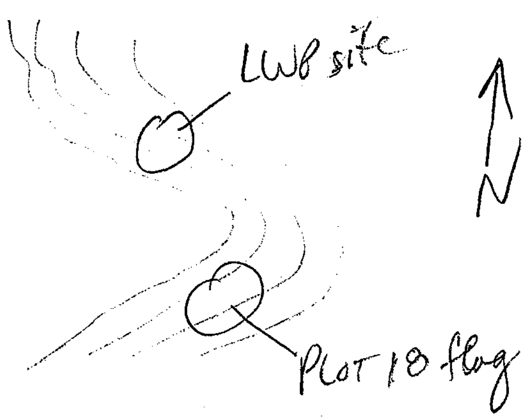
overstory - 75%
Q. prinus
Acer rubrum
Fagus grandifolia

Under 30%
Nyssa
Fagus
Sassafras

Litter 1" - compacted / stable

20° slope (SW)

Unmarked flag.



June 30, 2003

PLOT ID 18

Canopy Species — Visual estimate of canopy closure (%): 25

Liriodendron tulipifera — tulip poplar
Fagus grandifolia — beech
Oxydendron arboreum — sourwood
Acer saccharum — sugar maple
Nyssa sylvatica — Black gum

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%): 20

Acer saccharum — sugar maple
Nyssa sylvatica — black gum
Fagus grandifolia — beech
Asimina triloba — paw paw

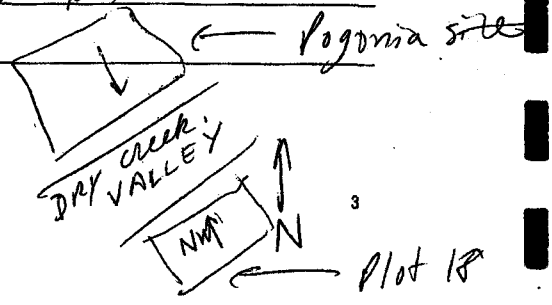
PLOT ID 18

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%):

Iris cristata	dwarf crested iris
Smilax	briar
Prenanthes alba.	lions tooth
Medeola virginiana.	cucumber root
Collinsonia	horse balm
Dioscorea	wild yam
Solidago caesia (flexicaulis?).	zig-zag goldenrod.
Carex cf. pennsylvanica	Pennsylvania sedge
Polystichum archrostscoides	Christmas fern.
Sanicula marilandica	snakeroot
Quercus rubra.	N. red oak.
Fagus grandifolia	beech.
Amphicarpa bracteata	hog peanut.
Botrichium virginiana.	grape fern.
Cimicifuga racemosa	bug bane
* ~~Isotria~~ verticillata	large-whorled Pogonia.
Sassafras albidum	wild sassafras
Carpinus (?)	
Viola (heart-shaped lv) sp.	violet sp.
Uvularia perfoliata.	bell flower.
Oxydendron arboreum	sourwood
Rosa multiflora	multiflora rose
Rubus (alleghenienses)	raspberry.
Thalictrum sp.	rue.
Carex plantiginea	sedge
Disporum maculatum	fairybells
Arisaema triphyllum	jack-in-the-pulpit

50 on slope opposite of plot. Plot faces NW. Pogonia slope faces South to SW



Rare plant species survey data form

Date: 6/30/03 County, State: Scioto OH

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: 19 Plot size: 1/4 acre

Coordinates: N 38° 53.922' W 82° 58.209

Investigator(s): Hook/olson

Survey Begin Time: 5:00 Survey End Time: 5:40

Slope position (U, M, L): M Slope angle (%): 20°

Slope aspect: N NE E SE S SW W (NW)

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1.5"	Litter				Compacted litter
0-1	A	2.5Y3/2			silt loam
1-6		2.5Y5/4			silt loam
6+	stony				

General Site Description/Notes:

Plot in undisturbed woods along new logging road. Bench slightly upslope/top part of plot.

June 30, 2003

PLOT ID 19

Canopy Species — Visual estimate of canopy closure (%): 50

Acer saccharum sugar maple
Oxydendrum arboreum sourwood
Black gum ⇄ Nyssa sylvatica
Liriodendron tulipifera tulip poplar

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%): 20–30

Carya ovata pignut hickory
Quercus rubra N. red oak
Quercus ~~Prunus~~ Chestnut oak
Fagus grandifolia Beech
Ostrya virginiana hop hornbeam

June 30, 2003

PLOT ID 19

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 40

Smilax rotundifolia	briar	
Uvularia perfoliata	bellflower	
Goodyera pubescens	rattlesnake plantain	(in bloom)
Medeola virginiana	cucumber root	(VI abundant!)
Thelypteris noveboracensis	New York fern	
Collinsonia canadensis	horse balm	
Disporum maculatum	fairy bells	
Rubus alleghenensis	raspberry	
Oxydendrum arboreum	sourwood	
~~Lindera benzoin~~	~~spicebush~~	
Galium circaezans	bedstraw	
Arisaema triphyllum	jack-in-the-pulpit	
Desmodium sp.	tick trefoil	
Sassafras albidum	sassafras	
Lysimachia quadrifolia	wild loosestrife	
Osmunda cinnamomea	cinnamon fern	
Botrychium virginiana	grape fern	
Carex pennsylvanica	Penn. sedge	
Rosa multiflora	multiflora rose	
Prenanthes alba	lion's tooth	
Parthenocissus quin.	Virg. creeper	
Toxicodendron radicans	poison ivy	
Podophyllum peltatum	May apple	
Hamamelis virginiana	witch hazel	

Silene Stellata

Rare plant species survey data form

Date: 6/30/03 County, State: Scioto, Ohio

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: 20 Plot size: 1/4 acre

Coordinates: N 38° 53.675' W82° 58.816'

Investigator(s): Hook/Olson

Survey Begin Time: 7:15 P Survey End Time: 7:35 P

Slope position (U, M, L): M Slope angle (%): 20°

Slope aspect: (N) NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
<1/4	Litter				not compacted
0-2	A	2.5Y3/2			silt loam
2-6	B	2.5Y5/4			silt loam
6+					stony

General Site Description/Notes:

Historically select cut - several decades ago - old stumps

PLOT ID 20

Canopy Species — Visual estimate of canopy closure (%): 75

Ace sacc — sug maple
Liriodendron tulipifera — tulip popla
Carya ~~sp~~ globra (5-leaflet) hickory (pignut)
Carya ~~sp~~ ovata — Shagbark hickory

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%): 30

Acer saccharum — sugar maple
Vitis riparia — grape

June 30, 2003

PLOT ID 20

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 25

Acer Saccharum — sugar maple.
Polystichum achrostichoides — Christmas fern
Uvularia perfoliata — Bell flower
Botrychium virginianum — Virginia grapefern.
~~Fern~~ Carex pennsylvanica — Penn sedge.
Galium circaezans — bedstraw
Parthenocissus quin — Virg. creeper.
Circaea lutetiana. — enchanters nightshade
Hydrangea arborescens — hydrangea.
Arisaema triphyllum — j-i-h-p.
Toxicodendron radicans — poison ivy.
Goodyera pubescens — rattlesnake plantain.
Panax quinquefolia — ginseng
Menispermum canadense — moonseed.
Panicum boscana. —
Smilacina racemosa.
Cydendrum arboreum — sourwood.
Carex (eburnea?) — sedge.
Geranium maculatum — geranium.
~~Rubus~~ Rubus allegheniensis. — raspberry.
Sassafras albidum — sassafras

Rare plant species survey data form

Date: July 1, 2003 County, State: Scioto OH

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: 21 Plot size:

Coordinates: N 38° 51.277' W82, 53.428'

Investigator(s): HOOK / OLSON

Survey Begin Time: 12:45 Survey End Time: 1105

Slope position (U, M, L): U-M Slope angle (%): 20°

Slope aspect: N NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
0-2	Litter				Compacted many fine roots
0-2	A	10YR3/2			Silt Loam
2+	B	2.5Y 5/4			silt loam

General Site Description/Notes:

NW 20'

7/1/03

PLOT ID 21

Canopy Species — Visual estimate of canopy closure (%): 50 %

Oxydendrum arboreum
Quercus prinus
Quercus alba
Acer saccharum
Fagus grandifolia
Nyssa sylvatica

Even aged structure - no signs of recent logging. general - 18-24" dbh

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%):

Fagus grandifolia
Acer saccharum
Cornus florida
Sassafras albidum
Castanea dentata x1
Ostrya virginiana

PLOT ID 21

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 25%

Isotria verticillata

Smilax rotundifolia

Sassafras albidum

Vaccinium vacillans

Quercus rubra

Medeola virginiana

Quercus prinus

Smilacina racemosa

Carex pensylvanica

Parthenocissus quinquefolia

Toxicodendron radicans (sparse)

Carya ovata (?)

± 200' downslope of flag slightly west - large patch of Medeola / Goodyera near large Carya's.

Rare plant species survey data form

Date: 7/1/03 County, State: Scioto, OH

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: 22 Plot size: 1/2 acre

Coordinates: N 38° 51.209' W 82° 52.940'

Investigator(s): HOOK/OLSON

Survey Begin Time: 3:45 Survey End Time: 4:20

Slope position (U, M, L): Upper-Middle Slope angle (%): 30°

Slope aspect: N NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1.5	Litter				somewhat compacted.
0-1		10YR 3/2			silt loam
1-4		2.5Y 5/4			silt loam
4+					stony

General Site Description/Notes:

Plot extends downslope ± 100' and west of flag medeola/Goodyera primary associate.

PLOT ID #22

Canopy Species — Visual estimate of canopy closure (%): 50 %

Acer saccharum

Quercus prinus

Carya glabra

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%): 35 %

Liriodendron tulipifera.

Ostrya virginiana

Oxydendrum arboreum

Cornus florida

PLOT ID 22

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%):

Smilacina racemosa

Medeola virginiana

Vaccinium vacillans

Dioscorea

Q. prinus

Amphicarpa bracteata,

Smilax rotundifolia.

Prunus serotina,

Nyssa sylvatica.

Goodyera pubescens (4 ind. about 100 ft downslope),

Parthenocissus quin.

Viburnum acerifolium.

Ostrya virginiana

Quercus rubra,

Azalea sp.

Desmodium sp.

Mitchella repens partridge berry. 3 individuals 30 feet NE of Plot flag.

→ extends NE along contour ± 200'

Rare plant species survey data form

Date: 7/2/03 County, State: Scioto OH

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: 23 Plot size: 1/4 acre

Coordinates: N 38° 50.911' W 82° 57.906'

Investigator(s): Hook / Olson

Survey Begin Time: 10:45A Survey End Time: 11:15 A

Slope position (U, M, L): Upper Slope angle (%): 25°

Slope aspect: N NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
2	Litter				± 1" loose litter ± 1" compact litter
0-6+		2.5Y4/4			silt loam

General Site Description/Notes:

Mature woodland - sample to document conditions although associate (Medeola, Goodyera) only scattered along hillside

July 2, 2003

PLOT ID #23

Canopy Species — Visual estimate of canopy closure (%): 70-75

Quercus rubra — N. red oak

Acer saccharum — Sugar maple

Nyssa sylvatica — Black gum – 1 was 21.3" DBH

~~Oxydendrum arboreum~~ ~~Sourwood~~

Carya glabra — pignut hickory

Carya ovata — Shagbark hickory

Liriodendron tulipifera — tulip poplar

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%): 10-15 %

Acer saccharum

Oxydendrum arboreum

PLOT ID # 23 — Maybe selectively logged ~ 50 yrs. ago old rotting stumps evident.

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): → 35–40 %

Smilacina racemosa.
Acer saccharum.
Amphicarpa bracteata.
Smilax rotundifolia.
dioscorea quaternata.
Vitis /ambrosia (?).
Carex pennsylvanica.
Parthenocissus quinquefolia.
Carex sp. ~~(wide - not plantijinea.)~~ laxiflora
Polystichum acrostichoides.
Viola sp.
Thalictrum sp.
~~Goodyera pubescens.~~
Quercus rubra.
Stellaria (?) sp. - no flowers
Galium circaezans.
Uvularia perfoliata.
Gillenia (now Porteranthus) stipulata.
Carex glabra.
Desmodium sp.
Euonymous atropurpureus.
Hedchera americana.
Prunus serotina.
Solidago caesia
Prenanthes alba
Sassafras albidum.
Cornus florida.
Medeola (scattered on hillside)

Rare plant species survey data form

Date: 7/2/03 County, State: Scioto OH

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: 24 Plot size: 1/4 acre

Coordinates: N 38° 46.556' W 82° 52.358'

Investigator(s): Hook/Olson

Survey Begin Time: 3:45 Survey End Time: 4:00

Slope position (U, M, L): M Slope angle (%): Valley 18% sides 45-50°

Slope aspect: N NE E SE S (SW) W NW

Valley

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
	Litter				

General Site Description/Notes:

Steep sided valley - "cove" All deciduous woods

Small intermittent/ephemeral stream

No associates found, Documentation point.

Ice damage/windthrown trees abundant both sides of valley

PLOT ID 24

Canopy Species — Visual estimate of canopy closure (%): 20%

Liquidambar styraciflua.
Fagus grandi
Tilia americana.
Quercus rubra
Quercus prinus

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%): 25-30%

Staphylea trifoliata
Acer saccharum.
Nyssa sylvatica
Fagus grand.
Tilia americana.

PLOT ID #24

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 35 %

Athyrium pycnocarpon

Polystichum acrostichoides

~~Coreopsis major~~

~~Draba sp. (?)~~

Impatiens capensis

Smilacina racemosa,

Quercus prinus

Aster ~~Solidago~~ cordifolius

Carex pennsylvanica,

Iris cristata,

~~Acer saccharum~~

Polygonum cuspidatum,

Nyssa sylvatica

Phytolacca americana

Plant survey data form

Date: 7-16-03 County, State: Scioto Co,

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: PL 25 Plot size:

Coordinates: N 38° 46.147 W 82°. 50. 281

Investigator(s): Hook / JENNINGS

Survey Begin Time: 12:00pm Survey End Time: 12:15

Slope position (U, M, L): middle Slope angle (%): 22°

Slope aspect: (N) NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
0-3	Litter	—	—	—	Oak + Beech
0-6in		10YR 3/2	—	—	

General Site Description/Notable Features:

- Historical Logging 10yrs +
- open understory
- some Dead Standing trees

PLOT ID PL25

Canopy Species — Visual estimate of canopy closure (%): 75%

Acer saccharum 8, 16, 6, 6

Quercus rubra 24

~~Fagus grandifolia~~

Quercus nigra 18"

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%): 30%

Fagus grandifolia

PLOT ID PL25

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 10 %

Smilax rotundifolia

Polystichum acrostichoides

Phytolacca americana

Oxalis

Parthenocissus

Liriodendron

Sassafras

Eupatorium sp (?)

Acer saccharum

Nyssa syl.

Smilax glauca

Polygonatum

Carya cordiformis

Stellaria (?)

Fagus grandifolia

Sambucus canadensis

Prenanthes alba

Quercus sp.

Desmodium nudiflorum - at toe of slope along Oasis - no other associates.

Rare plant species survey data form

Date: 7-16-03 County, State: Scioto Co.

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: PL26 Plot size:

Coordinates: N 38° 51.794 W 82° 53.260

Investigator(s): Hook/JENNINGS

Survey Begin Time: 5:55 pm Survey End Time: 6:10

Slope position (U, M, L): middle Slope angle (%): 20°

Slope aspect: N NE E SE S (SW) W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1-2	Litter	—	—	—	oak, maple
0-5	A	4-3 10YR	—	—	Clay loam

General Site Description/Notes:

- understory well established w/ Few Briers/vines/m. Ros
- some pines present
- easy to walk through
- canopy closed @ 60%
- thin Detritial Layer, but Held together well many Roots

PLOT ID PL26

Canopy Species	Visual estimate of canopy closure (%): 60%
Quercus prinus	12"
Acer saccharum	4"
Quercus velutina	24", 16"
Pinus	12"
Quercus rubra	24"
Carya	12"
Oxydendrum	10"
Quercus coccinea	24"

Subcanopy Species (woodies > 1 meter height and climbing vines)	Visual estimate of canopy closure (%): 30%
Acer rubrum	
Quercus marilandica	
~~Sassafras~~ albidum	
Smilax rotundifolia	(dense - upper portion of plot)
Acer saccharum	
Amelanchier	
Oxydendrum	
Cornus florida	

PLOT ID PL26

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 40%

Smilax rotundifolia — Sanguinaria

Sassafras

Quercus prinus

Quercus alba

Amelanchier

Acer rubrum

Smilax glauca

Podophyllum

Quercus rubra

Panicum sphaerocarpon

Krigia biflora

Parthenocissus

Carya

Carex pensylvanica

Gillenia

Polystichum

Vitis labrusca

Fagus grandifolia

Silphium trifoliatum

Vaccinium vacillans

Prunus serotina

Rubus sp.

Antennaria

Panicum latifolium (?)

Danthonia spicata

Cercis

Dr Harry

Lysimachia quadrifolia

Plant survey data form

Date: 7-16-03 County, State: Scioto Co.

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: PL27 Plot size:

Coordinates: N 38° 91.333 W 82° 53.631

Investigator(s): Hood/JENNINGS

Survey Begin Time: 6:35 pm Survey End Time: 6:52

Slope position (U, M, L): Middle Slope angle (%): 16°

Slope aspect: N NE E SE S SW W (NW)

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
1-2	Litter	—	—	—	Pine, maple, oak
0-5	A	4-3 10yr	—	—	clay loam

General Site Description/Notable Features:

- open understory (Redmaple)
- Petrital layer similar to PL25
- Ice storm damage; Hard to get to area
- Isolated population of Medeola.

PLOT ID PL27

Canopy Species — Visual estimate of canopy closure (%): 50%

Pinus 14" x 3
Oxydendrum 6" x 5
Quercus velutina (?) 3 x 18"
Acer Saccharum
Quercus coccinea 24, 24

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%): 50%

Acer rubrum
Sassafras
Smilax rotund.
Fagus grandifolia
Ilex multiflora

PLOT ID PL27

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 25%

Sassafras — center & east

Medeola — center of plot — 50-60% west & north

Acer rubrum

Vaccinium stamineum

Polystichum

Parthenocissus quinquefol.

Carya sp.

Smilax glauca

Oxydendrum

Acer saccharum

Liriodendron

Nyssa

Podophyllum

Vaccinium vacillans

Smilax rotundifolia

Quercus alba

Potentilla

Rhododendron nudi: ?

Rubus sp.

Panicum Sphaerocarp

Toxicodendron radicans

Betula lenta (?)

Lonicera japonica

Scutellaria

Rosa multiflora

Lysimachia quadrifolia

Plant survey data form

Date: 7-16-03 County, State: Scioto Co.

Project Title: PB

Target Species: Isotria medeoloides

Plot ID: PL28 Plot size: 1/4 acre

Coordinates: N 38° 53.169 W 82° 59.361

Investigator(s): Hood/Jennings

Survey Begin Time: 7:30 pm Survey End Time: 7:55 pm

Slope position (U, M, L): Middle Slope angle (%): 18°

Slope aspect: N NE E SE (S) SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
7 lin	Litter	~	~	~	oak, hickory, maple
0-3	A	3-3 10YR	~	~	clay loam
3-5	B	5-6 10YR	~	~	silty

General Site Description/Notable Features:

- Mature Woods
- Very open understory; easily walkable
- Detrital layer extremely thin
- No associates.

PLOT ID PC28

Canopy Species — Visual estimate of canopy closure (%): 75%

Carya (shag & pig)
Acer saccharum — 12" – 24" — strong dominant throughout slope.
Quercus alba (upslope)
Quercus rubra (upslope)

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%): 10-15%

Cupressus
Acer saccharum
Fagus grand.
Betula lenta?
Carya
Lindera

PLOT ID PL 28

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 40% - 50%

Gillenia
Carex pens.
Rubus spp.
Acer sacch.
Panthens.
Carya
Sassafras
Polystichum
Ulmus
Solidago
Lonicera japonica
Lysimachia quadrifolia
Viola sp.
Sambucus
Rosa multi.
Eupatorium sp.
Sassafras
Quercus alba
Prunus
Smilax
Acer saccharum.
Panicum sp.
Carex platyphylla
Amelanchier
Asimina
Amphicarpa
Silene stellata

Rare plant species survey data form

Date: 7/1/03 County, State: Scioto OH

Project Title: PB

Target Species: Spiraea virginiana

Plot ID: VS1 Plot size: 400' ± along stream

Coordinates: N 38° 51.208' W 82° 52.934'

Investigator(s): Hook / Olson

Survey Begin Time: 3:05 Survey End Time: 3:35

Slope position (U, M, L): Slope angle (%):

Slope aspect: N NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
	Litter				

General Site Description/Notes:

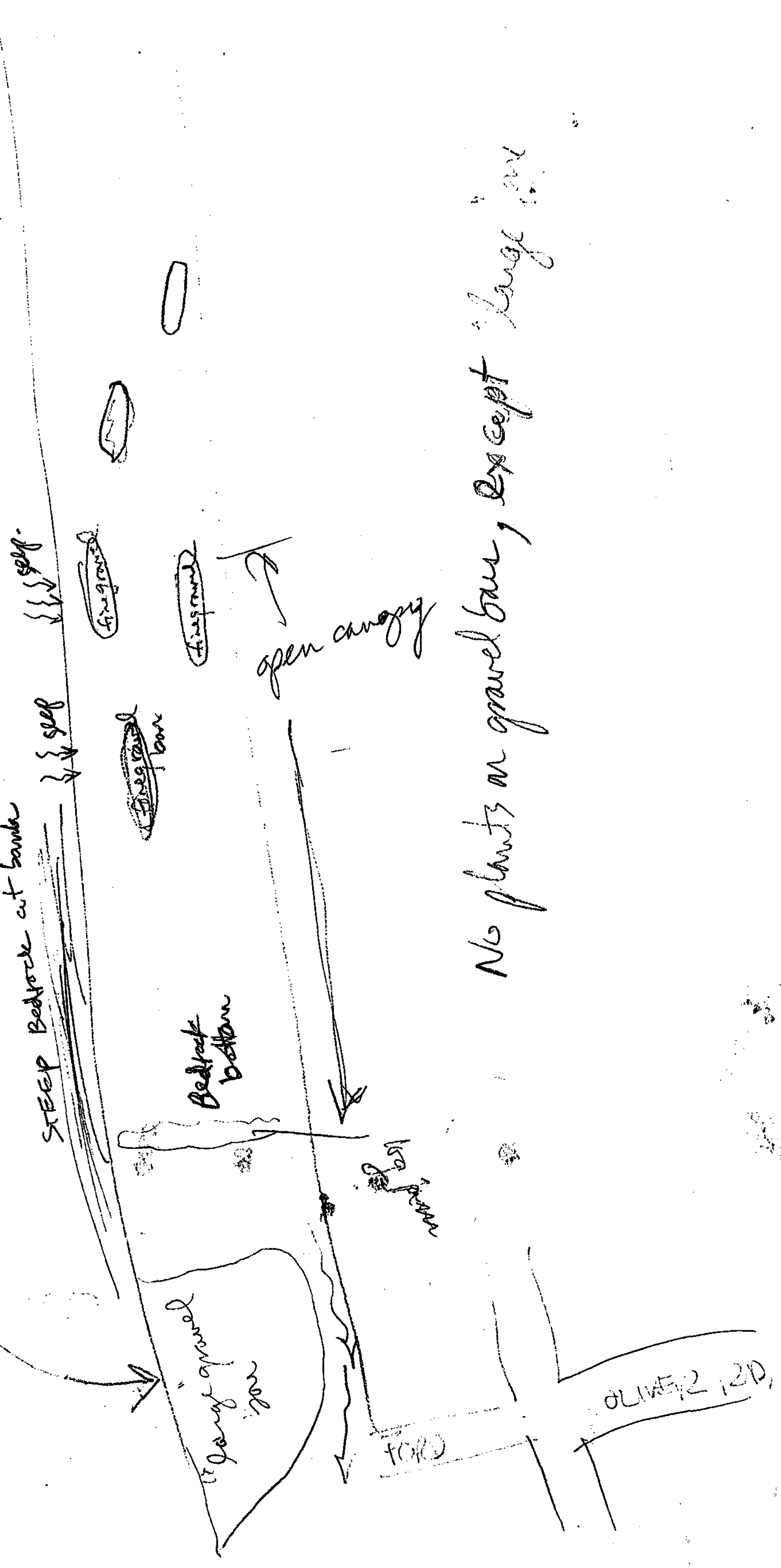
Site @ abandoned crossing along Long Run.
Cut Bedrock (R) bank. Open canopy, dense succ. growth
(L) Bank.

Gravel bars - slightly raised above water level -
no vegetation.

Several seeps along (R) bank

large gravel bar plants

Rumex crispus
Brassicaceae
Stellaria pubera
Boehmeria
Glechoma
Polygonum cuspidatum
Erigeron
Circaea lut.
Queen Anne's lace
Polygonum
English Plantain
Fraxinus spp.
[illegible] sp.
Bidens sp.
Birch seedling?
Impatiens
Hypericum



PLOT ID VS #1

Plants along bank

Canopy Species

Visual estimate of canopy closure (%):

Q prinus

Betula lenta

Platanus occidentalis.

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%):

Amelanchier arborea.

Oxydendrum

Hydrangea arborescens

Viburnum dentata

Prunus serotina.

Robinia pseudoacacia

PLOT ID VS# 1

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%):

Polygonum cuspidatum

~~Ratibida laciniata~~. Rudbeckia laciniata

Pilea pumila

Rosa multiflora

Amelanchier arborea.

~~Ø~~ Ranunculaceae sp.

Rosa multiflora.

Urtica dioica.

Iris cristata.

Bidens sp.

Glechoma hederacea.

Lycopus sp.

Onoclea sensibilis

Thelypteris noveboracensis

Viburnum acerifolium.

Solidago cordifolia (?)

Polystichum acrostichoides.

Rare plant species survey data form

Date: 7/2/03 County, State: Scioto OH

Project Title: PB

Target Species: Spiraea virginiana

Plot ID: VS-2 - Little Scioto River Plot size: 400± along stream

Coordinates: N 38° 51.208' W 82° 52.934'

Investigator(s): HOOK/OLSON

Survey Begin Time: 4:20 Survey End Time: 4:40

Slope position (U, M, L): Slope angle (%):

Slope aspect: N NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
	Litter				

General Site Description/Notes:

River banks - silty - high flood 18-20' above current stage

Unstable sand bars in stream, no vegetation.

Somewhat open canopy - overhanging sycamores especially north bank

PLOT ID VS #2

Canopy Species — Visual estimate of canopy closure (%): 30-40

Plat. occ
Ulm ame
Acer saccharinum
Acer negundo

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%): 10 %

Toxicodendron rad.

PLOT ID VS #2

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): <5% for steep Banks

70 [illegible]% for terr

Leersia virginica,

Onoclea sensibilis

Polygonum sp.

Campsis radicans,

Carex sp.

Severe water level fluctuations (Δ ~25 feet).
Silt substrate rapidly eroding – unstable!
Bad habitat for SV.

Rare plant species survey data form

Date: 7/1/02 County, State: Scioto, OH

Project Title: PB

Target Species: Spiraea Virginiana

Plot ID: VS3 - Shell Creek Plot size: 400' ± along stream

Coordinates: N38° 45.892' W82° 50.343'

Investigator(s): Hook/Olson

Survey Begin Time: 5:10 Survey End Time: 6:00

Slope position (U, M, L): _____ Slope angle (%): _____

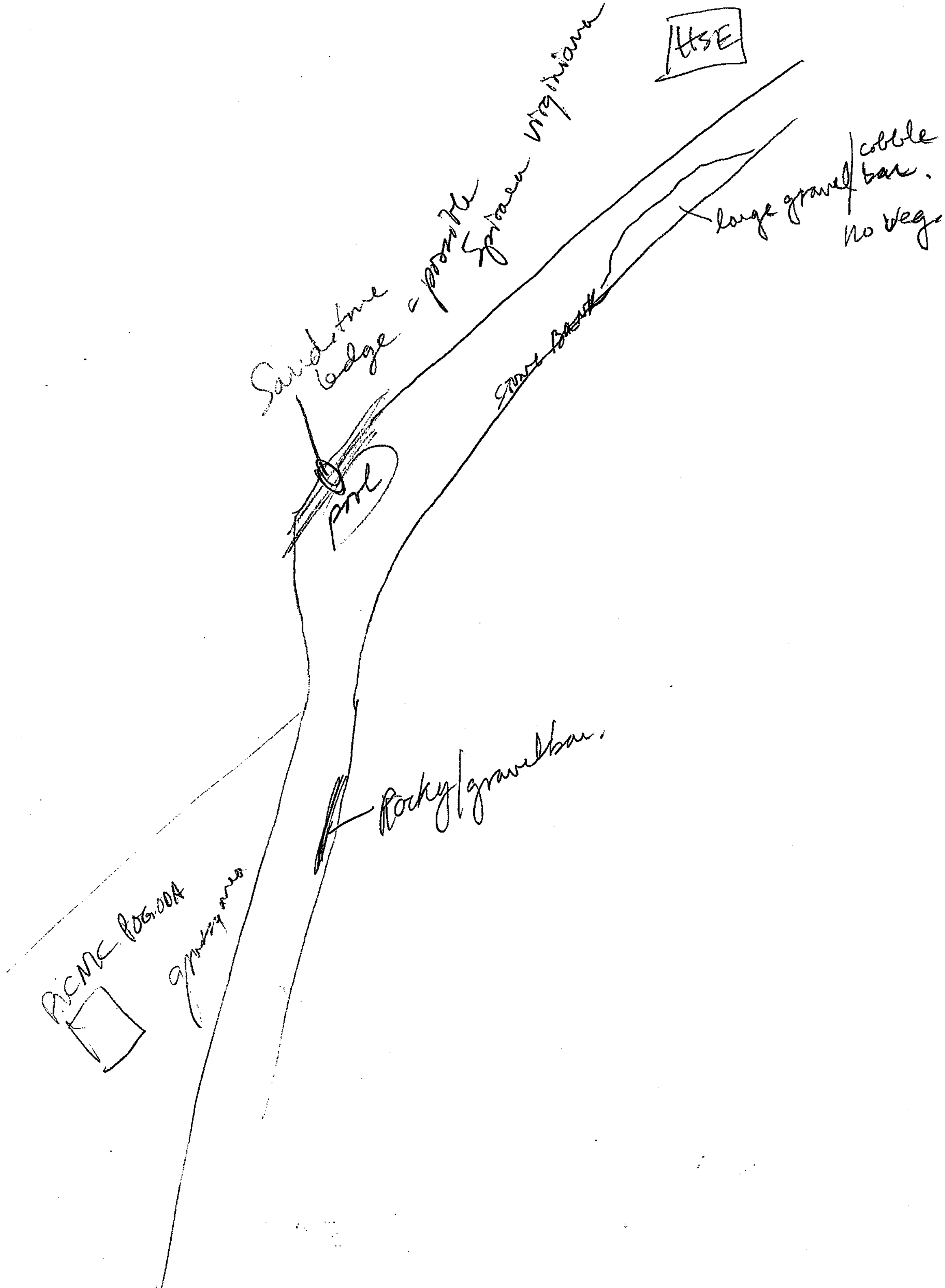
Slope aspect: N NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
	Litter				

General Site Description/Notes:

Bedrock bottom stream with sandstone ledge on (L) bank, gravel/cobble bars, Appears to be a possible SV habitat.


HSE
Sandstone ledge c possible Spiraea virginiana
pool
large gravel/cobble bar. no veg.
Rocky/gravel bar.

PLOT ID VS #3

Canopy Species — Visual estimate of canopy closure (%):

Acer saccharinum,
Acer negundo

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%):

Aesculus glabra
Rhus glabra,
Vitis riparia,

PLOT ID VS #3

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%):

Rubus occidentalis

Polygonum cuspidatum,

Glechoma hederacea,

By picnic shelter on south bank Hemerocallis – day lily

Tensia virginica,

Onoclea sensibilis

Sassafras albidum,

Sandstone ledge ← LOOK

- Solidago caesia?

Hydrangea arborescens

Toxicodendron radicans

Lonicera japonica

Sassafras

Acer rubrum

Impatiens capensis

Polystichum acrostichoides

Rosa multiflora

~~Tia~~ Parthenocissus quinquefolia

Eupatorium purpureum

Vitis riparia

Ipomoea sp

Lysimachia nummularia

Rubus occidentalis

Rare plant species survey data form

Date: 7/2/03 County, State: Scioto OH

Project Title: PB

Target Species: Spiraea virginiana

Plot ID: VS4-LSR Plot size: 400± along river

Coordinates: N 38° 45.892' W 82° 50.343'

Investigator(s): Hook/Olson

Survey Begin Time: 6:25 Survey End Time: 6:45

Slope position (U, M, L): _____ Slope angle (%): _____

Slope aspect: N NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
	Litter				

General Site Description/Notes:

Little Scioto River. no gravel bars or stone banks
All silt banks / high flood plain.
Stream several feet deep - no bars / shallows / riffles.
North bank - number of fallen trees

PLOT ID VS#4

Canopy Species

Visual estimate of canopy closure (%): South Bank 85%
North Bank 25-30%

Acer negundo.
Acer saccharinum
Aesculus glabra.
Platanus occidentalis
Quercus rubra.

Subcanopy Species (woodies > 1 meter height and climbing vines)

Visual estimate of canopy closure (%): 30%

Aesculus glabra.
acer negundo.
Staphylea trifolia.

PLOT ID VS #4

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 95%

Glechoma hed.
Viola sp.
Aesculus glabra.
Ambrosia trifida.
Cryptotaenia canadensis.
Elymus canadensis
Euonymous alata
Caprifolium sp.
Parthenocissus quin.
Staphylea trifolia.
Toxicodendron virginica
Ratibida lacinlata.
Euonymous (running), obovatus

no gravel,
no rocks,

Rare plant species survey data form

Date: 7/16/03 County, State: Scioto OH

Project Title: PB

Target Species: Spiraea virginiana

Plot ID: VS-5 Plot size: 400± length

Coordinates: N 38° 45.710 W 82° 50.566

Investigator(s): Hook / JENNINGS

Survey Begin Time: 9:45 Survey End Time: 10:35

Slope position (U, M, L): Slope angle (%):

Slope aspect: N NE E SE S SW W NW

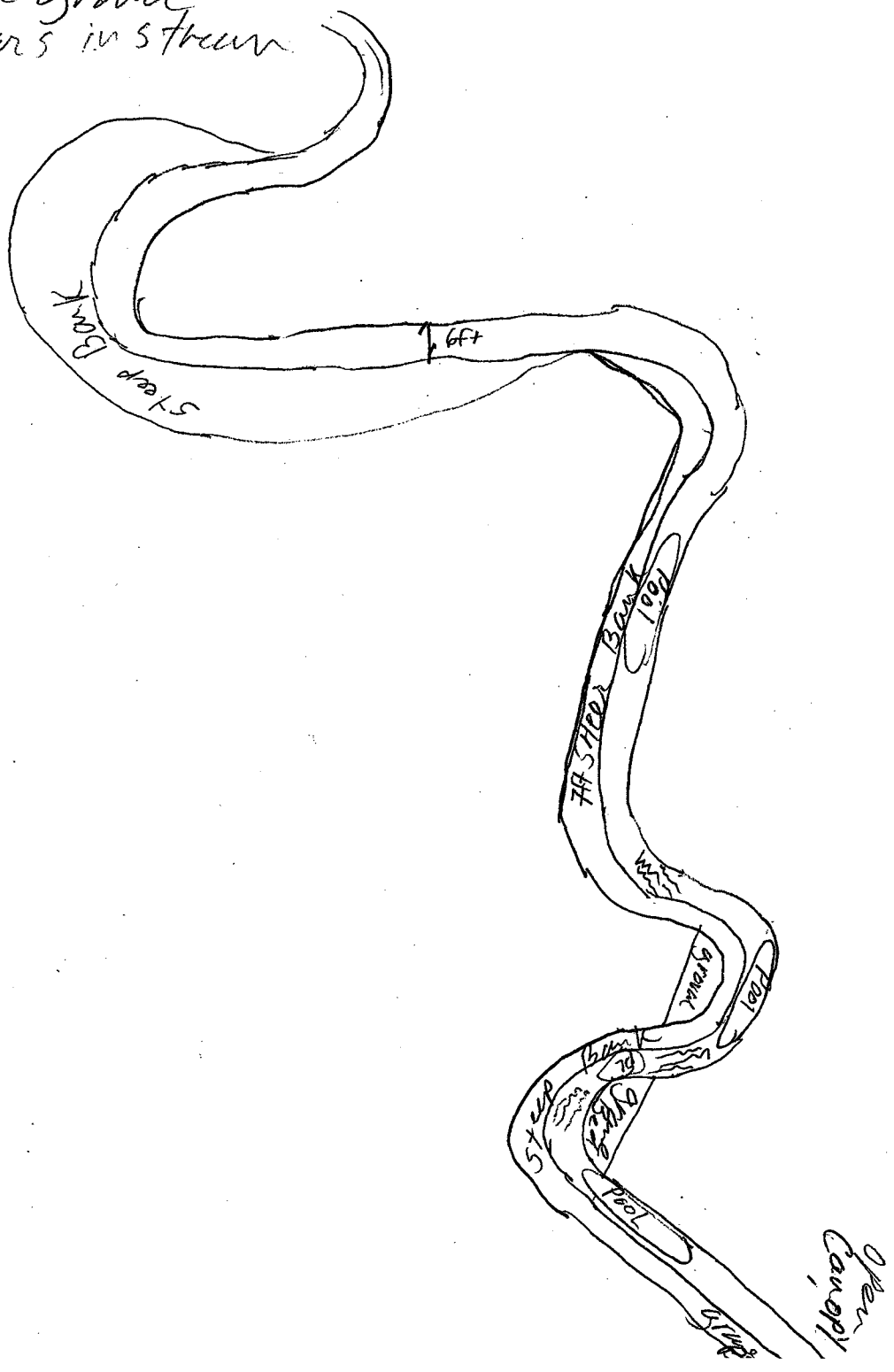
Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
	Litter				

General Site Description/Notes:

#4 of picture

- Dense ground cover
- cobble ground Bed
- mud Banks
- Lots of over Hanging Veg.
- Some gravel
- Bars in stream



PLOT ID VS5

Canopy Species — Visual estimate of canopy closure (%): 50%

Acer negundo
Platanus occidentalis
Liriodendron

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%): 75%

Acer negundo
Rosa multiflora
Betula nigra
Rhus glabra
Cornus florida
Vitis riparia
Carpinus carol.
Ulmus rubra

PLOT ID VS5

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 80-85%

Elymus — Glechoma hederacea

Aster novae-angliae or prenanthoides — Commelina sp.

Parthenocissus quing. — Passiflora lutea

Verbesina alternifolia

Lindera benzoin

Carex sp.

Fragaria Virginiana

Viola sp.

Polystichum acrostichoides

Panicum latifolium

Lysimachia nummularia

Impatiens sp.

Pilea pumila

Berberis thunbergii

Lonicera japonica

Amphicarpa bracteata

Polygonum sp.

Geum (white avens) — Sessile fruit 3 leaflets

Thelypteris hexagonoptera

Panicum sphaerocarpon (?)

Polygonum virginianum

Rubus allegh.

Lycopus sp.

Prunus serotina

Leersia Virginica

Pentromium pedoides - sandbar

Boehmeria cylindrica - sandbar

Polygonum - sandbar

Rare plant species survey data form

Date: 7-16-03 County, State: Scioto Co.

Project Title: PB

Target Species: Spiraea virginiana

Plot ID: VS6 Plot size: 250' ± along stream

Coordinates: N 38° 45.489 W 82° 57.261

Investigator(s): Hook / JENNINGS

Survey Begin Time: 11:25 Survey End Time: 4:40

Slope position (U, M, L): _____ Slope angle (%): _____

Slope aspect: N NE E SE S SW W NW

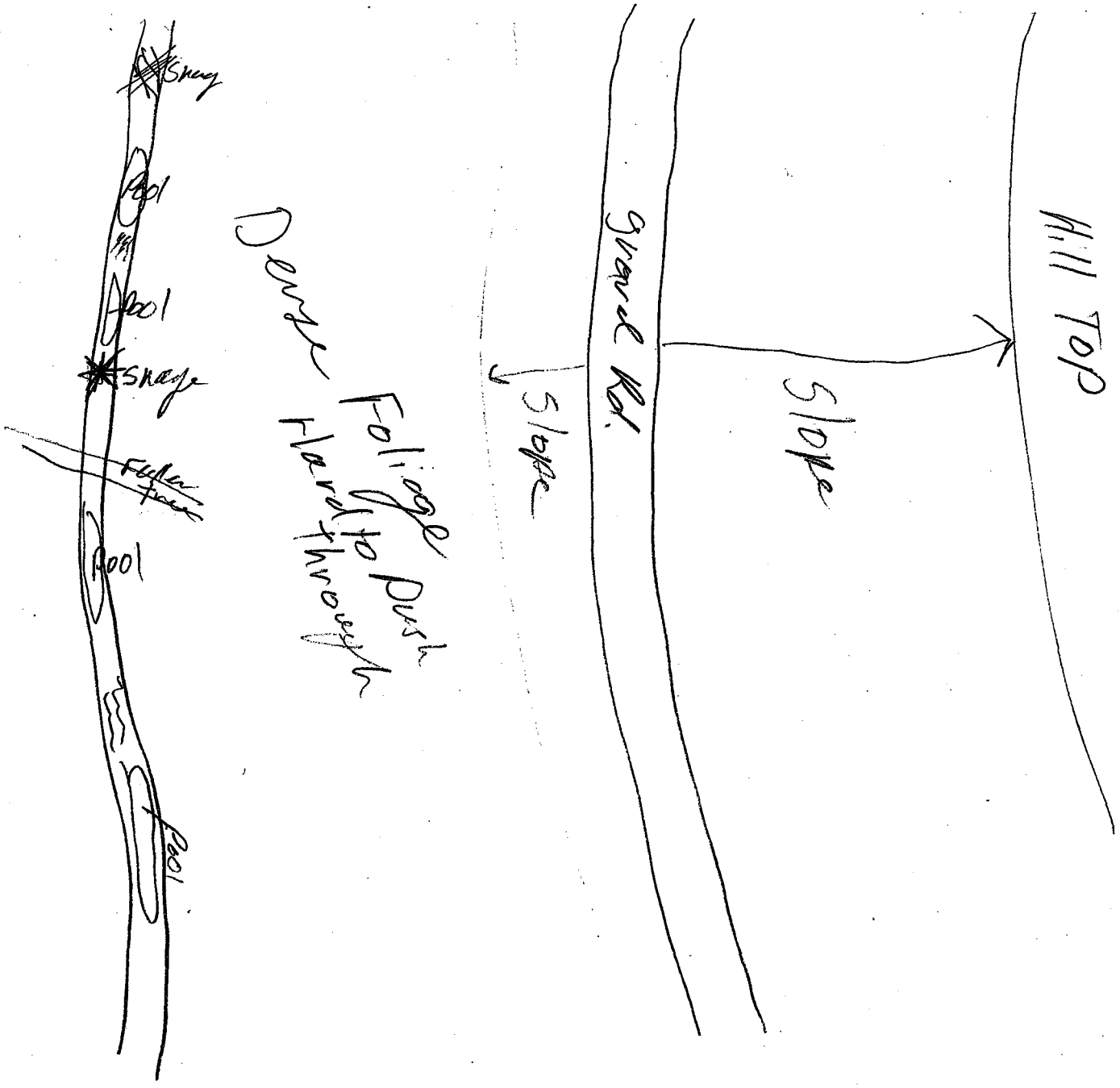
Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
	Litter				

General Site Description/Notes:

Spictures

- some fish in stream
- Silt/detritus Bed with some gravel at riffles
- extremely vegitated Banks
- woody snags in stream



PLOT ID VS6

Canopy Species — Visual estimate of canopy closure (%): 10%

Platanus occidentalis
Juglans nigra
Ailanthus altissima
Salix nigra

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%): 70%

Ulmus rubra
Rubus spp.
Lindera
Acer rubrum
Acer negundo
Rosa multiflora

PLOT ID VS6

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 90%

Panicum latifolium (Mud banks)
Glechoma hederacea
Vitis riparia
Ipomoea pandurata
Rosa multiflora
Verbesina alternifolia
Poaceae spp.
Leersia virginica
Impatiens
Rhus copallina (staghorn)
Elymus can.
Pilea pumila
Oxalis
Sambucus canadensis
Polygonum spp.
Lysim. nummularia

Rare plant species survey data form

Date: 7-16-03 County, State: Scioto Co.

Project Title: PB

Target Species: Spiraea virginiana

Plot ID: VS 7 Plot size: 800' ± along stream

Coordinates: N 38° 47.237 W 82° 50.543

Investigator(s): Hook/ JENNINGS

Survey Begin Time: 1:40 pm Survey End Time: 2:40

Slope position (U, M, L): Slope angle (%):

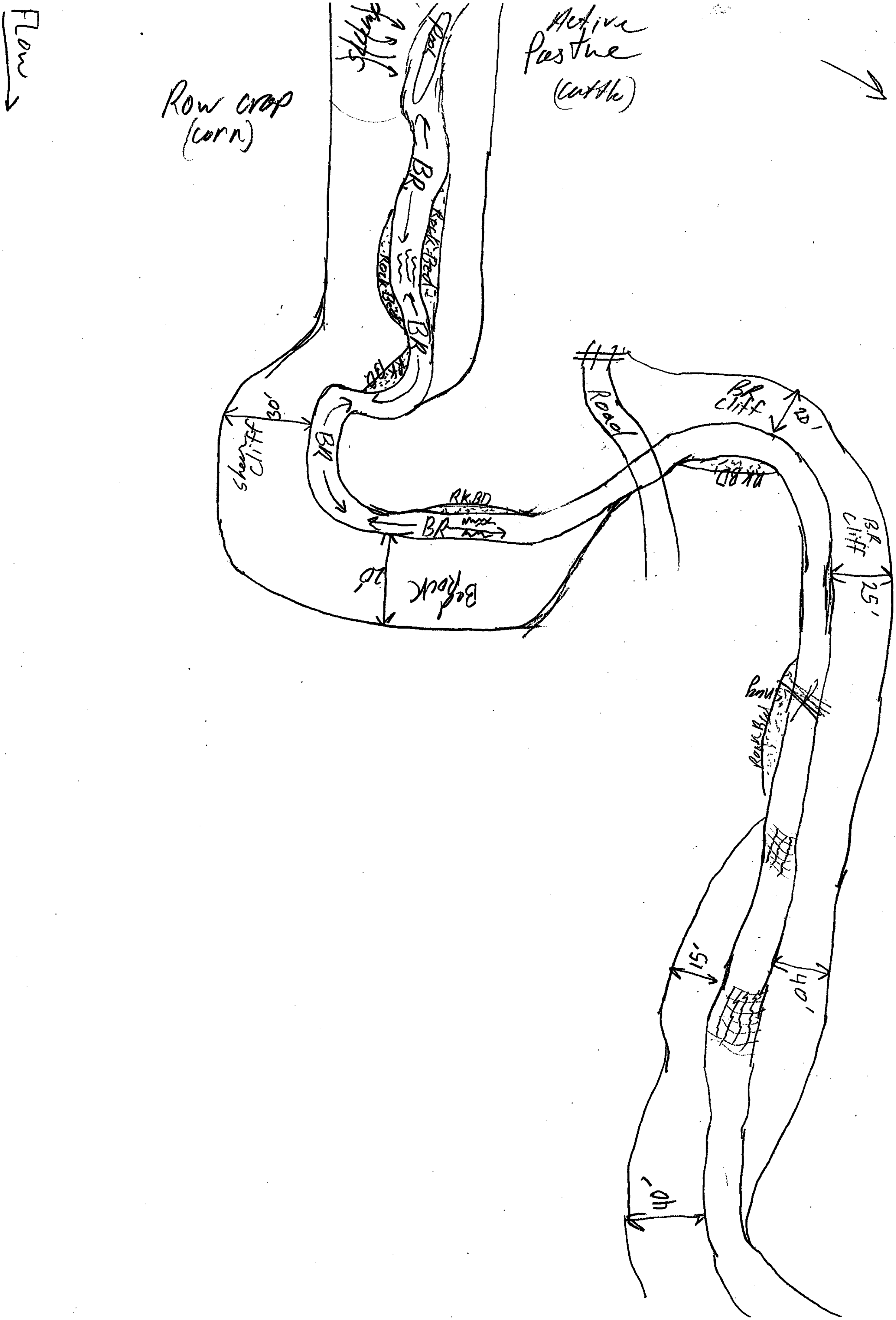
Slope aspect: N NE E SE S SW W NW

Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
	Litter				

General Site Description/Notes:

- Mature woods on either Bank w/ Farm pasture & Row crops Further out.
- BedRock/cobble Bed


Flow
Row crop (corn)
Active Pasture (cattle)
BR
Rock Bed
RKBD
sheer cliff
30'
20'
Bedrock
Road
BR Cliff
20'
25'
15'
40'
40'

PLOT ID VS7

Canopy Species — Visual estimate of canopy closure (%): 75% (some open canopy gaps)

Platanus occidentalis
Acer saccharum
Ulmus rubra
Acer saccharinum

Subcanopy Species (woodies > 1 meter height and climbing vines) — Visual estimate of canopy closure (%): 50-60%

Acer saccharum
Prunus serotina
Carpinus
Asimina triloba
Cornus amomum
Fraxinus penn.
Fagus.
Euonymus atropurpr.
Amelanchier

PLOT ID VS7

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 90%+

Impatiens capensis — generally along bank where not steep bedrock
Panicum latifolium
Hemerocallis fulva
Aster novae-angliae
Toxicodendron radicans
Lysimachia nummularia
Leersia virginica
Elymus canadensis
Polygonum sp.
Pilea pumila
Glyceria striata
- wild sweet william
- ditch stonecrop

Polygonum virginianum ↓ At steep bedrock bank — 50% total cover →
Cinna (?)
Aster sp.
Heuchera
Toxicodendron radicans
Carpinus
Aster novae angliae
Carex grayillima
Carex lupulina
- Spotted joe pye
Boehmeria
Glyceria
Panicum latifolium
Hydrangea arbor

Rare plant species survey data form

Date: 7-16-03 County, State: Scioto Co.

Project Title: PB

Target Species: Spiraea virginiana

Plot ID: VS 8 (Dan White Hollow) Plot size: 1000' ± along stream.

Coordinates: N 38° 48.983 W 82° 51.560

Investigator(s): Hook/Jennings

Survey Begin Time: 4:25 Survey End Time: 5:00

Slope position (U, M, L): _____ Slope angle (%): _____

Slope aspect: N NE E SE S SW W NW

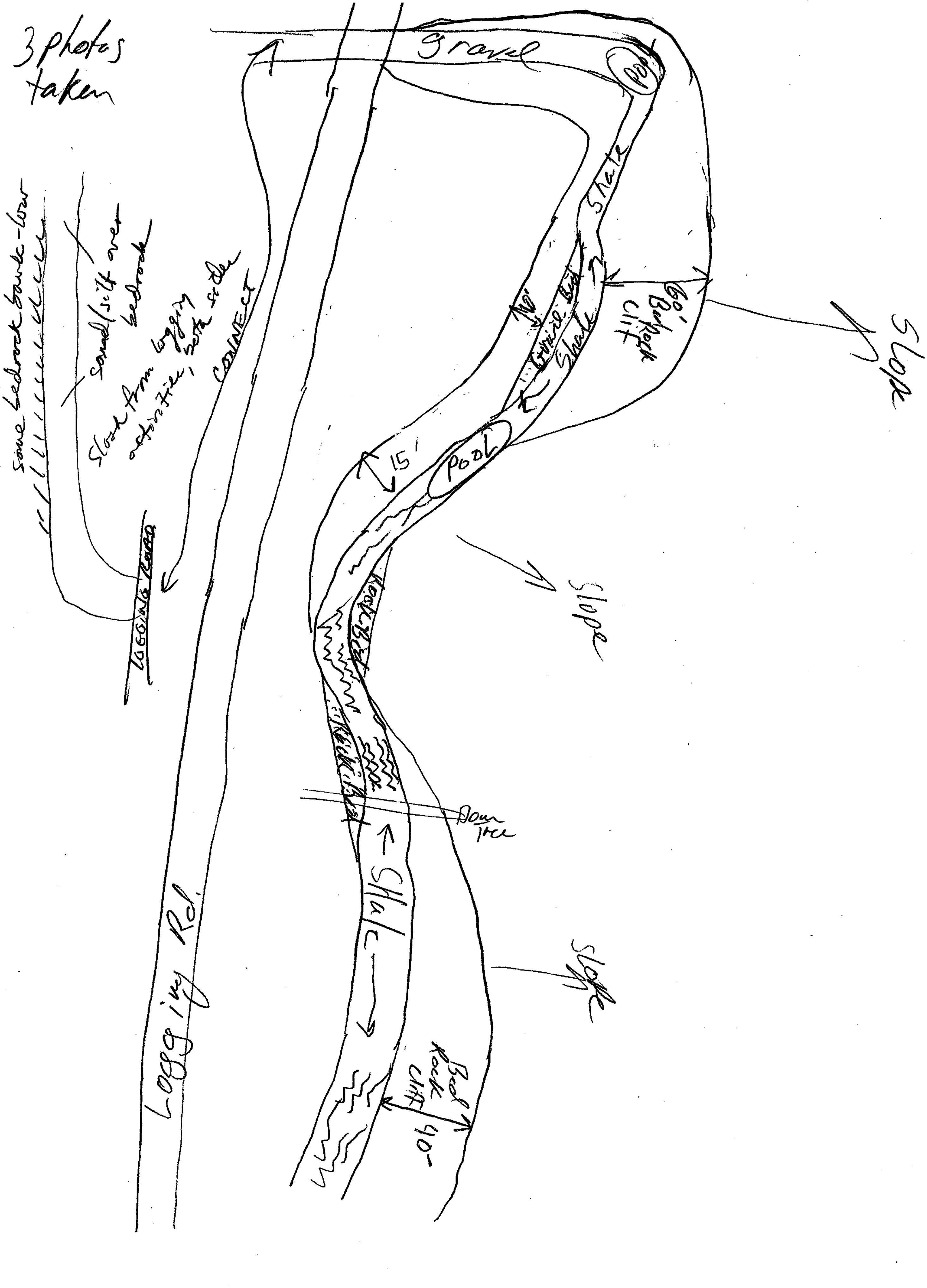
Soil description to 12 inches:

Depth (inches)	Layer	Matrix color	Mottle color	Mottle abundance	Texture/Notes
	Litter				

General Site Description/Notes:

Rock/cobble/gravel Bed with Shale Runs
- many Riffles
Cobble/Gravel Bars
- Bed Rock Bank (North Facing) at various Heights up to about 60'
- East of Road crossing is more Bed Rock Bank

3 photos taken



PLOT ID VS8 Dan White Hollow

Canopy Species — Visual estimate of canopy closure (%): 50 %

Acer saccharum
Tilia
Liriodendron
Quercus rubra

Subcanopy Species (woodies > 1 meter height and climbing vines)
Visual estimate of canopy closure (%): 75% with gaps

Hamamelis
Fraxinus
Cercis canadensis
Ulmus americana
Carpinus
Amelanchier

PLOT ID 1/58

Ground Layer (non-woody plants and woodies < 1 meter height)

Visual estimate of total ground cover (%): 50 - 90% (except on steeper banks) trace

Laportea ↓ Steep ~~rock~~ bank

Impatiens pallida

Polystichum

Aster sp. (SV7)

Hydrangea

Thelypteris noveboracensis

Aralia nudi.

Thalictrum

Rubus spp. ↓

Pilea pumila

— Silvery spleenwort

Adiantum pedatum — Tussilago(?) - large leaf

Lindera benzoin — Circaea lut.

Panicum latifolium — Menispermum

— White avens — Bidens

Aster sp. — Gillenia

~~Elm~~ — Iris cristata

Cryptotaenia — Sambucus

Ratibida

Aesculus

Amphicarpa

Asarum canadense

Sanguinaria

Viola

Podophyllum

Cimicifuga

— Spotted Joe Pye weed

Impatiens capensis

ADDITIONAL PLANT SPECIES OBSERVED DURING THE RARE PLANT SURVEY
Portsmouth Bypass Project
June 2003-July 2003

Scientific Name	Common Name	Mature Woodland	Successional Woodland	Scrub-Shrub	Floodplain Forest	Pasture/ Old Field	Wetland
Amelanchier arborea	Serviceberry	X					
Antennaria plantaginifolia	Pussytoes	X	X				
Aralia nudicaulis	Sarsaparilla		X				
Aster divaricata	Aster	X	X				
Athyrium pycnocarpon	Narrow-leaved glade fern		X				
Botrychium virginianum	Grape fern	X	X				
Brachyelytrum erectum	Bearded shorhusk		X				
Bromus purgans	Woodland brome		X				
Campanula americana	Tall bellflower		X				
Carex digitalis	Slender woodland sedge	X					
Carex gracillima	Graceful sedge						X
Carex hirsutella	Fuzzy wuzzy sedge	X					
Carex laxiflora	Broad loose-flower sedge	X					
Carex platyphylla	Broadleaf sedge	X					
Celastrus orbiculatus	Oriental bittersweet			X			
Chimaphila maculata	Spotted wintergreen		X				
Commelina communis	Day flower					X	
Conopholis americana	Squawroot	X					
Cunila origanoides	Dittany	X	X				

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Cystopteris fragilis	Fragile fern		X				
Desmodium nudiflorum	Tick trefoil	X	X				
Diarrhena americana	American beakgrain		X				
Dioscorea quaternata	Wild yam	X	X				
Disporum maculatum	Fairybells	X	X				
Elymus canadensis	Canada wild rye		X				
Epigaea repens	Trailing arbutus	X					
Euonymus atropurpureus	Strawberry bush	X	X				
Euonymus obovatus	Running strawberrybush	X	X				
Eupatorium rugosum	Black snakeroot		X				
Galium concinnum	Bedstraw		X				
Galium triflorum	Fragrant bedstraw		X				
Goodyear pubescens	Rattlesnake plantain	X	X				
Habenaria lacera	Green fringed-orchid		X				
Hamamelis virginiana	Witch hazel	X	X				
Heuchera americana	Alumroot	X					
Hieracium venosum	Veined hawkweed	X	X				
Hydrangea arborescens	Wild hydrangea	X	X				
Hydrastis canadensis	Goldenseal		X				

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Ipomoea pandurata	Wild potato vine			X			
Isotria verticillata	Large whorled pogonia	X	X				
Krigia biflora	Dwarf dandelion		X				
Lespedeza hirta	Hairy lespedeza		X				
Menispermum canadense	Canada moonseed		X				
Mitchella repens	Partridge berry	X					
Monarda clinopodia	White bergamot		X				
Monotropa hypopithys	Pinesap	X					
Monotropa uniflora	Indian pipe	X					
Ophioglossum vulgatum	Adder's tongue		X				
Osmunda cinnamomea	Cinnamon fern		X				
Panax quiquefolia	Ginseng	X					
Panicum bicknelli	Panic grass		X				
Panicum boscii	Panic grass		X				
Panicum latifolium	Panic grass		X				
Passiflora lutea	Yellow passion flower		X				
Phyla lanceolata	Fog fruit			X			
Pinus virginiana	Virginia pine		X				
Polygala incarnata	Whorled milkwort		X				

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Polymnia uvedalia	Large flowered leaf cup		X				
Potentilla canadensis	Five-fingers	X	X				
Prenanthes alba	White lettuce	X	X				
Prenanthes trifoliata	Gall-of-the-earth		X				
Quercus marilandica	Blackjack oak	X					
Rhamnus alnifolia	Alder-leaf buckthorn		X				
Rhododendron sp.	Azalea	X					
Rudbeckia hirta	Black-eyed Susan			X			
Sanicula canadensis	Sweet cicely	X	X				
Scutellaria integrifolia	Hyssop skullcap	X					
Silene stellata	Starry campion	X	X				
Silphium trifoliatum	Whorled rosinweed		X				
Smilax bona-nox	Cat briar	X					
Smilax hispida	Hispid greenbriar	X					
Solidago caesia	Goldenrod	X	X				
Staphylea trifoliata	Bladdernut		X				
Swertia caroliniensis	American columbo		X				
Teucrium canadense	Germander			X			
Thelypteris noveboracensis	New York fern	X	X				

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Tilia americana	Basswood		X				
Uvularia perfoliata	Perfoliate bellwort	X	X				
Vaccinium stamineum	Blueberry	X					
Veronica officinalis	Veronica		X				
Viburnum dentatum	Arrowwood		X				
Vitis labrusca	Fox grape		X				
Vitis riparia	Riparian grape				X		