

Rouse Environmental Services

Environmental Consultation & Permitting

August 1, 2016

Mr. John Rayl & Mr. Robert Shircliff
9108 Snowy Egret Court
Spotsylvania, Virginia 22553

Subject: Project R16007, Survey for *Isotria medeoloides* (Small Whorled Pogonia), Bear Tract Property, River Road, Spotsylvania County, Virginia.

Gentlemen:

Provided here are our findings in connection with a survey for potential populations of *Isotria medeoloides* at the above referenced site. This report represents the completion of our services rendered per our proposal made by email transmittal on June 7, 2016.

1. BACKGROUND

Development is being planned for portions of an approximately 198 acre tract of land located west of the intersection of River and Spotswood Furnace Roads, Spotsylvania County, Virginia. The actual study area represents a subset of this tract, refined downward to encompass only the areas of proposed development, the limits of which were provided to us by Fairbanks & Franklin in electronic format (225-1003 Bear Tract Layout 060616.dwg) on June 6, 2016. The area of study, in relation to surrounding topographic features, is shown on our Vicinity Map included as Figure 1 and is estimated to be approximately 135 acres in extent.

We understand that a survey for potential populations of *Isotria medeoloides* (Small Whorled Pogonia) is needed in connection with future permit requirements at the site. *I. medeoloides* is a rare orchid which generally occurs within relatively mature, hardwood dominated forests on nearly level to moderate slopes and has been documented in Spotsylvania County and adjacent Stafford County. Due to its rarity and loss of potential habitat from development, *I. medeoloides* has been formally listed as *Threatened* by the US Fish & Wildlife Service (USFWS). The plant has also received formal recognition as *Endangered* by the Virginia Department of Agriculture & Consumer Services under the Commonwealth of Virginia's Endangered Plant & Insect Act. The objective of our study was to evaluate the potential for

BEAR TRACT PROPERTY,
RIVER ROAD,
SPOTSYLVANIA CO., VIRGINIA

LEGEND



AREA SURVEYED FOR
Isotria medeoloides
(June 13, 2016)



APPROXIMATE LOCATION
OF *Isotria medeoloides*
(seven individuals)

FIGURE 1

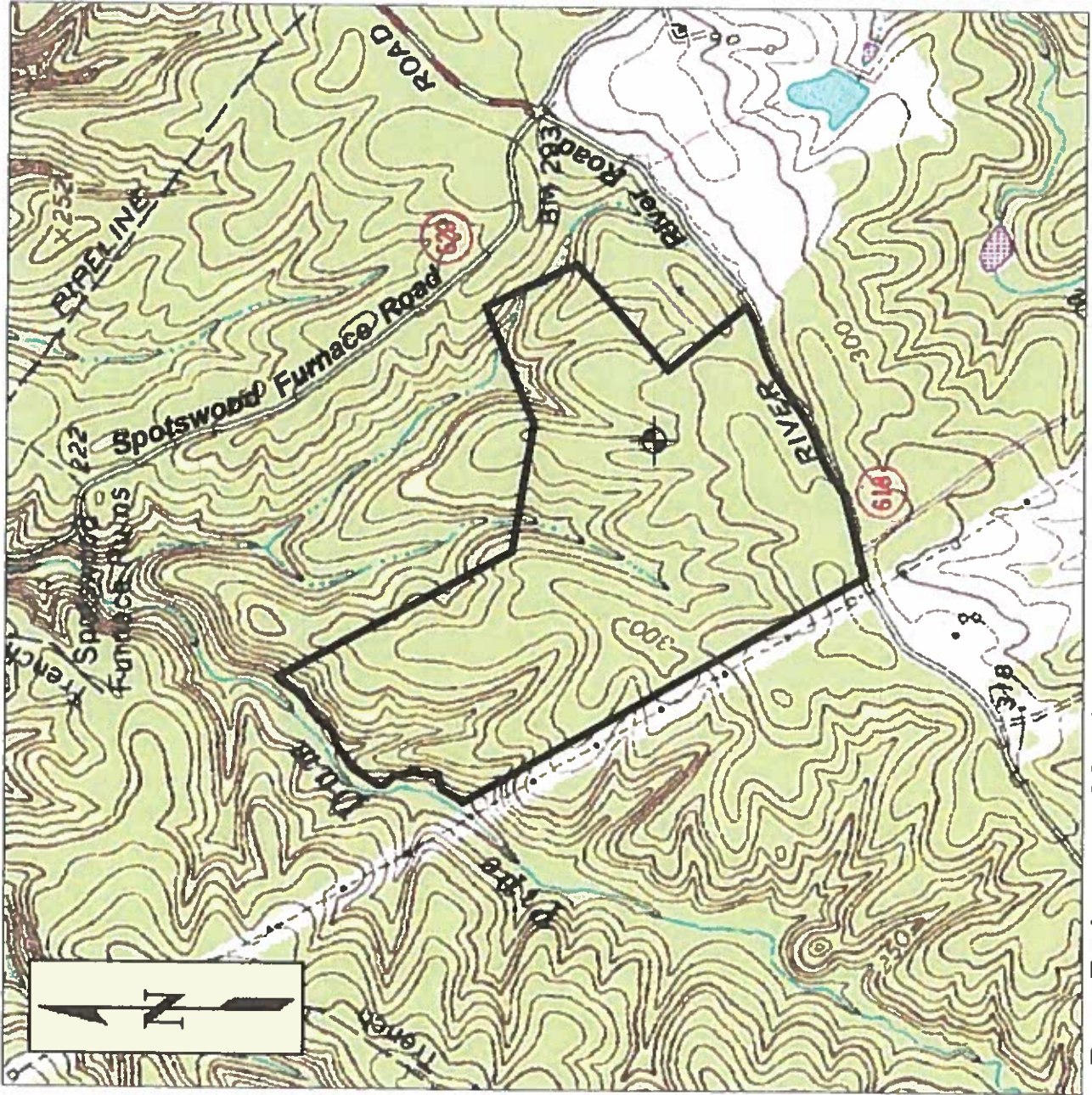
**PROJECT
LOCATION MAP**

SCALE: 1" ≈ 1000'

SOURCE: USGS 7.5' TOPOGRAPHIC MAP -
SALEM CHURCH QUADRANGLE
(Photorevised 1984)

R16007

August 2016



the occurrence of populations of *I. medeoloides* within the proposed limits of development at the subject tract.

2. DATA REVIEW AND FIELD STUDY

A desktop review was conducted to preliminarily identify areas of potential habitat for *Isotria medeoloides*. Our review included the following sources of information:

- Digital Raster Graphic (DRG) USGS topographic quadrangles covering the areas of study,
- Aerial infrared imagery available on US Geological Survey Digital Orthographic Quarter Quadrangles (DOQQs),
- USDA National Agricultural Imagery Program (NAIP) digital orthophotographs (visible spectrum) flown in 2011.
- Topographic and other existing site features provided on a base map prepared by Fairbanks & Franklin in electronic format (*225-1003 Bear Tract Layout 060616.dwg*), titled *Parcel 11-A-9 Exhibit, Spotsylvania County, Virginia* and dated June 6, 2016.

Information from the above listed sources was incorporated onto field maps and used to prioritize follow-up field surveys for the target species. Surveys were conducted with a single team of three field personnel on June 13, 2016, a time of year when *Isotria medeoloides* has been deemed by the USFWS as searchable in areas north of Caroline County, Virginia. The field work was led by myself, Garrie Rouse, a botanist recognized by the USFWS as qualified to conduct surveys for the plant. We documented plant species as they were encountered during the course of our field efforts. A listing of these taxa is provided as an attachment to this report.

3. SUMMARY OF FINDINGS

The majority of the site consisted of relatively mature, mixed hardwoods and some pine, growing on broad, convex ridges and moderately sloping unnamed drainages to Pipe Dam Run, a tributary of the Rappahannock River. An overhead power line and gas pipeline easement ran the length of the southwestern boundary of the study area from River Road to Pipe Dam Run.

Open conditions within and adjacent to the power line and gas pipeline easement would present little to no habitat for potential populations of *Isotria medeoloides*. Relatively xeric ridge lines and moderate to steep slopes at the site would support only marginally suitable habitat for the plant. Colluvial terraces and gentle slopes present within the more mature woodland areas along the primary drainages of the site, however, did provide some moderate to good potential habitat for supporting potential populations of *I. medeoloides*. Systematic searches of these areas were conducted by us during our site visit.

A single population of *Isotria medeoloides* was found during the course of our field surveys on June 16, 2016. A total of seven, non-flowering individuals were located after much

searching, growing within medium-aged mixed hardwoods on gentle, northeast-facing slopes near the upper reaches of one of the unnamed drainages to Pipe Dam Run. Dominant plant species found here included Red Oak, Tulip Poplar and White Oak in the canopy, American Beech, Red Maple and American Holly in the subcanopy/shrub layer, and New York Fern and Partridgeberry at ground level. The approximate location of this population is provided on our *Project Location Map* included as Figure 1. A photograph of a representative individual from this population is included as Figure 2.



Figure 2. Photograph of *Isotria medeoloides*, Bear Tract Property, Spotsylvania County, Virginia (taken June 13, 2016).

A Trimble Pathfinder ProXR GPS receiver was used to locate the seven individual plants more specifically. The receiver was operated to achieve submeter accuracy at each location using Trimble recommended procedures. Locational data was then downloaded and exported into CAD file format and sent to Fairbanks & Franklin for incorporation on their base maps for the proposed project. The precise location of the individual plants, in relation to local topographic details and nearby delineated wetlands, is provided on our *Small Whorled Pogonia Location Map* included as Figure 3. The extent of the total population is estimated to be less than 300 square feet.

BEAR TRACT PROPERTY,
RIVER ROAD,
SPOTSYLVANIA CO., VIRGINIA

LEGEND

LOCATION OF INDIVIDUAL
PLANTS OF *Isotria
medeoloides* (June 13, 2016)



EXTENT OF POPULATION
OF *Isotria medeoloides*
(June 13, 2016)



FIGURE 3

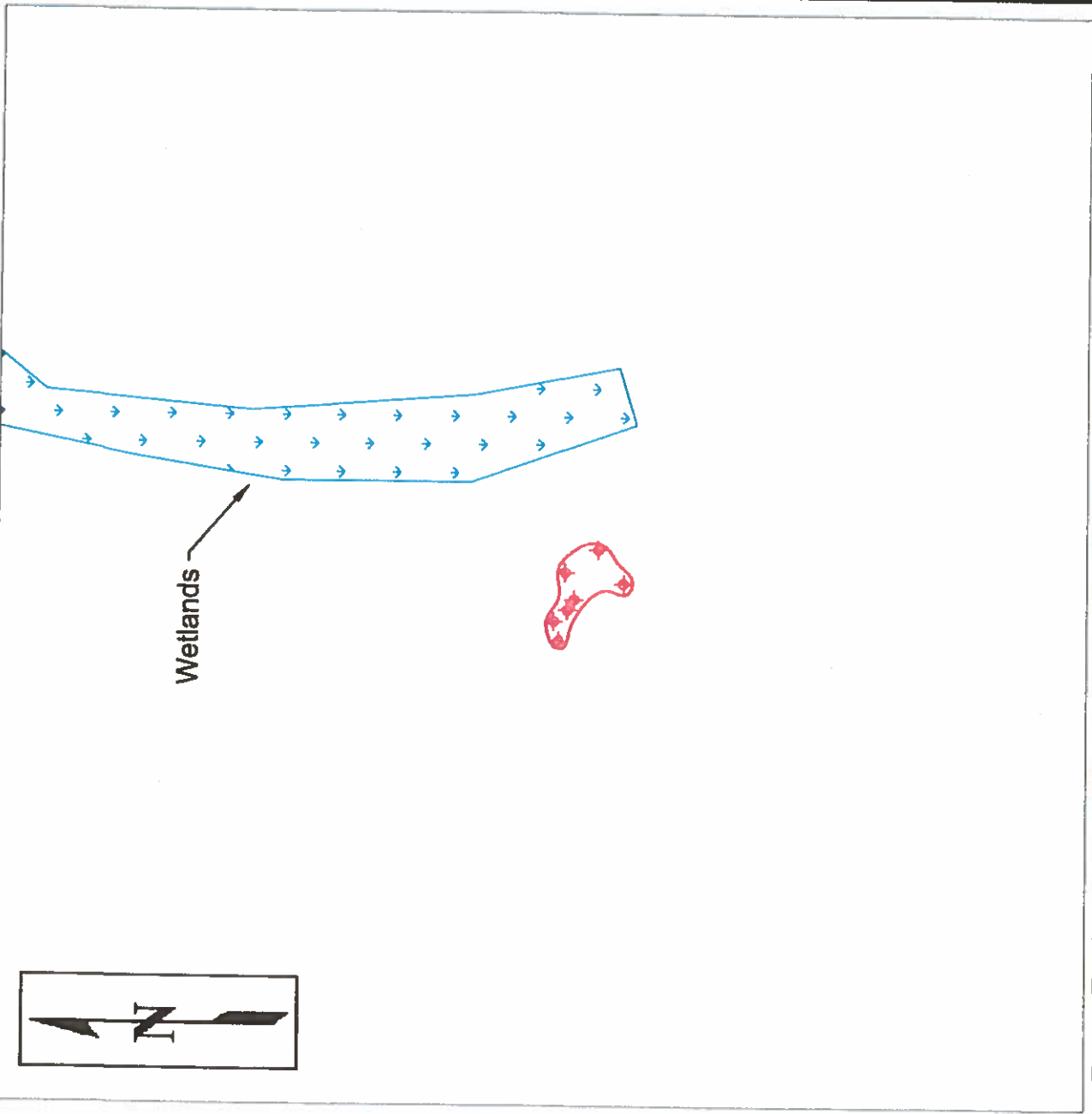
**SMALL WHORLED
POGONIA LOCATION
MAP**

SCALE: 1" \approx 50'

Notes: 1) Plants located using GPS Pathfinder ProXR GPS receiver operated to achieve submeter accuracy. 2) Topographic details and wetland extent taken from CAD file (225-1003 Bear Tract Lot Layout 060616.pdf) prepared by Fairbanks & Franklin on June 6, 2016.

August 2016

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No other individuals of *Isotria medeoloides* were observed during the course of our field visit, despite our concentrated search efforts following the location of the initial seven plants. Three other orchid species, *Goodyera pubescens* (Downy Rattlesnake Plantain), *Isotria verticillata* (Large Whorled Pogonia) and *Platanthera clavellata* (Small Green Wood Orchid), were noted at the site during our visits. *G. pubescens* and *P. clavellata* are easily distinguished from *I. medeoloides* by their very different vegetative and reproductive morphologies. As a close relative, *I. verticillata* may look very similar to *I. medeoloides* in its vegetative state, but can be differentiated from the latter by its larger stature, stems suffused with purple near their base, and a longer peduncle subtending the flower/fruit. None of the four identified orchid species are listed as *Threatened* or *Endangered* at either the federal or state level.

Individuals of the lily, *Medeola virginiana* (Indian Cucumber Root), were also observed at the site. Vegetative portions of this plant are superficially similar to *Isotria medeoloides*, but can be differentiated by the thinner, firmer stem, cobwebby pubescence and presence of a node near the base of the stem (absent in *I. medeoloides*). *M. virginiana* is not listed as *Threatened* or *Endangered* at either the federal or state level.

4. LIMITATIONS

Our study was limited to the survey of *Isotria medeoloides* and did not include searches for potential populations of other rare, Threatened or Endangered species which may occur within the study area. In addition, our study did not include the identification or delineation of wetlands, processing of permits, meetings with local, state or federal officials, land surveying services and environmental concerns or services that were not specifically described herein. Ecological conditions and species distributions represent dynamic processes. The findings of this survey, therefore, are valid only for the time at which this study was performed.

We appreciate the opportunity to have been of service to you on this project. Please do not hesitate to contact us should you have any questions regarding the contents of this report.

Sincerely,



Garrie D. Rouse
Consulting Botanist

Attachment: Checklist of Plant Species Encountered during *Isotria medeoloides* Surveys
(June 13, 2016)

Attachment

**PARTIAL CHECKLIST OF PLANT SPECIES ENCOUNTERED DURING
ISOTRIA MEDEOLOIDES SURVEYS, BEAR TRACT PROPERTY,
SPOTSYLVANIA COUNTY, VIRGINIA
(June 13, 2016)**

**PARTIAL CHECKLIST OF PLANT SPECIES ENCOUNTERED DURING
ISOTRIA MEDEOLOIDES SURVEYS, BEAR TRACT PROPERTY,
SPOTSYLVANIA COUNTY, VIRGINIA
(June 13, 2016)**

<u>Scientific Name:</u>	<u>Common Name:</u>
Acer rubrum L.	red maple
Achillea millefolium L.	common yarrow
Amphicarpaea bracteata (L.) Fern.	American hogpeanut
Apocynum cannabinum L.	Indianhemp
Asimina triloba (L.) Dunal	pawpaw
Athyrium filix-femina (L.) Roth	common ladyfern
Betula nigra L.	river birch
Boehmeria cylindrica (L.) Sw.	smallspike false nettle
Carex crinita Lam.	fringed sedge
Carex debilis Michx. var. pubera Gray	white edge sedge
Carex debilis Michx.	white edge sedge
Carex intumescens Rudge	greater bladder sedge
Carex leptalea Wahlenb.	bristlystalked sedge
Carex lurida Wahlenb.	shallow sedge
Carex rosea Schkuhr ex Willd.	rosy sedge
Carex swanii (Fern.) Mackenzie	Swan's sedge
Carya alba (L.) Nutt. ex Ell.	mockernut hickory
Carya glabra (P. Mill.) Sweet	pignut hickory
Castanea pumila (L.) P. Mill.	chinkapin
Chimaphila maculata (L.) Pursh	striped prince's pine
Cicuta maculata L.	spotted water hemlock
Cimicifuga racemosa (L.) Nutt.	black bugbane
Circaea lutetiana L.	broadleaf enchanter's nightshade
Cornus florida L.	flowering dogwood
Crepis capillaris (L.) Wallr.	smooth hawksbeard
Dactylis glomerata L.	orchardgrass
Danthonia spicata (L.) Beauv.	poverty oatgrass
Dennstaedtia punctilobula (Michx.) T. Moore	eastern hayscented fern
Desmodium nudiflorum (L.) DC.	nakedflower ticktrefoil
Desmodium rotundifolium DC.	prostrate ticktrefoil
Dianthus armeria L.	Deptford pink
Dichantherium boscii (Poir.) Gould & Clark	Bosc's panicgrass
Dichantherium clandestinum (L.) Gould	deertongue
Dichantherium scoparium (Lam.) Gould	velvet panicum
Dioscorea quaternata J.F. Gmel.	fourleaf yam
Diospyros virginiana L.	common persimmon
Eleocharis obtusa (Willd.) J.A. Schultes	blunt spikerush
Elephantopus carolinianus Raeusch.	Carolina elephantsfoot
Epifagus virginiana (L.) W. Bart.	beechdrops
Erigeron strigosus Muhl. ex Willd.	prairie fleabane
Euonymus americana L.	strawberry bush
Eupatorium capillifolium (Lam.) Small	dogfennel
Eupatorium perfoliatum L.	common boneset

**PARTIAL CHECKLIST OF PLANT SPECIES ENCOUNTERED DURING
ISOTRIA MEDEOLOIDES SURVEYS, BEAR TRACT PROPERTY,
SPOTSYLVANIA COUNTY, VIRGINIA
(Continued)**

<u>Scientific Name:</u>	<u>Common Name:</u>
Eurybia divaricata (L.) Nesom	white wood aster
Fagus grandifolia Ehrh.	American beech
Galium triflorum Michx.	fragrant bedstraw
Gaylussacia baccata (Wangenh.) K. Koch	black huckleberry
Glyceria striata (Lam.) A.S. Hitchc.	fowl mannagrass
Goodyera pubescens (Willd.) R. Br. ex Ait. f.	downy rattlesnake plantain
Gratiola virginiana L.	roundfruit hedgehyssop
Houstonia purpurea L.	Venus' pride
Hypochaeris radicata L.	hairy catsear
Hypoxis hirsuta (L.) Coville	common goldstar
Ilex opaca Ait.	American holly
Ilex verticillata (L.) Gray	common winterberry
Impatiens capensis Meerb.	Jewelweed
* Isotria medeoloides (Pursh) Raf.	small whorled pogonia
Isotria verticillata Raf.	purple fiveleaf orchid
Juncus effusus L.	common rush
Juniperus virginiana L.	eastern redcedar
Kalmia latifolia L.	mountain laurel
Leersia virginica Willd.	whitegrass
Leucanthemum vulgare Lam.	oxeye daisy
Leucothoe racemosa (L.) Gray	swamp doghobble
Liquidambar styraciflua L.	sweetgum
Liriodendron tulipifera L.	tuliptree
Lolium pratense (Huds.) S.J. Darbyshire	meadow ryegrass
Lonicera japonica Thunb.	Japanese honeysuckle
Ludwigia palustris (L.) Ell.	marsh seedbox
Lycopodium dendroideum Michx.	tree groundpine
Lycopodium digitatum Dill. ex A. Braun	fan clubmoss
Lycopus sp.	a waterhorehound
Lyonia ligustrina (L.) DC.	maleberry
Maianthemum racemosum (L.) Link	feathery false lily of the vally
Medeola virginiana L.	Indian cucumber
Melica mutica Walt.	twoflower melicgrass
Microstegium vimineum (Trin.) A. Camus	Nepalese browntop
Mitchella repens L.	partridgeberry
Monotropa uniflora L.	Indianpipe
Nyssa sylvatica Marsh.	blackgum
Onoclea sensibilis L.	sensitive fern
Osmunda cinnamomea L.	cinnamon fern
Osmunda regalis L.	royal fern
Packera anonyma (Wood) Weber & Löve	Small's ragwort
Parthenocissus quinquefolia (L.) Planch.	Virginia creeper
Pinus virginiana P. Mill.	Virginia pine

**PARTIAL CHECKLIST OF PLANT SPECIES ENCOUNTERED DURING
ISOTRIA MEDEOLOIDES SURVEYS, BEAR TRACT PROPERTY,
SPOTSYLVANIA COUNTY, VIRGINIA
(Continued)**

<u>Scientific Name:</u>	<u>Common Name:</u>
Plantago aristata Michx.	largebracted plantain
Plantago lanceolata L.	narrowleaf plantain
Platanthera clavellata (Michx.) Luer	small green wood orchid
Polygonatum biflorum (Walt.) Ell.	smooth Solomon's seal
Polygonum persicaria L.	spotted ladythumb
Polygonum sagittatum L.	arrowleaf tearthumb
Polystichum acrostichoides (Michx.) Schott	Christmas fern
Pseudognaphalium obtusifolium (L.) Hilliard	rabbittobacco
Pycnanthemum tenuifolium Schrad.	narrowleaf mountainmint
Quercus alba L.	white oak
Quercus coccinea Muenchh.	scarlet oak
Quercus falcata L.	southern red oak
Quercus phellos L.	willow oak
Quercus rubra L.	northern red oak
Quercus velutina Lam.	black oak
Ranunculus recurvatus Poir.	blisterwort
Rubus hispidus L.	bristly dewberry
Sagittaria latifolia Willd.	broadleaf arrowhead
Sambucus nigra L. ssp. canadensis	common elderberry
Sanicula sp.	a sanicle
Scirpus georgianus Harper	Georgia bulrush
Scutellaria elliptica Muhl. ex Spreng.	hairy skullcap
Scutellaria integrifolia L.	helmet flower
Smilax glauca Walt.	cat greenbrier
Smilax rotundifolia L.	roundleaf greenbrier
Solidago rugosa P. Mill.	wrinkleleaf goldenrod
Sparganium sp.	a bur-reed
Symplocarpus foetidus (L.) Salisb. ex Nutt.	skunk cabbage
Thalictrum sp.	a meadow-rue
Thelypteris noveboracensis (L.) Nieuwl.	New York fern
Vaccinium corymbosum L.	highbush blueberry
Vaccinium pallidum Ait.	Blue Ridge blueberry
Vaccinium stamineum L.	deerberry
Viburnum acerifolium L.	mapleleaf viburnum
Viburnum nudum L.	possumhaw
Viola xprimulifolia L. (pro sp.)	primrose-leaf violet
Viola sp.	a violet

Rouse Environmental Services

Environmental Consultation & Permitting

June 27, 2011

EnviroData, Inc.
PO Box 1508
Gloucester, Virginia 23061

Attn: Mr. William B. Ellen

Subject: Project R11008, Survey for *Isotria medeoloides* (Small Whorled Pogonia), Glenhaven North Subdivision, Spotsylvania County, Virginia.

Gentlemen:

Provided here are our findings in connection with a survey for potential populations of *Isotria medeoloides* at the above referenced site. This letter report represents the completion of our services rendered per our proposal made by email transmittal on June 9, 2011.

1. BACKGROUND

Development is being planned for an approximately 184 acre tract of land located between River Road to the north and Mine Run to the south, Spotsylvania County, Virginia. The project limits were outlined to us in a PDF file (*F&F SWP Ideal Habitat Overlay 060211.pdf*) sent to us as an email attachment on June 6, 2011. The area of study, in relation to surrounding topographic features, is shown on our Vicinity Map included as Figure 1.

We understand that a survey for potential populations of *Isotria medeoloides* (Small Whorled Pogonia) is needed in connection with future permit requirements at the site. *I. medeoloides* is a rare orchid which generally occurs within relatively mature, hardwood dominated forests on nearly level to moderate slopes and has been documented in

GLENHAVEN NORTH SUBDIVISION,
SPOTSYLVANIA CO., VIRGINIA

LEGEND



PROPERTY LIMITS

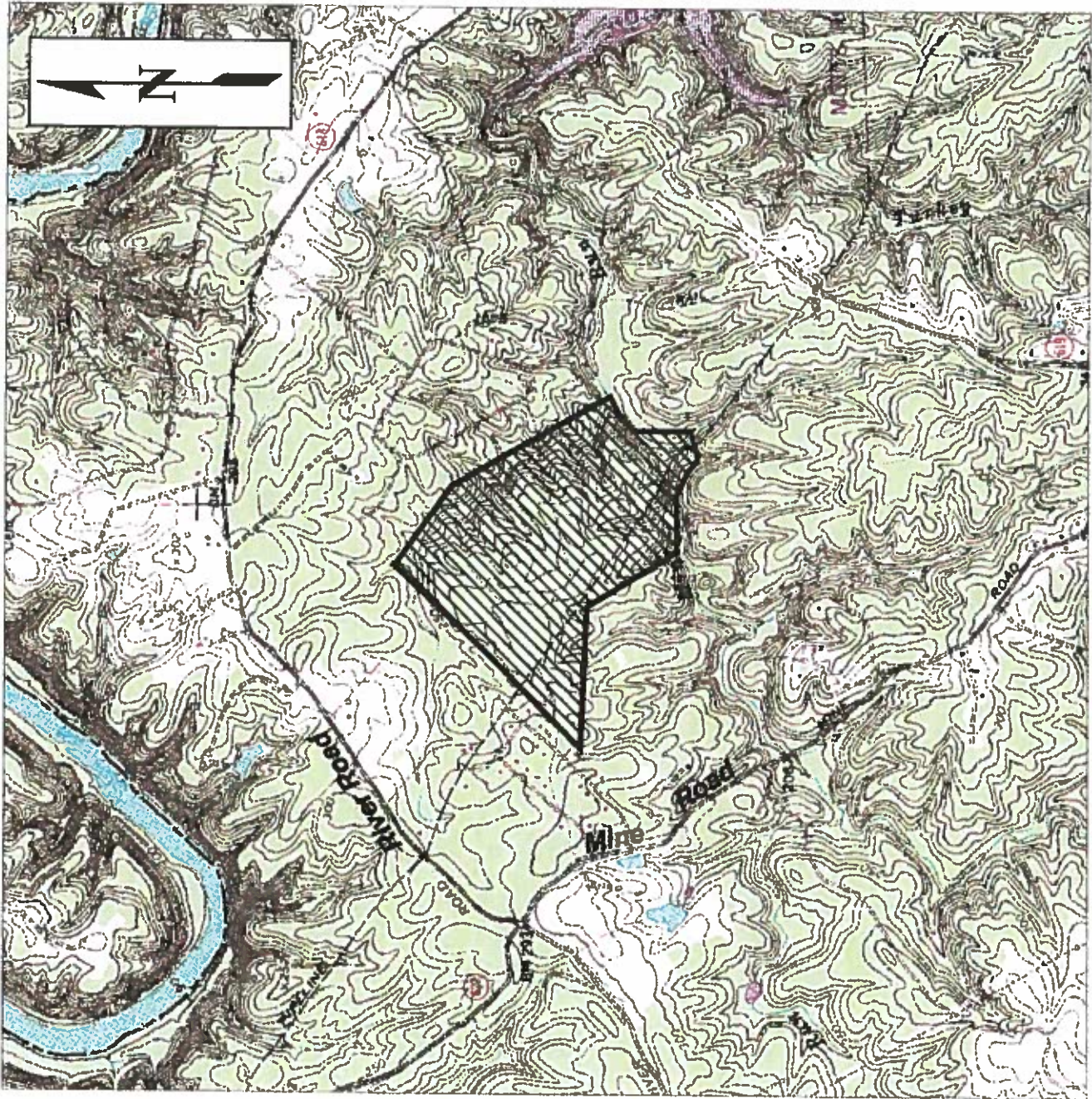
FIGURE 1

**VICINITY
MAP**

SCALE: 1" ≈ 2000'

SOURCE: USGS 7.5' TOPOGRAPHIC MAPS
- SALEM CHURCH QUADRANGLE
(Photoinspected 1988)

June 2011 R11008



Spotsylvania County and adjacent Stafford County. Due to its rarity and loss of potential habitat from development, *I. medeoloides* has been formally listed as *Threatened* by the US Fish & Wildlife Service (USFWS). The plant has also received formal recognition as *Endangered* by the Virginia Department of Agriculture & Consumer Services under the Commonwealth of Virginia's Endangered Plant & Insect Act. The objective of our study was to evaluate the potential for the occurrence of populations of *I. medeoloides* within the subject tract.

2. DATA REVIEW AND FIELD STUDY

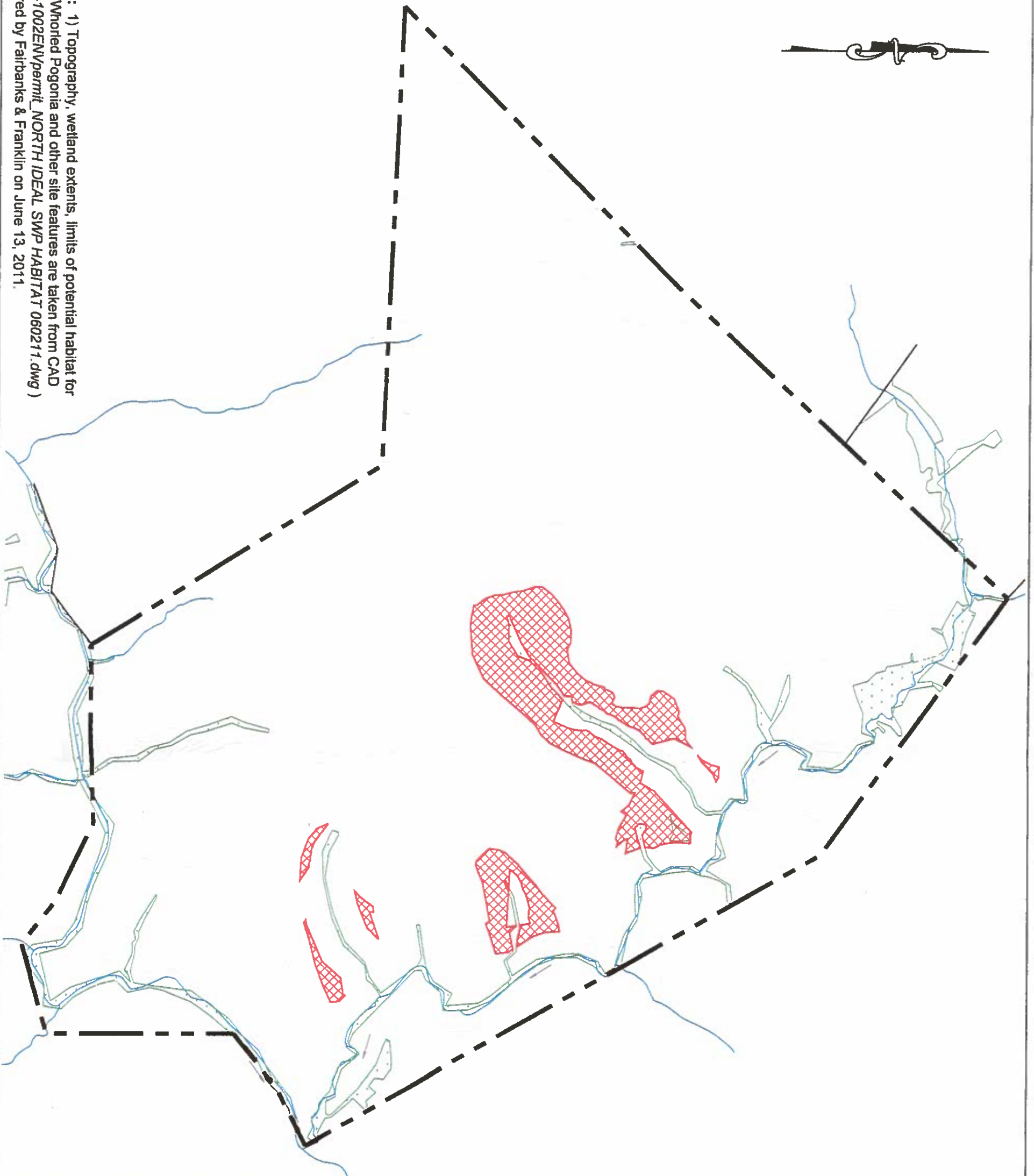
Habitat suitability surveys for *Isotria medeoloides* had previously been conducted on a larger area encompassing the subject tract by Mr. David L. Davis during June 2004. Areas of "ideal habitat" for the plant were identified in connection within these surveys, the extents of which were provided to us in a CAD file (*3-1002ENVpermit_NORTH IDEAL SWP HABITAT 060211.dwg*) sent to us by Fairbanks & Franklin via email attachment on June 13, 2011.

Per the direction of Mr. William Ellen, our field surveys were confined to the previously identified areas of "ideal habitat" lying outside of designated protection areas (namely Resource Protection Areas and Conservation Easements) and including any other potential habitat identified by us at the time of our site visits, lying immediately adjacent to these same mapped areas. The areas targeted for field survey, in relation to the overall project site, are shown on our *Project Location Map* included as Figure 2.

Surveys were conducted with a single team of two field personnel on June 21, 2011, a time of year when *Isotria medeoloides* has been deemed by the USFWS as searchable in areas north of Caroline County, Virginia. Designated areas of "ideal habitat" were taken from the CAD file supplied by Fairbanks & Franklin and uploaded to a Trimble Juno handheld GPS receiver. The GPS receiver was used to properly locate and canvass the identified target areas. We documented plant species as they were encountered during the course of our surveys. A listing of these taxa is provided as an attachment to this letter report.





3. SUMMARY OF FINDINGS

The majority of the site consisted of relatively mature, mixed hardwoods and some pine, growing on broad, convex ridges and moderately sloping unnamed drainages to Mine Run. We observed the previously identified areas of "ideal habitat" as generally being conducive for supporting potential populations of *Isotria medeoloides*, although some of the targeted sites appeared to us to be borderline (drier end) in terms of the hydrologic



Notes: 1) Topography, wetland extents, limits of potential habitat for Small Whorled Pogonia and other site features are taken from CAD file (3-1002ENV/permitt_NORTH IDEAL SWP HABITAT 060211.dwg) prepared by Fairbanks & Franklin on June 13, 2011.

LEGEND

-  PROPERTY BOUNDARY
-  STREAM CHANNEL
-  LIMITS OF WETLANDS AS DEPICTED BY FAIRBANKS & FRANKLIN
-  AREAS PREVIOUSLY IDENTIFIED BY DAVE DAVIS AS IDEAL HABITAT FOR SMALL WHORLED POGONIA LYING OUTSIDE OF PRESERVATION AREAS

Rouse Environmental Services

Glenhaven North Subdivision,
Spotsylvania County, Virginia

Project Location Map	SCALE: 1"=400'	DATE: 6/27/11
	DRAWN BY: G. Rouse	CHECKED BY:
	PROJECT: R11008	FIGURE: 2

regime that *I. medeoloides* typically prefers. Some limited additional areas of potential habitat, immediately adjacent to the previously identified "ideal habitat", were observed on colluvial bottoms generally just downgradient of these targeted sites. Despite our systematic search efforts of the previously identified "ideal habitat" and some additionally identified potential habitat, however, no individuals of *I. medeoloides* were observed during the course of our field visits.

Four other orchid species, *Cypripedium acaule* (Pink Lady's Slipper), *Goodyera pubescens* (Downy Rattlesnake Plantain), *Isotria verticillata* (Large Whorled Pogonia) and *Platanthera clavellata* (Small Green Wood Orchid), were noted at the site during our visits. *C. acaule*, *G. pubescens* and *P. clavellata* are easily distinguished from *I. medeoloides* by their very different vegetative and reproductive morphologies. As a close relative, *I. verticillata* may look very similar to *I. medeoloides* in its vegetative state, but can be differentiated from the latter by its larger stature, stems suffused with purple near their base, and a longer peduncle subtending the flower/fruit. None of the four identified orchid species are listed as *Threatened* or *Endangered* at either the federal or state level.

Individuals of the lily, *Medeola virginiana* (Indian Cucumber Root), were also observed at the site. Vegetative portions of this plant are superficially similar to *Isotria medeoloides*, but can be differentiated by the thinner, firmer stem, cobwebby pubescence and presence of a node near the base of the stem (absent in *I. medeoloides*).

Given that all previously identified "ideal habitat" at the site, as well as additional potential habitat immediately adjacent to these targeted areas, were canvassed during a time of year when the plant is considered to be searchable, and that we were unsuccessful in locating individuals of the target species, we consider there to be a low potential for the occurrence of *Isotria medeoloides* on the subject property.

4. LIMITATIONS

Our study was limited to the survey of *Isotria medeoloides* and did not include searches for potential populations of other rare, Threatened or Endangered species which may occur within the study area. In addition, our study did not include the identification or delineation of wetlands, processing of permits, meetings with local, state or federal officials, land surveying services and environmental concerns or services that were not specifically described herein. Ecological conditions and species distributions represent dynamic processes. The findings of this survey, therefore, are valid only for the time at which this study was performed.

Project R11008

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June 27, 2011

We appreciate the opportunity to have been of service to you on this project. Please do not hesitate to contact us should you have any questions regarding this report.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Garrie D. Rouse', with a long horizontal flourish extending to the right.

Garrie D. Rouse
Consulting Scientist

Attachment: Checklist of Plant Species Encountered During *Isotria medeoloides*
Surveys (June 21, 2011)

ATTACHMENT 1

**PARTIAL CHECKLIST OF PLANT SPECIES
ENCOUNTERED DURING *ISOTRIA MEDEOLOIDES* SURVEYS
(June 21, 2011)**

**PARTIAL CHECKLIST OF PLANT SPECIES ENCOUNTERED DURING
ISOTRIA MEDEOLOIDES SURVEYS, GLENHAVEN NORTH SUBDIVISION,
SPOTSYLVANIA COUNTY, VIRGINIA
(June 21, 2011)**

Scientific Name:

Common Name:

<i>Acer rubrum</i> L.	red maple
<i>Amphicarpaea bracteata</i> (L.) Fern.	American hogpeanut
<i>Apocynum cannabinum</i> L.	Indianhemp
<i>Arisaema triphyllum</i> (L.) Schott	Jack in the pulpit
<i>Asimina triloba</i> (L.) Dunal	pawpaw
<i>Brachyelytrum erectum</i> (Schreb.) Beauv.	bearded shorthusk
<i>Carex debilis</i> Michx.	white edge sedge
<i>Carex intumescens</i> Rudge	greater bladder sedge
<i>Carex rosea</i> Schkuhr ex Willd.	rosy sedge
<i>Carex swanii</i> (Fern.) Mackenzie	Swan's sedge
<i>Carpinus caroliniana</i> Walt.	American hornbeam
<i>Carya glabra</i> (P. Mill.) Sweet	pignut hickory
<i>Chimaphila maculata</i> (L.) Pursh	striped prince's pine
<i>Cimicifuga racemosa</i> (L.) Nutt.	black bugbane
<i>Cornus florida</i> L.	flowering dogwood
<i>Cypripedium acaule</i> Ait.	moccasin flower
<i>Danthonia spicata</i> (L.) Beauv.	poverty oatgrass
<i>Dennstaedtia punctilobula</i> (Michx.) Moore	eastern hayscented fern
<i>Desmodium nudiflorum</i> (L.) DC.	nakedflower ticktrefoil
<i>Dichanthelium boscii</i> (Poir.) Gould & Clark	Bosc's panicgrass
<i>Dichanthelium clandestinum</i> (L.) Gould	deertongue
<i>Dichanthelium scoparium</i> (Lam.) Gould	velvet panicum
<i>Erechtites hieraciifolia</i> (L.) Raf. ex DC.	American burnweed
<i>Euonymus americana</i> L.	strawberry bush
<i>Eurybia divaricata</i> (L.) Nesom	white wood aster
<i>Fagus grandifolia</i> Ehrh.	American beech
<i>Galium circaezans</i> Michx.	licorice bedstraw
<i>Goodyera pubescens</i> (Willd.) R. Br.	downy rattlesnake plantain
<i>Hamamelis virginiana</i> L.	American witchhazel
<i>Hypericum hypericoides</i> (L.) Crantz	St. Andrew's cross
<i>Ilex opaca</i> Ait.	American holly
<i>Isotria verticillata</i> Raf.	purple fiveleaf orchid
<i>Juncus tenuis</i> Willd.	poverty rush
<i>Juniperus virginiana</i> L.	eastern redcedar
<i>Kalmia latifolia</i> L.	mountain laurel
<i>Liquidambar styraciflua</i> L.	sweetgum
<i>Liriodendron tulipifera</i> L.	tuliptree
<i>Lonicera japonica</i> Thunb.	Japanese honeysuckle
<i>Lycopodium digitatum</i> Dill. ex A. Braun	fan clubmoss
<i>Medeola virginiana</i> L.	Indian cucumber

**PARTIAL CHECKLIST OF PLANT SPECIES ENCOUNTERED DURING
ISOTRIA MEDEOLOIDES SURVEYS, GLENHAVEN NORTH SUBDIVISION,
SPOTSYLVANIA COUNTY, VIRGINIA
(Continued)**

Scientific Name:

Mitchella repens L.
Murdannia keisak (Hassk.) Hand.-Maz.
Nyssa sylvatica Marsh.
Osmunda cinnamomea L.
Osmunda regalis L.
Pinus virginiana P. Mill.
Platanthera clavellata (Michx.) Luer
Polystichum acrostichoides (Michx.) Schott
Populus grandidentata Michx.
Quercus alba L.
Quercus falcata Michx.
Quercus phellos L.
Quercus rubra L.
Smilax glauca Walt.
Thelypteris noveboracensis (L.) Nieuwl.
Toxicodendron radicans (L.) Kuntze
Vaccinium pallidum Ait.
Vaccinium stamineum L.
Viburnum acerifolium L.
Viburnum dentatum L.
Viola sp.

Common Name:

partridgeberry
wartremoving herb
blackgum
cinnamon fern
royal fern
Virginia pine
small green wood orchid
Christmas fern
bigtooth aspen
white oak
southern red oak
willow oak
northern red oak
cat greenbrier
New York fern
eastern poison ivy
Blue Ridge blueberry
deerberry
mapleleaf viburnum
southern arrowwood
a violet