



DESIGNATION ORDER

USDA Forest Service, Eastern Region
Chequamegon-Nicolet National Forest
Great Divide Ranger District
Ashland County, Wisconsin

St Peters Dome

RESEARCH NATURAL AREA

Designation Order

By virtue of the authority vested in me by the Secretary of Agriculture in accordance with 7 CFR 2.42, 36 CFR 251.23, and 36 CFR Part 219, I hereby establish the St Peters Dome Research Natural Area. It shall be comprised of 2,268 acres (918 hectares) of land in Ashland County, in the state of Wisconsin, on the Great Divide District of the Chequamegon-Nicolet National Forest, as described in the section of the Establishment Record entitled "Location" [and in the Land and Resource Management Plan for the Chequamegon-Nicolet National Forest map]

Approved by:



Kathleen Atkinson
Regional Forester



Date

SIGNATURE PAGE

for

RESEARCH NATURAL AREA ESTABLISHMENT RECORD

St Peters Dome Research Natural Area

Chequamegon-Nicolet National Forest

Ashland County, Wisconsin

The undersigned certify that all applicable land management planning and environmental analysis requirements have been met and that boundaries are clearly identified in accordance with FSM 4063.21, Mapping and Recordation, and FSM 4063.41, Establishment Record Content, in arriving at this recommendation.

Prepared by:

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Draft by:

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Recommended by:

Paul I.V. Strong Date 3/17/15
Paul I.V. Strong, Forest Supervisor, Chequamegon-Nicolet National Forest

Concurrence of:

Michael T. Rains Date 3/16/15
Michael T. Rains, Station Director, Northern Research Station



TITLE PAGE

United States
Department of
Agriculture

Forest
Service

November 2014



Establishment Record for St Peters Dome Research Natural Area

**Chequamegon-Nicolet National Forest,
Great Divide District,
Ashland County, Wisconsin**



Cover photo: The prominence known as *St Peters Dome* as seen in spring from the north, rises 400 feet (120 m) above Morgan Creek visible in the lower right of the photo. (Photo by Steven G. Spickerman 1995)

Below: The same view as Cover Photo on a beautiful October day. (Photo by Steven G. Spickerman 2004)



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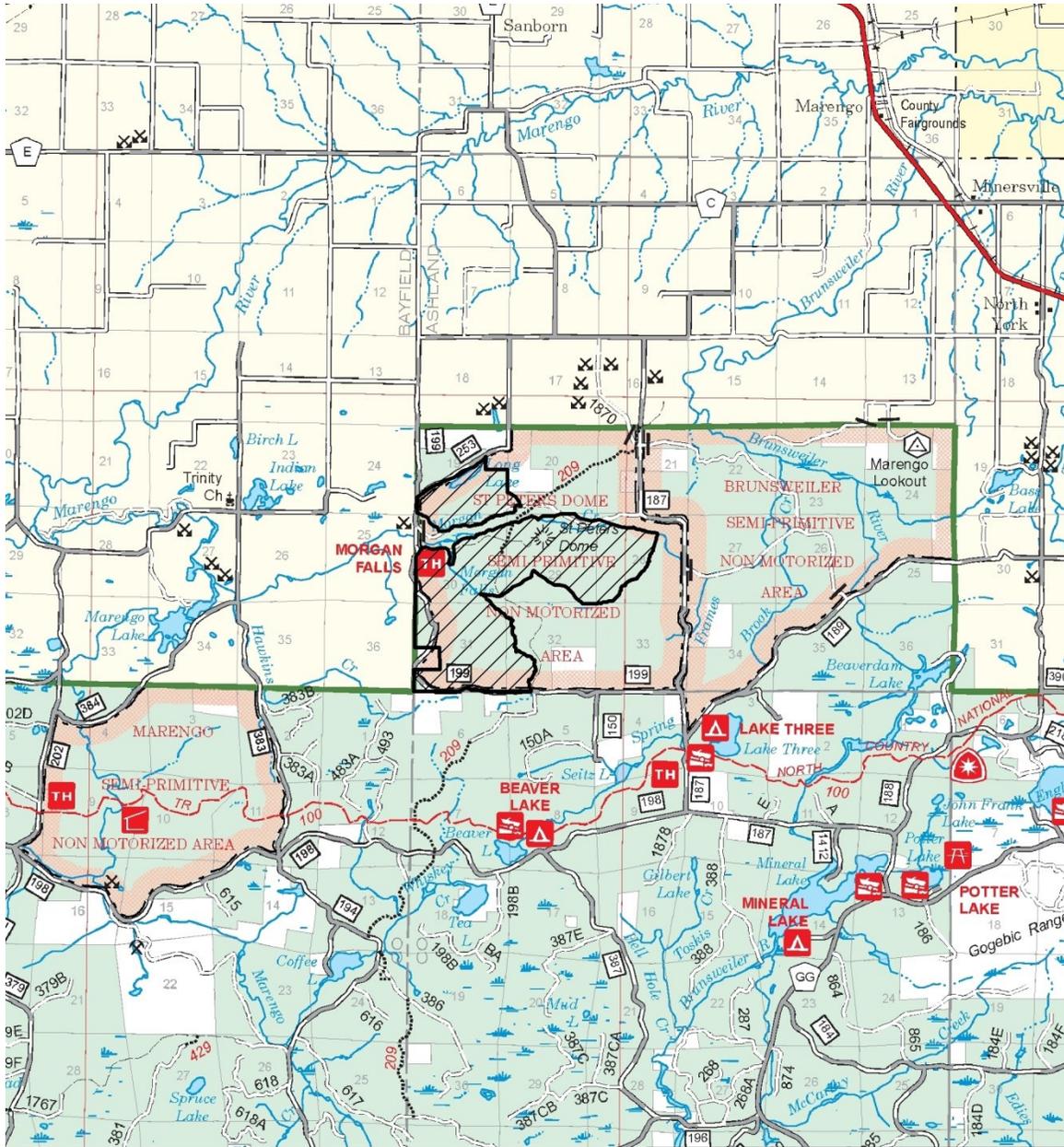
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Note: The Alpha/Numeric ordering in this document follows that within Forest Service Manual direction (FSM 4063) for Establishment Records.

1. IDENTIFICATION SECTION

Location Map



 Research Natural Area
 FS Ownership

0 0.5 1 2 Miles
 0 0.75 1.5 3 Kilometers

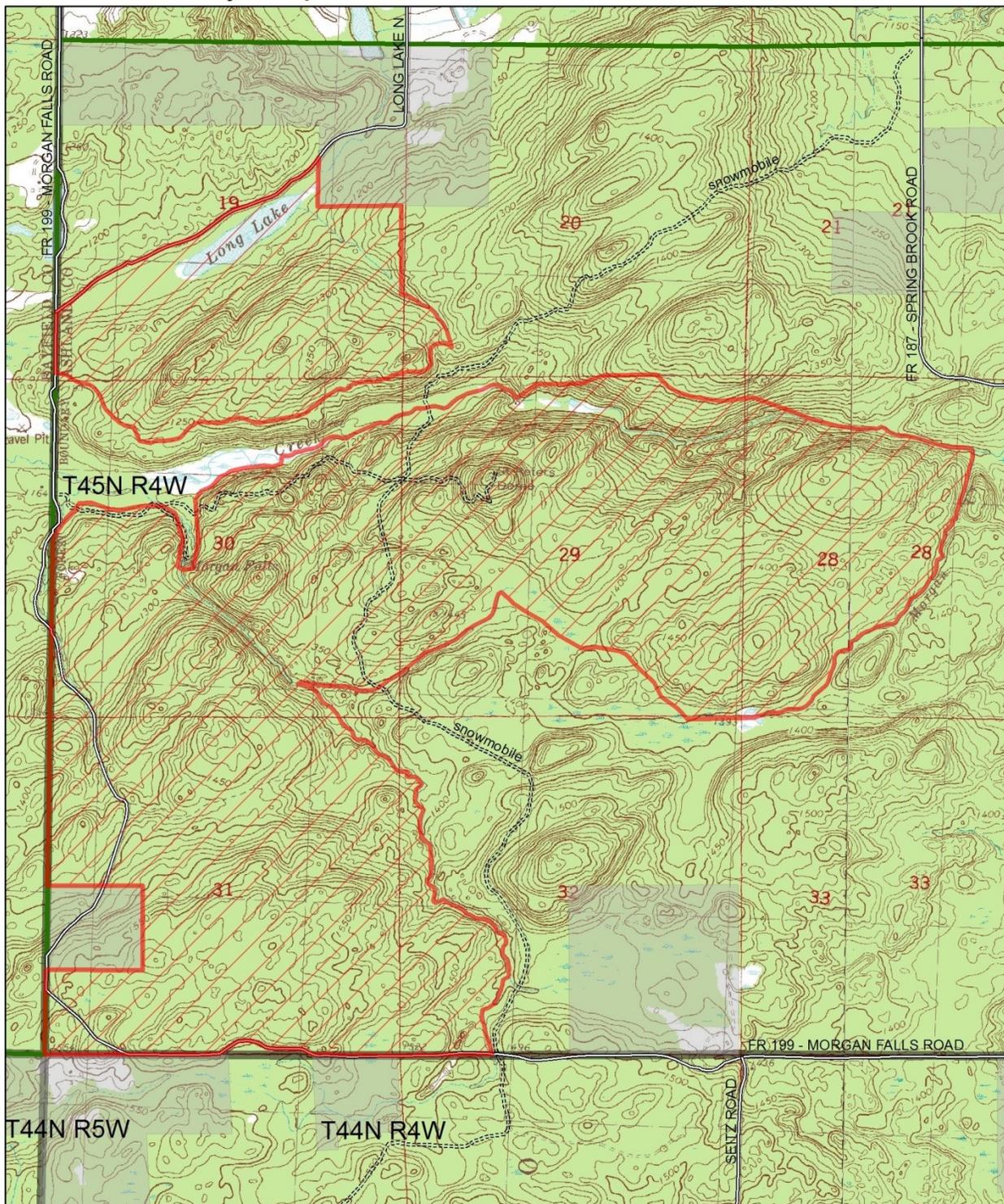
Map background is 2013 SBS. This product is reproduced from geospatial information prepared by the USDA, Forest Service. GIS data and product accuracy may vary. The Forest Service cannot assure the reliability or suitability of this information for a particular purpose and accepts no liability for use of its data or products by any other party. The Forest Service reserves the right to correct, update, modify, or replace this geospatial information without notification. For additional information about this data, please contact the Chequamegon-Nicolet National Forest. DV 20130624

RNA Location Map:

St Peters Dome

BOUNDARY MAP

RNA Boundary Map: St Peters Dome



Legend:
 [Red hatched box] Research Natural Area
 [Grey box] NonFS ownership
 [Solid line] Open Road
 [Dashed line] Trail
 [Scale bar] 0 0.25 0.5 1 Miles
 [Scale bar] 0 0.25 0.5 1 Kilometers
 DV 20140417
 Acres: 2268

LANDSCAPE OVERVIEW ST PETERS DOME RNA



 RNA Boundary

ESRI Basemap World Imagery
MB 2013



LEGAL DESCRIPTION

The legal description of St Peters Dome RNA is attached as Appendix 6. GIS data of the perimeter boundary are on file at the Chequamegon-Nicolet National Forest Supervisor's office.

2. ADMINISTRATIVE SECTION

This Establishment Record has been prepared pursuant to Forest Service Manual direction (FSM 4063). Establishment of the St Peters Dome RNA is documented with a signature page to follow and a Designation Order which is a separate document accompanying this document (FSM 4063.41.2) (USDA Forest Service 2004c).

The Station Director of the Northern Research Station (NRS) in consultation with the Chequamegon-Nicolet Forest (CNNF) Supervisor, Great Divide District Ranger, and NRS RNA Coordinator(s) will approve and coordinate research conducted in the RNA.

Requests to conduct research are referred to the Station Director, Northern Research Station, who will coordinate a review of the application. The Director or NRS RNA Designate will approve research proposals, and prior to the initiation of any projects, will coordinate the project or activity with the District Ranger. Any plant, animal, vegetation, or soil specimen(s) collected in the course of research conducted in the RNA are to be housed at a location designated by the Forest or approved by the Station Director.

Hard copies of research data files will be maintained in the following offices:

Chequamegon-Nicolet National Forest
1170 4th St. South
Park Falls, WI 54552

Station Director
c/o Station RNA Field Representative
Northern Research Station
5985 Highway K
Rhineland, WI 54501

3. BODY OF ESTABLISHMENT RECORD

a. INTRODUCTION

St. Peters Dome Research Natural Area (RNA) is located on the Chequamegon-Nicolet National Forest (CNNF), Ashland County on the Great Divide Ranger District. The RNA is located entirely on National Forest Service Land and is approximately 15 miles south of Ashland, Wisconsin (Identification Section: *Location Map* and *Boundary Map*). It consists of two portions, separated by the St Peters Dome/Morgan Falls Forest Special Management Area.

The 2,268-acre (918 hectares) St Peters Dome RNA features a large block of un-fragmented, contiguous northern mesic forest dominated by sugar maple (*Acer saccharum*) and basswood (*Tilia americana*) with significant inclusions of old-growth forest (Spickerman 1996). Extensive areas of exposed bedrock form vertical shaded and open cliffs, narrow stream gorges with waterfalls, and a granite dome that rises 1000 feet above nearby Lake Superior. The RNA harbors scattered populations of rare plants and core habitat for the state-endangered American marten (*Martes americana*).

Historical Background - American Indian tribes have lived on the lands that make up the CNNF for thousands of years with a long and complex history. They hunted, fished, gathered food, and obtained forest products for shelter, moved plants from other areas, and sometimes used fire to manipulate the land. Many of these practices continue today under reserved treaty rights (treaties of 1837 & 1842) with eleven Ojibwe tribes. The Bad River Ojibwe Reservation lies 10 miles to the northeast of this RNA with other reservations nearby. See Section 4 d.(2) Cultural/Heritage for further discussion of Native American history on the site.

Northern Wisconsin was heavily logged during the late 1800's and early 1900's followed by sporadic catastrophic wildfires which burned through leftover slash. The bark of hemlock (*Tsuga canadensis*) was an important part of the hide tanning industry during this era and the extensive hemlock forests covering the Penokee Range, including the St Peters Dome area, attracted what was in 1896, the largest tannery in Wisconsin. There are still scattered hemlock bark piles within the RNA (Spickerman, personal observation).



Figure 1. A view of Morgan Creek gorge showing the sharp relief that occurs in the RNA (Photo by S. Spickerman 1995)

Since formation of Wisconsin's National Forests in the 1930's, timber harvests within the RNA and surrounding area have included salvage of dead and dying American elm (*Ulmus americanus*), selection harvest of northern hardwoods, and aspen clear-cut management. From CNNF compartment and stand records, the latest commercial timber sale activity occurred in the early to mid-1970's.

The site's ecological value was recognized decades ago by state and federal agencies and universities. Previous inventories include a Natural Heritage Evaluation of selected plant communities (1995), Proactive TES plant survey (1990-1997), Vegetation Monitoring (1990, 1991, 1996), and Northland College Plant Watch (1996). The site was co-designated as a Wisconsin State Natural Area [see section *D(1):Research, Education, History of Establishment*].

Uses - Recreation development includes a snowmobile trail that bisects a portion of the RNA and a hiking trail to Morgan Falls and the top of St Peters Dome. Numerous university groups use the area for field botany and geology study.

Ownership & Administration - St Peters Dome RNA is owned outright by the USDA Forest Service. Administration and protection of the RNA is the responsibility of the Forest Supervisor of the Chequamegon-Nicolet National Forest, or designate. The Great Divide Ranger District, Chequamegon-Nicolet National Forest, provides day-to-day protection and maintenance of the area.

The Northern Research Station Director, or his or her designee, will be responsible for any studies or research conducted in the RNA. The Northern Research Station Director, or his or her designee, will evaluate research proposals and coordinate all studies and research in the area with the Chequamegon-Nicolet RNA Coordinator and District Ranger.

Congressionally Designated Areas - St Peters Dome RNA does not occur within any other administratively or congressionally designated areas.

b. JUSTIFICATION SECTION

(1) JUSTIFICATION STATEMENT

St. Peters Dome RNA represents a unique opportunity to protect a large block of northern mesic forest growing on a bedrock-controlled landtype (Spickerman 1996) known as the Penokee/Gogebic Iron Range (see section 4 b(1) *Eco-Region*). The RNA features the widest range of elevation gradients found anywhere on the CNNF and there are extensive areas of eastern hemlock, white pine (*Pinus strobus*), and northern white cedar (*Thuja occidentalis*) regeneration, along with numerous rare plants and animals. It contains one of the most complete plant species assemblages on the CNNF (Table 4 - Flora). The RNA will provide long-term protection for a significant geo-hydrological feature, rare plant habitat and a segment of a narrow, high quality stream. Specifically, the site overlooks one of Wisconsin's highest waterfalls – a series of cascades 80 feet in height. The *St. Peters Dome* prominence (Title Page photo) has had a long history of being a “special place” in Wisconsin. The RNA is part of a large protected area: it adjoins a large Forest Special Management Area (SMA) and is connected to the *Brunsweller and Mineral Lake RNA* via the *Lake Three Old Growth Management Area* (Figure 11).

(2) PRINCIPAL DISTINGUISHING FEATURES

St. Peter's Dome RNA features a creek situated on a scenic chasm surrounded by second-growth northern hardwood forest (Smith and Meyer 1986). The creek descends the Lake Superior

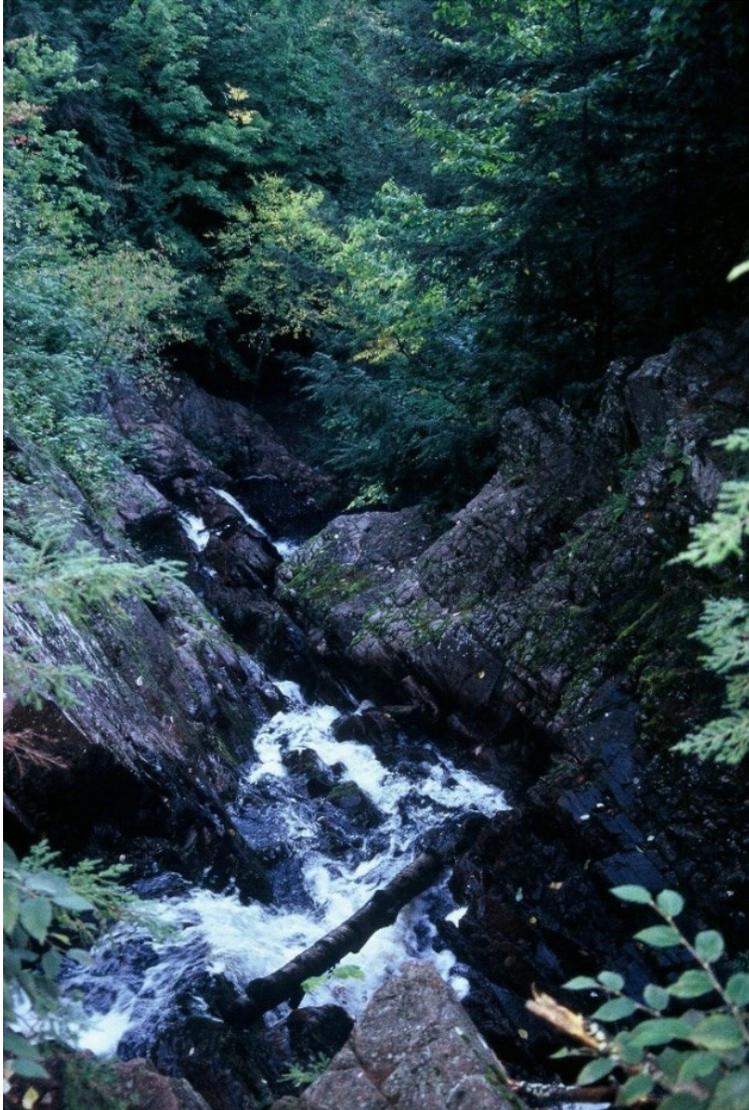


Figure 2. Principle distinguishing features of St Peters Dome RNA are the streams and granitic rock that support rare plants. The photo above is taken from the top of Morgan Falls, the third highest falls in the state. (S. Spickerman 1995)

escarpment in a gorge, which follows a fracture in Keweenawan granite (Figure 2). The gorge contains several low cliffs and occasional vertical cliffs, both moist and dry. Most of the lower gorge slopes are composed of large moss-covered boulders. Several un-named perennial and ephemeral streams flow through this boulder area. The exposed bedrock features are used extensively by university groups studying Precambrian geology.

Plant communities include upland northern mesic forest with extensive stands of maturing eastern hemlock-hardwoods, rich sugar maple-basswood forest and significant inclusions of "old growth-like" forest as well as maturing older seral stage forest (Spickerman 1996). Other forest types include black ash (*Fraxinus americana*)-northern white cedar swamp, mixed swamp conifer, and dry-mesic forest. Notable due to their relative rarity is the presence of extensive areas of Canada yew (*Taxus canadensis*) and upland regeneration of northern white cedar, eastern hemlock, and eastern white pine. Other important features within the site include rare and uncommon

plant and animals species, exposed cliffs and talus, headwaters of several important cold water streams, and a full range of forest development from older seral to old growth-like stages. Additionally, the interior of this site is a remote and roadless tract adding to both its aesthetic and ecological value.

This site is embedded within an area recognized by the Wisconsin Bird Conservation Initiative as the *St Peters Dome Important Bird Area* which by definition provides essential habitat to one or

more species of breeding or non-breeding birds (Steele 2007). The identification of a site as an Important Bird Area carries no legal status or regulatory requirements.

(3) OBJECTIVES

St Peters Dome RNA was recommended for RNA designation in the 2004 Chequamegon and Nicolet National Forest Land and Resource Management Plan (hereinafter referred to as “2004 CNNF Forest Plan”) and is incorporated by reference per the page citations that occur in this Establishment Record (USDA Forest Service 2004a pg 3-50). Objectives in the 2004 CNNF Forest Plan state that “RNAs and candidate RNAs (MA8E) and Special Management Areas (MA8F), as well as Old Growth and Natural Features Complexes (MA8G) serve in the role of minimum management requirements, because they cumulatively function as important contributors for sustainable ecosystem management including the provision of a long-term increase in security of species viability and diversity” (USDA Forest Service, 2004c p. 10). These include plant communities that are part of a larger network of ecosystems represented across the region and nation.

The St Peters Dome RNA is one of thirty areas on the CNNF that will be managed to meet the research and educational objectives of the national RNA program for research, education, and maintenance of biological diversity. The specific objectives of this RNA are to preserve an array of pristine representative areas that typify the important forest and riparian community types of northern Wisconsin. It provides a refuge for numerous populations of rare plants and animals. It also contains geological characteristics of scientific interest and importance. It serves as a control area for study of the effects of forest management elsewhere and as a study site where succession is well-advanced. Here succession will occur naturally following community-changing events such as wind throw and beaver flooding.

c. LAND MANAGEMENT PLANNING

The alternative effects on RNA establishment were analyzed and disclosed in the Final Environmental Impact Statement (USDA Forest Service 2004b pg 3-110) and Record of Decision (USDA Forest Service 2004c pg 9). St Peters Dome RNA is part of a national network of ecological areas designated in perpetuity for research and education, and to provide important components of biological diversity for the CNNF.

The RNAs and candidate RNAs on the CNNF have been assigned to a management prescription (8E) that is consistent with RNA objectives (USDA Forest Service 2004c pg 9). Management Area 8E is characterized by ecologically significant natural features and representative ecosystems. It includes a broad array of community types occurring on the range of landforms and soil types that occur on the Chequamegon-Nicolet National Forest. Plant communities are generally of an older age class and contain all or most species characteristic of that community in the region (Appendix 3 - *Forest Management Area Direction* and USDA Forest Service 2004a pg 3-50).

d. MANAGEMENT PRESCRIPTION

The management prescription for St Peters Dome RNA is embodied in the management area direction and guidance presented in the 2004 CNNF Forest Plan.

The CNNF has not developed an individual site management plan for St Peters Dome RNA. When developed, such a plan will provide more specific detail of management needs and ensure that the objectives for which the RNA was created are met. In general, the management objectives are to allow natural processes to drive the structure and function of the ecosystems. Any site plans will be coordinated with the state as this is also a State Natural Area and as such has compatible management goals (WI DNR 2011). The CNNF non-native invasive plant strategy (USDA Forest Service 2009) will detect, manage and prevent the spread of invasive plants. Research Natural Areas are high priority for monitoring and controlling invasives.

Refer to Appendix 1, section f.(1) *Potential or existing conflicts* to reference unique management issues that should be addressed for this RNA.

e. USE OR CONTROL OF FIRE AND GRAZING

Fire is not generally used as a management tool in these mesic community types. Fire is allowed if needed for specific objectives; however, fire has not been identified as a management need. Fire Management Guidelines in 2004 Chequamegon-Nicolet National Forests Land and Resource Management Plan are listed in Appendix 3- *Forest Management Area Direction*.

Occasional wildfires do occur in dry years, but they are most often small in size; usually less than one acre (0.4 ha), limited by lack of fuel, and easily suppressed. Spring fires that occasionally occur in wetlands can be as large as 100 acres (40 ha). Wildfire suppression within the RNA would employ those methods that cause the least disturbance.

There is currently no grazing on the Chequamegon-Nicolet National Forest, nor is grazing allowed in RNAs per 2004 CNNF Forest Plan standard.

4. APPENDIX 1 ECOLOGICAL EVALUATION

The following ecological evaluation is included as an appendix to the establishment record and tiers to the 2004 CNNF Forest Plan (USDA Forest Service 2004a) and to the Environmental Impact Statement (USDA Forest Service 2004b). This evaluation provides the initial baseline information for the Research Natural Area, serves as a source of data for reports on the Research Natural Area program, and provides information to researchers seeking research sites or projects. . More specific information on research sites can be obtained from the Forest RNA Coordinator.

a. PHYSICAL SITE DESCRIPTION AND CLIMATIC CONDITIONS

(1) LOCATION

St Peters Dome RNA is located on the Great Divide Ranger District of the Chequamegon-Nicolet National Forest, Ashland County, in the state of Wisconsin approximately 15 miles (24 km) south of Ashland. The RNA's Mercator coordinates are 46° 22' N latitude and 90° 54' W longitude (map datum WGS 84).

See Establishment Record Identification Section for *Location Map* and *Boundary Map*.

(2) SIZE IN ACRES/HECTARES

The RNA is comprised of 2,268 acres (918 hectares). Together with the adjoining Forest Special Management Area block, the size of the complex is approximately 5,000 acres (2,000 ha).

(3) ELEVATION RANGE

Elevations range from 1,160 feet (354 m) to 1,560 feet (476 m) above sea level. As a comparison, the highest point in Wisconsin is Timm's Hill in Price County at 1,952 feet (5959 m) about 100 miles (160 km) to the south of St Peters Dome.

(4) ACCESS TO THE SITE

The RNA is approximately 15 miles (24 km) south of Ashland, Wisconsin with access from FR 199 (Morgan Falls Road), which runs along the western boundary of the site (see Identification Section: *Location Map* and *Boundary map*). The RNA is within a larger non-motorized management area. Walking is the only way to access the interior. The most remote portions of the site are 1.5 miles (2.4 km) from any road that is open to motor vehicles. There is a small parking area (not mapped) on Forest Road 187 two miles south of County Highway C which provides access to the Morgan Creek area above the gorge. From here one can walk an old road formerly used as the un-

groomed *Veikko Ski Trail*. Both a hiking and a snowmobile trail shown on the *Boundary Map* provide access to the largest portions of the RNA.

(5) CLIMATIC DATA

The weather of this area is greatly affected by its proximity to Lake Superior, especially in winter when lake-effect storms bring high amounts of snow. The weather station nearest to the St Peters Dome RNA is Ashland Experimental Farm (station no. 470349, latitude 46°34' N, longitude 90° 58' W) about 15 miles (24 km) north of the RNA. Precipitation amounts in the RNA may vary from the weather station. This station recorded temperature and precipitation data since 1900 (Midwestern Regional Climate Center 2003).

Table 1. Climate Data for St Peters Dome RNA from 1905 to 2000

Temperature	°F	°C
Mean annual	40.5	4.7
Mean April through September	57.0	13.9
Mean October through March	24.0	-4.4
Average daily maximum	51.3	10.7
Average daily minimum	29.7	-1.3
Record high	107.0	41.7
Record low	-41.0	-41.0
Precipitation	in	mm
Average annual rainfall	30.0	762.5
Average monthly - April through September	20.1	50.8
Average monthly - October through March	9.9	25.1
Average annual snowfall	58.0	1473.0

b. ECOLOGICAL DESCRIPTION

Nomenclature for flora follows the USDA PLANTS database (USDA, NRCS. 2012); nomenclature for birds follows AOU Checklist (1983); nomenclature for vertebrates follows Watermolen & Murrell (2001). In Wisconsin, commonly used references for describing ecosystems include Forest Habitat Types (Kotar 2002) and Natural Communities (Curtis 1959).

(1) ECO-REGION (TO THE LOWEST LEVEL OF DETAIL CURRENTLY AVAILABLE).

St. Peters Dome RNA is located in the Laurentian Mixed Forest Province, 212J Southern Superior Section, Subsection 212Jb Penokee/Gogebic Iron Range of the Ecological Units of the Eastern United States (Cleland et al. 2007). It includes Land Type Association (LTA) Jb01 Penokee/Gogebic Iron Range.

(2) PLANT COMMUNITY TYPES

The northern mesic forest (Figure 4) is dominated by sugar maple (*see Table 4 -Flora, for scientific names*) and basswood with scattered eastern hemlock, yellow birch, northern white cedar, and pockets of mature white pine. Regeneration of white pine, hemlock, and white cedar is good and there are stable populations of Canada yew, a species of CNNF management concern.

Common shrubs include mountain maple, alternate-leaved dogwood, red elderberry, leatherwood, and American fly-honeysuckle (Smith and Meyer 1986).

The understory is rich with one of the most complete species assemblages on the CNNF including fourteen species of fern. Some areas contain very nutrient-rich mesic soils that support a diverse flora (Figure 5).

Herbaceous species common throughout the northern mesic forest include Carolina spring-beauty, large-flowered and nodding trillium, bellwort, rosy twisted-stalk, trout-lily, wild leek, wild ginger, red baneberry, and blue cohosh. White mandarin (*Streptopus amplexifolius*), a species of special concern in Wisconsin, is also present.

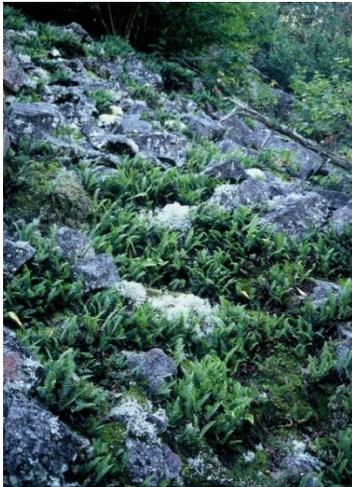


Figure 3. Open granitic talus plant community with Rock polypody (*Polypodium virginianum*) ferns and lichen (Photo by S. Spickerman)



Figure 4. A northern mesic forest community with eastern hemlock, yellow birch and sugar maple. In areas such as above, dense conifer tree cover results in sparse ground flora (Photo by S. Spickerman)



Figure 5. A maple/basswood community with rich mesic soils supports dense spring ephemeral flora (Photo by S. Spickerman)

Also present are high quality representatives of open cliff and talus communities. The open cliff faces, talus (Figure 3) and cliff tops support an overstory of white pine, red pine, northern white cedar, mountain maple, gooseberries, blueberry, and bearberry. Herbs include pale corydalis, columbine, long-leaf bluet, and numerous ferns. Of interest is the presence of three rare fern species: fragrant fern (*Dryopteris fragrans*), spreading wood fern (*Dryopteris expansa*) and state-threatened Braun's holly fern (*Polystichum braunii*) (Spickerman 1996; Smith and Meyer 1986).

Table 2. Natural vegetation community types within St Peters Dome RNA using common classification systems for Wisconsin (Curtis 1959 and Kotar et al. 2002) and NGDC (2013)

Community Type (Curtis 1959)	Habitat types (Kotar et al. 2002)	Dominant Species	NVCS Associations* (NGDC 2012)
Northern mesic forest	AViO	sugar maple, basswood	Acer saccharum - Tilia americana / Ostrya virginiana / Lonicera canadensis Forest CEGLO02458 or: Acer saccharum - Betula alleghaniensis - (Tilia americana) Forest CEGLO02457
Northern mesic forest	ATD	hemlock, yellow birch, sugar maple	Tsuga canadensis - Acer saccharum - Betula alleghaniensis Forest CEGLO05044
Northern wet-mesic forest	TMC	hemlock, white cedar, white pine	Pinus strobus - Tsuga canadensis Great Lakes Forest CEGLO02590
Northern dry-mesic forest on bedrock	PMV	white pine, red pine, white cedar	not immediately recognizable
Northern hardwood swamp	N/A	black ash, red maple, yellow birch	Fraxinus nigra - Mixed Hardwoods - Conifers / Cornus sericea / Carex spp. Forest CEGLO02105
Shaded cliff	TMC	hemlock, white cedar, <i>Dryopteris</i> sp	Thuja occidentalis - Betula alleghaniensis Forest CEGLO02450
Open cliff	N/A	bearberry, <i>Woodsia</i> sp	Igneous - Metamorphic Northern Dry Cliff Sparse Vegetation CEGLO02300
Stream: fast, soft, cold (Morgan Creek) spring fed	N/A	N/A	N/A
Lake: shallow, soft seepage (Long Lake)	N/A	cattail, sedges, water lilies, water-shield	Nymphaea odorata - Nuphar Herbaceous Vegetation CEGLO02562
Open bog small pockets	N/A	leatherleaf-sphagnum	Chamaedaphne calyculata - Ledum groenlandicum - Kalmia polifolia Bog Dwarf-shrubland CEGLO05278
Northern sedge meadow	N/A	Bluejoint grass, sedges	Calamagrostis canadensis - Eupatorium maculatum Herbaceous Vegetation CEGLO05174
Ephemeral ponds	N/A	N/A	N/A

* These National Vegetation Classification System associations are preliminary.

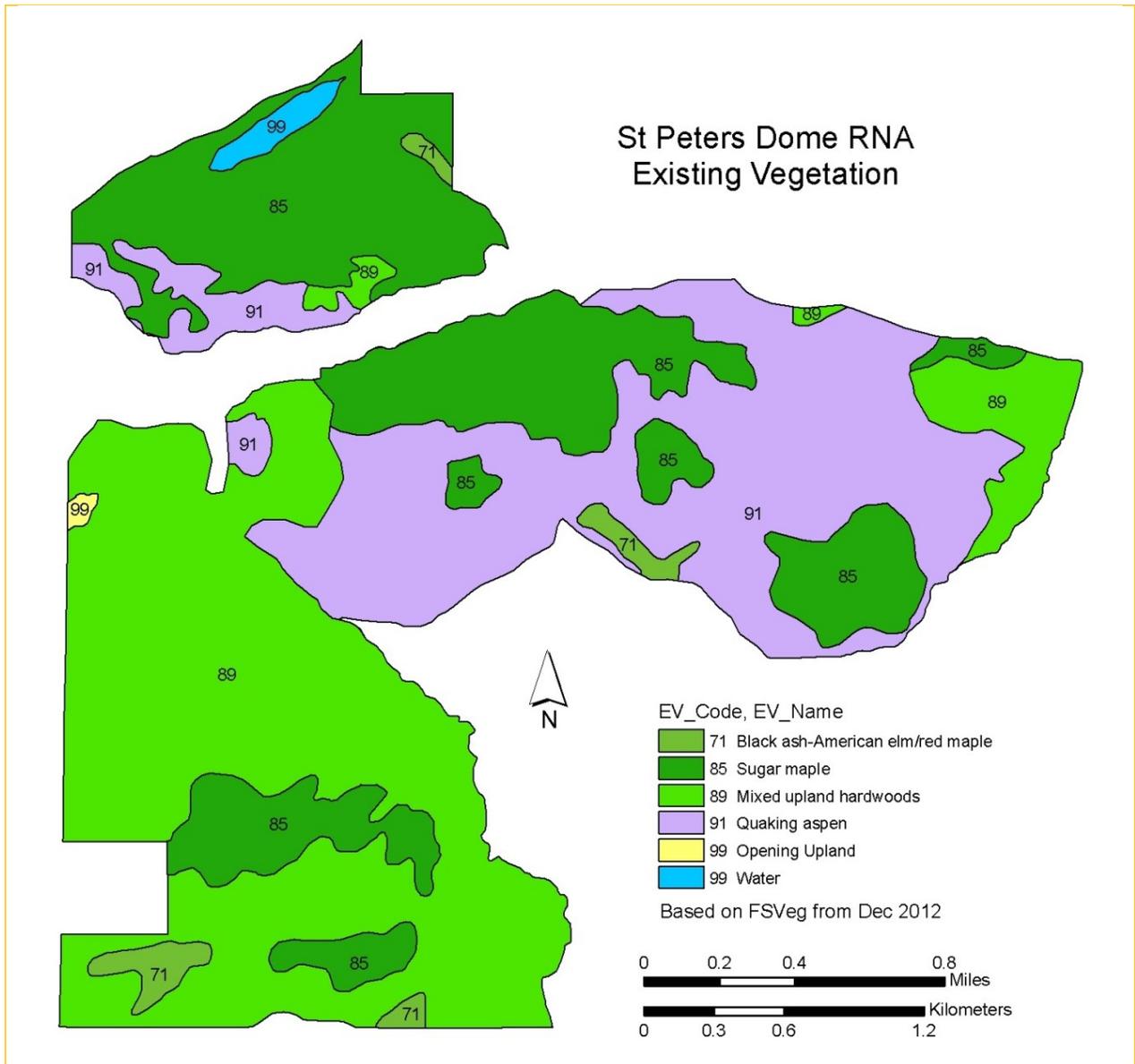


Figure 6. Existing Vegetation (formerly Forest Type) in St Peters Dome RNA (CNNF data)

Table 3. Existing Vegetation (as dominant tree cover) in St Peters Dome RNA and key to Figure 6

EV Code	Existing Vegetation (EV)	Acres	Hectares
71	Black ash-American elm/red maple	41.8	16.9
85	Sugar maple	664.1	268.7
89	Mixed upland hardwoods	906.4	366.8
91	Quaking aspen (older; transitioning to hardwood)	634.9	256.8
99	Opening Upland	3.5	1.4
99	Water	17.1	6.9
Grand Total		2267.8	917.5

(3) DESCRIPTION OF THE VALUES OF THE RESEARCH NATURAL AREA.

(A) FLORA LIST

The flora in Table 4 is fairly complete and is based on surveys in the 1990s. More survey work is needed in the wetlands and Long Lake.

Table 4. Flora of St Peters Dome RNA based on Spickerman surveys of 1990s (USDA PLANTS 2012)

Scientific name	Common Name
<i>Abies balsamea</i>	balsam fir
<i>Acer rubrum</i>	red maple
<i>Acer saccharum</i>	sugar maple
<i>Acer spicatum</i>	mountain maple
<i>Actaea pachypoda</i>	white baneberry
<i>Actaea rubra</i>	red baneberry
<i>Adiantum pedatum</i>	maidenhair fern
<i>Allium tricoccum</i>	wild leek
<i>Amelanchier sp</i>	serviceberry
<i>Anemone quinquefolia</i>	woods anemone
<i>Apocynum androsaemifolium</i>	spreading dogbane
<i>Aralia nudicaulis</i>	wild sarsaparilla
<i>Aralia racemosa</i>	spikenard
<i>Arisaema triphyllum</i>	jack-in-the-pulpit
<i>Asarum canadense</i>	wild ginger
<i>Aster lateriflorus</i>	calico aster
<i>Aster macrophyllus</i>	big-leaf aster
<i>Athyrium filix-femina</i>	lady fern
<i>Betula alleghaniensis</i>	yellow birch
<i>Betula papyrifera</i>	paper birch
<i>Botrychium lanceolatum v. angustisegmentum</i>	lance-leaved grapefern
<i>Botrychium matricariifolium</i>	daisy-leaved grapefern
<i>Brasenia schreberi</i>	watershield
<i>Caltha palustris</i>	marsh marigold
<i>Cardamine concatenata</i>	cut-leaf toothwort
<i>Carex arctata</i>	drooping woodland sedge
<i>Carex intumescens</i>	greater bladder sedge
<i>Carex lasiocarpa</i>	woollyfruit sedge
<i>Carex pedunculata</i>	long-stalked sedge
<i>Carex pensylvanica</i>	Pennsylvania sedge
<i>Carex stipata</i>	awl-fruit sedge
<i>Caulophyllum thalictroides</i>	blue cohosh

Scientific name	Common Name
<i>Chamaedaphne calyculata</i>	leatherleaf
<i>Chimaphila umbellata</i>	pipsissewa
<i>Cinna latifolia</i>	drooping woodreed
<i>Circaea alpina</i>	Dwarf enchanter's nightshade
<i>Claytonia caroliniana</i>	Carolina spring beauty
<i>Clintonia borealis</i>	bluebead lily
<i>Cornus alternifolia</i>	alternate-leaved dogwood
<i>Cornus canadensis</i>	bunchberry
<i>Corydalis sempervirens</i>	rock harlequin
<i>Corylus cornuta</i>	beaked hazelnut
<i>Danthonia spicata</i>	poverty oatgrass
<i>Deparia acrostichoides</i>	silvery glade fern
<i>Dicentra cucullaria</i>	Dutchman's breeches
<i>Diervilla lonicera</i>	northern bush honeysuckle
<i>Dirca palustris</i>	leatherwood
<i>Dryopteris carthusiana</i>	toothed woodfern
<i>Dryopteris expansa</i>	spreading woodfern
<i>Dryopteris intermedia</i>	fancy woodfern
<i>Equisetum arvense</i>	field horsetail
<i>Equisetum hyemale</i>	scouringrush horsetail
<i>Equisetum scorpioides</i>	wiry scouring rush
<i>Equisetum sylvaticum</i>	woodland horsetail
<i>Eriophorum spissum</i>	tussock cottongrass
<i>Erythronium americanum</i>	trout lily
<i>Eupatorium maculatum</i>	spotted joe-pye wed
<i>Eupatorium perfoliatum</i>	boneset
<i>Fraxinus americana</i>	white ash
<i>Fraxinus nigra</i>	black ash
<i>Galium triflorum</i>	sweet-scented bedstraw
<i>Gaultheria procumbens</i>	wintergreen
<i>Glyceria striata</i>	fowl mannagrass
<i>Gymnocarpium dryopteris</i>	oak fern

Scientific name	Common Name
<i>Hieracium aurantiacum</i>	orange hawkweed
<i>Houstonia longifolia</i>	longleaf summer bluet
<i>Huperzia lucidula</i>	shining club-moss
<i>Impatiens capensis</i>	jewelweed
<i>Juncus tenuis</i>	path rush
<i>Kalmia polifolia</i>	bog laurel
<i>Laportea canadensis</i>	Canadian wood nettle
<i>Ledum groenlandicum</i>	Labrador tea
<i>Lonicera canadensis</i>	American fly honeysuckle
<i>Lycopodium annotinum</i>	bristly club-moss
<i>Lycopodium clavatum</i>	running club-moss
<i>Lycopodium dendroideum</i>	northern tree club-moss
<i>Maianthemum canadense</i>	wild lily-of-the-valley
<i>Matteuccia struthiopteris</i>	ostrich fern
<i>Mitchella repens</i>	partridgeberry
<i>Mitella diphylla</i>	two-leaf miterwort
<i>Nuphar variegata</i>	bulkhead lily
<i>Nymphaea odorata</i>	American white waterlily
<i>Onoclea sensibilis</i>	sensitive fern
<i>Oryzopsis asperifolia</i>	roughleaf ricegrass
<i>Osmorhiza claytonii</i>	sweet cicely
<i>Osmunda claytonii</i>	interrupted fern
<i>Ostrya virginiana</i>	ironwood
<i>Oxalis montana</i>	mountain wood sorrel
<i>Panax trifolius</i>	dwarf ginseng
<i>Parthenocissus vitacea</i>	woodbine
<i>Phegopteris connectilis</i>	northern beech fern
<i>Pinus resinosa</i>	red pine
<i>Pinus strobus</i>	eastern white pine
<i>Platanthera psycodes</i>	lesser purple-fringed orchid
<i>Poa alsodes</i>	bluegrass
<i>Polygonatum biflorum</i>	greater Solomon's-seal
<i>Polygonatum pubescens</i>	hairy Solomon's-seal
<i>Polypodium virginianum</i>	rock polypody

Scientific name	Common Name
<i>Polystichum braunii</i>	Braun's hollyfern
<i>Populus balsamifera</i>	balsam poplar
<i>Populus grandidentata</i>	big-tooth aspen
<i>Populus tremuloides</i>	quaking aspen
<i>Prenanthes alba</i>	white rattlesnake-root
<i>Prunus serotina</i>	black cherry
<i>Pteridium aquilinum</i>	bracken fern
<i>Quercus rubra</i>	red oak
<i>Ranunculus abortivus</i>	little-leaf buttercup
<i>Ribes glandulosum</i>	skunk currant
<i>Rubus idaeus</i>	red raspberry
<i>Rubus parviflorus</i>	thimbleberry
<i>Sambucus racemosa</i>	red elderberry
<i>Scirpus cyperinus</i>	woolgrass
<i>Scutellaria lateriflora</i>	blue skullcap
<i>Selaginella rupestris</i>	northern selaginella
<i>Smilacina racemosa</i>	false Solomon's-seal
<i>Solidago flexicaulis</i>	zigzag goldenrod
<i>Sorbus americana</i>	mountain ash
<i>Streptopus lanceolatus v. longipes</i>	rosy twisted stalk
<i>Taxus canadensis</i>	Canada yew
<i>Thuja occidentalis</i>	northern white cedar
<i>Tilia americana</i>	basswood
<i>Trientalis borealis</i>	starflower
<i>Trillium cernuum</i>	nodding trillium
<i>Trillium grandiflorum</i>	large-flowered trillium
<i>Tsuga canadensis</i>	eastern hemlock
<i>Ulmus americana</i>	American elm
<i>Uvularia grandiflora</i>	large-flowered bellwort
<i>Uvularia sessilifolia</i>	sessile bellwort
<i>Vaccinium myrtilloides</i>	velvet-leaf blueberry
<i>Verbascum thapsus</i>	common mullein
<i>Viburnum acerifolium</i>	mapleleaf viburnum
<i>Viola canadensis</i>	Canadian white violet
<i>Viola pubescens</i>	downy yellow violet
<i>Woodsia ilvensis</i>	rusty woodsia fern

(B) FAUNA LIST

Faunal observations are those species encountered during 1990s ecological surveys (Spickerman; Krause; Hoffman). The area needs a more thorough survey for reptiles, amphibians, small mammals, and insects.

Table 5. Fauna of St Peters Dome RNA (AOU Checklist 1983; Watermolen & Murrell 2001)

St Peters Dome Fauna List	
Common Name	Scientific Name
Birds	
Turkey vulture	<i>Cathartes aura</i>
Broad-winged hawk	<i>Buteo platypterus</i>
Northern goshawk	<i>Accipiter gentilis</i>
Barred owl	<i>Strix varia</i>
Pileated woodpecker	<i>Dryocopus pileatus</i>
Yellow-bellied sapsucker	<i>Syphyrapicus varius</i>
Downy woodpecker	<i>Picoides pubescens</i>
Common raven	<i>Corvus corax</i>
Winter wren	<i>Troglodytes troglodytes</i>
Hermit thrush	<i>Catharus guttatus</i>
Veery	<i>C. fuscescens</i>
Wood thrush	<i>Hylocichla mustelina</i>
Black-throated green warbler	<i>Dendroica virens</i>
Black-throated blue warbler	<i>Dendroica caerulescens</i>
Ovenbird	<i>Seiurus aurocapillus</i>
Scarlet tanager	<i>Piranga olivacea</i>
White-crowned sparrow	<i>Zonotrichia leucophrys</i>
Northern goshawk	<i>Accipiter gentilis</i>
Black-throated blue warbler	<i>Dendroica caerulescens</i>
Reptiles and Amphibians	
American toad	<i>Bufo americanus</i>
Wood frog	<i>Rana sylvatica</i>
Northern Green frog	<i>Rana clamitans melanota</i>
Mink frog	<i>Rana septentrionalis</i>
Eastern gray tree frog	<i>Hyla versicolor</i>
Northern Spring peeper	<i>Pseudacris crucifer</i>
Blue spotted salamander	<i>Ambystoma laterale</i>
Wood turtle	<i>Glyptemys insculpta</i>
Mammals	
Timber wolf	<i>Canis lupus</i>
Whitetail deer	<i>Odocoileus virginiana</i>
American beaver	<i>Castor canadensis</i>
American marten	<i>Martes americana</i>
Fish	
brook trout	<i>Salvelinus fontinalis</i>
brown trout	<i>Salmo trutta</i>
common shiner	<i>Notropis cornuta</i>
blacknose dace	<i>Rhinichthys cataractae</i>
johnny darter	<i>Etheostoma nigrum</i>
central mudminnow	<i>Umbra limi</i>
redside dace	<i>Clinostomus elongatus</i>

(C) GEOLOGY

The geology of northern Wisconsin was shaped by long periods of cooling climate and expansion of glaciers; the last expansion is known as the Wisconsin Glaciation. This glacial advance began about 26,000 years ago when the Laurentide Ice Sheet spread across the continent. As this glacier retreated, till deposition and glacial melt-water formed an irregular landscape of hills pocked with depressions that later became lakes and wetlands (WGNHS 2011).

Bedrock of this area is igneous, metamorphic, and volcanic rock (WI DNR 2003). The bedrock is between 50 and 5 feet (15 to 1.5 m) of the land surface. Glacial morphological process was till deposition.



Figure 7. An open cliff of Morgan Creek gorge in the northeast part of the RNA. The creek here has been flooded by beaver in the past setting back succession. (Photo by S. Spickerman 1995)

(D) SOILS

The majority of soils within the RNA fall into the Gogebic-Michigamme-Rock series (US Forest Service 2003a).

The Gogebic series consists of undulating soils that are well to excessively drained. The soils have a sandy loam, fine sandy loam, and/or loam surface texture over sandy loam and loamy sand glacial till. The underlying material is most often a loamy sand, but a considerable amount of material that is a borderline sandy loam-loamy sand texture can be found. These soils occupy areas of upland, coarse ground moraine, non-drumlinoid till. Many surface and subsurface stones are common and can be obstructive in some areas. The major timber species are sugar maple, basswood, ash, aspen, and paper birch. Common associates are balsam fir, red maple, yellow birch, red oak, hemlock, and ironwood.

The ELTP of the Gogebic-Michigamme-Rock series consists of hilly to steep well drained soils. Areas of moderately well drained soils are found intermingled with well drained soils. Prominent bedrock outcrops are common (Figure 7). The soils typically have a fine sand or a very fine sandy loam surface over bedrock, which is usually within 40 inches of the surface. An estimate of 2-10 percent of the surface area of this Ecological Land Type Phase (ELTP) is bedrock outcrops that are typically elongated knobs, oriented in an east-west or northeast-southwest direction. Their size ranges from 10 to 50 feet (3-15 m) in width, and 20 to 300 feet (6-90 m) in length. Locally, high concentrations of surface rock fragments may be present (Figure 3). This ELTP is associated with the resistant quartzite formation (the Penokee-Gogebic Range) that had been scoured by several glacial advances. It also includes smaller monadnocks isolated from the main body of the Penokee-Gogebic Range. Upland hardwoods with a heavy sugar maple component are the dominant tree species. Other species that can be found are basswood, white ash, and to a lesser extent, yellow birch, white birch, aspen, red maple, and white spruce.

(E) TOPOGRAPHY

The characteristic landform pattern of this Land Type Association is hilly, bedrock-controlled moraine (Wisconsin Department of Natural Resources 2003). Topography is rolling to hilly with exposed granitic cliffs, outcrops (Figure 7), and talus slopes (Figure 3) (Spickerman 1996). This RNA contains some of the steepest terrain on the Forest as well as its highest point (see Identification Section; Boundary map).

(F) AQUATIC/RIPARIAN

St Peters Dome RNA is located in the Lake Superior basin and the Marengo River Sub-watershed. The Marengo is contained within the Bad/Montreal Watershed. Due to erosion and sedimentation caused by land use, topography, and geologic conditions within the watershed, the Marengo River Watershed has become an important focus area for highlighting “slow the flow”; the key management strategy to reducing sedimentation in Wisconsin’s Lake Superior Basin (WI DNR 2013).

Morgan Creek is a spring feeder stream flowing west then north into the Marengo River (Sather and Threinen 1966). It is a good quality brook trout stream that also has a few brown trout present. Another un-named creek flows north and spills 80 feet (24 m) over an escarpment as Morgan Falls (Figure 14) into Morgan Creek. Note that some documents refer to the falls as formed by Morgan Creek.

The 20-acre Long Lake is a soft-water seepage lake. Littoral vegetation here consists of cattail, sedges, water lilies, and watershield. The RNA also contains several ephemeral woodland ponds that are habitat for forest frogs and salamanders.

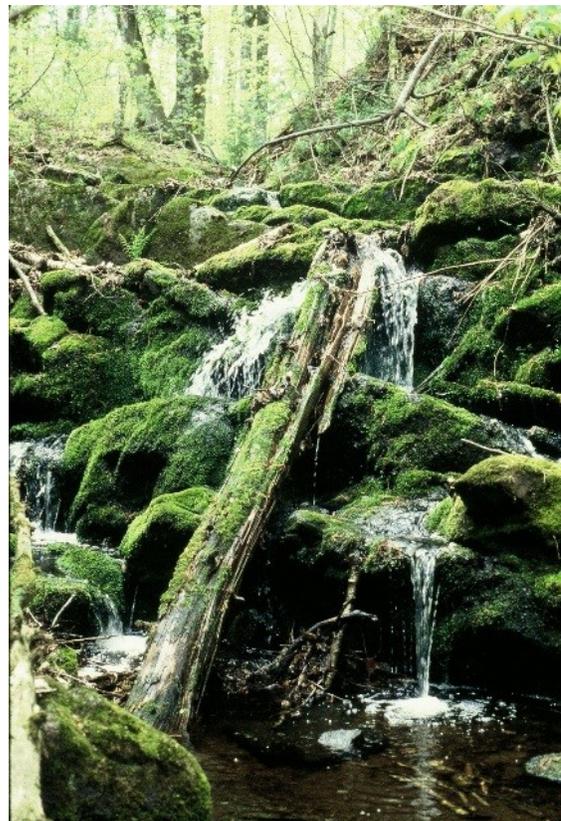


Figure 8. A seepy hillside where groundwater pushes out from the rock is habitat for rare ferns (Photo by S. Spickerman 1995)

In places, groundwater seeps out of the rocky substrate of the hillside (Figure 8) providing a unique microhabitat that is vital to some plant species especially Braun’s hollyfern (Figure 9) and spreading woodfern.

(G) RARE, THREATENED, ENDANGERED, OR SENSITIVE SPECIES

Table 6. Threatened, endangered, and unique species in St Peters Dome RNA, State status and Natural Heritage rank

Common Name	Scientific Name	Global Rank, State Status, State Heritage Rank ¹
PLANTS		
Braun’s holly fern	<i>Polystichum braunii</i>	G5, THR, S3
White mandarin	<i>Streptopus amplexifolius</i>	G5, SC, S3
Spreading wood fern	<i>Dryopteris expansa</i>	G5, SC, S2
Fragrant wood fern	<i>Dryopteris fragrans</i>	SC, S3
Purple clematis	<i>Clematis occidentalis</i>	no longer listed - uncommon on CNNF
Canada Yew	<i>Taxus canadensis</i>	G5, S4, SC CNNF management concern
ANIMALS		
Timber wolf	<i>Canis lupus</i>	G4, SC/P, S4
American marten	<i>Martes americana</i>	G5, END, S2
Wood turtle	<i>Glyptemys insculpta</i>	G4, THR, S2
Northern goshawk	<i>Accipiter gentilis</i>	G5, SC/M, S2B,S2N
Redside dace	<i>Clinostomus elongatus</i>	G3G4, SC/N, S3S4

¹ see Appendix 4: *Wisconsin Natural Heritage Working List – Rank Definitions*



Figure 9. The state threatened Braun’s Hollyfern (*Polystichum braunii*) is a handsome and distinctive species that occurs infrequently in the RNA. It is found in Wisconsin only in the north and within a narrow range in North America (Photo by S. Spickerman)

(H) LIST OF RARE ELEMENTS AND RARE PLANT COMMUNITIES

Table 7. Rare Natural Elements and Plant Communities of St Peters Dome RNA with Global and State rank

Element/Community Name	Global Rank	State Rank ¹
Talus Forest	G4G5	S1
Moist cliff	GNR	S4
Dry cliff	G4G5	S4
Northern Wet Forest	G4	S3
Northern Wet-Mesic Forest	G3?	S3S4
Northern Sedge Meadow	G4	S3
waterfall (one of 10 highest in WI)	none	none

¹ see Appendix 4: *Natural Heritage Working List-Rank Definitions*

This site is embedded within an area recognized by the Wisconsin Bird Conservation Initiative as the *St Peters Dome Important Bird Area* which by definition provides essential habitat to one or more species of breeding or non-breeding birds (Steele 2007). The identification of a site as an IBA carries no legal status or regulatory requirements.

c. RESOURCE INFORMATION

This section discusses resources that occur in the RNA framed *within the context of potentially conflicting uses*. St Peters Dome RNA is owned outright by the United States government and is administered by the USDA Forest Service, Chequamegon-Nicolet National Forest.

(1) MINERALS

The mineral estate within the RNA includes portions that are federally owned, reserved, and outstanding. Federal-owned, outstanding, and reserved minerals are open to hardrock prospecting within the Research Natural Area and the Forest Service must allow access to the surface to the mineral owner. There is potential for hardrock prospecting activity within RNA based on geology and recent hardrock prospecting permit activity in surrounding counties. The state of the knowledge of the bedrock geology and where actual ore bodies may be found (if they exist and are commercial) is not precise enough to assign relative probability of prospecting activity within the RNA (Knight pers. comm. 2013).

There are currently no active prospecting permits within the RNA. Forest RNA Standards and Guidelines regarding minerals are listed in Appendix 3: *Forest Management Area Direction*.

Table 8. Mineral resources within St Peters Dome RNA (CNNF data)

Township-Range	Section	Acres*	Hectares	Mineral ownership	Comments
45N 4W	28	40 balance	16	Federally owned Outstanding	Statement of Mineral Claim filed
	29	160 balance	65	Federally owned Reserved	
	30	120 balance	49	Federally owned Reserved	

	19	80 balance	32	Outstanding Reserved	Statement of Mineral Claim filed
	31, 32	all		Reserved	

Definitions of terms in table:

Outstanding: Third party (mineral rights were not owned by the surface land owner when the land was sold to the National Forest) mineral ownership rights are described in deed and State Law. Forest Service must allow access to the surface to the mineral owner.

Reserved: The surface land owner owned the mineral rights and retained those mineral rights when they sold the surface land to the National Forest. These mineral rights are subject to Secretary of Agriculture's Rules & Regulations and State laws based on date of land purchase. Forest Service must allow access to the surface to the mineral owner.

Federally owned: Mineral estate is administered by Bureau of Land Management and are open for prospecting.

Statement of Mineral Claim was filed by the Forest Service: State of Wisconsin Law provides a way for a surface owner to file for and acquire the Outstanding mineral rights when those rights have become "dormant". Dormant mineral rights are acquired by filing a Statement of Mineral Claim.

All: Means the total acreage within the RNA boundary in that section.

Balance: Means the remaining acreage minus the listed acres within the RNA boundary in that section.

***Acres:** This represents only a rough estimate of the number of acres within the proposed RNA boundary. Mineral ownership acreage is estimated because RNA boundaries are meander lines and mineral ownership is a legal description.

(2) GRAZING

There is no grazing on the Chequamegon-Nicolet National Forest. The 2004 CNNF Forest Plan includes a standard that prohibits grazing in Research Natural Areas (Appendix 3- *Forest Management Area Direction*).

(3) PLANTS (INCLUDING TIMBER AND SPECIAL FOREST PRODUCTS)

The RNA retains a high value for ecological research on the state-threatened Braun's holly fern, which is present in good numbers throughout the site as well as the rare spreading woodfern and fragrant woodfern. Additionally, the widespread advanced regeneration of eastern hemlock, northern white cedar, and eastern white pine provide excellent research opportunities within the RNA. The RNA is predominantly upland forest types that, with the exception of eastern hemlock and northern white cedar, are harvested for timber elsewhere on the CNNF.

The 2004 CNNF Forest Plan includes a guideline that prohibits gathering Special Forest Products for personal use or commercial sale within RNAs (USDA Forest Service 2004a pg 3-50). When the CNNF issues a permit to gather products such as club moss or firewood, the permittee is provided with a map of areas, including RNAs, which are off-limits to harvesting. The CNNF supplement to the Forest Handbook (FSH2409.18) states that "gathering small amounts of fruit, nuts, berries, and fungi (mushrooms) for personal use is allowed" in RNAs.

St Peters Dome RNA at the time of establishment is not designated as an Ojibwe Tribal RNA (Tribal-USDA MOU) which would limit tribal gathering. The CNNF is continuing to work with the Tribes to protect these unique features and to provide for the exercise of treaty-reserved hunting and gathering rights. See Section d.(2) -*Cultural/Heritage* for further discussion.

(4) WATERSHED VALUES

St Peters Dome RNA is within the Marengo River watershed of the Lake Superior Basin. For discussion of watershed values see section B.(3)(f) *Aquatic/Riparian*. The shaded, moist microclimate of Morgan Creek and other gorges supports a healthy population of the state-threatened Braun's hollyfern and other rare plants. The site protects Morgan Falls, one of the highest waterfalls in Wisconsin but the falls itself is not included within the RNA.

(5) RECREATION USE

St. Peter's Dome RNA receives high use by hikers and sightseers drawn to the area to view the falls and make the 1.8 mile (2.9 km) climb of 400 feet (122m) to the "dome". Well-used but narrow hiking trails lead to these two features. The trail to the falls was repaired and rerouted in 2002 to eliminate erosion and side trails. The *Chequamegon Bay Birding and Nature Festival* offers birding and wildflower field trips visit this area every spring. An old road that enters the RNA from the east was for a time a cross-country ski trail (Veikko Ski Trail). It was never groomed and is no longer maintained or mapped but it is still possible to hike on it.

A snowmobile trail crosses a portion of the RNA (see *Boundary Map* in the Identification Section). The CNNF has so far been unsuccessful in establishing a feasible corridor to relocate this trail. No other motorized use is allowed in this large block of about 5,000 acres (2000 ha). In the past, people have used the cliff face at Morgan Falls for technical rock climbing. This activity has been discouraged and seems to have stopped (personal observation). Human use at current levels is compatible with RNA designation. These recreation uses will be regularly monitored and limited if resource damage occurs.



Figure 10. The view from the top of St Peters Dome prominence looking northeast in early autumn. On a very clear day one can just see Lake Superior 15 miles (24 km) to the north. (Photo by Steven Spickerman 1997)

(6) WILDLIFE

The RNA protects a large block of un-fragmented habitat for wildlife in northern Wisconsin. The state threatened wood turtle and American marten as well as the protected goshawk, and red-sided dace utilize this habitat.

Game animals such as white-tailed deer inhabit the area and some hunting occurs. Trout are fished from the streams. These activities have not shown impact in the past and remain compatible with designation. Indeed, harvest of white-tailed deer is desirable to prevent over browsing of sensitive vegetation.

(7) TRANSPORTATION/ROAD SYSTEM

The RNA is bounded on two sides by graveled forest system roads (FR 199 and FR 253) that get a moderate amount of daily traffic compared to other gravel roads on the district. A small parking area off Forest Road 199 outside the RNA accommodates sightseers hiking in to Morgan Falls and St Peters Dome. Snowmobile trail number 209 bisects a portion of the site for approximately one mile (1.6 km) (see *Location and Boundary Maps*). Currently, other than clearing of fallen trees, the snowmobile trail does little to disrupt the site during frozen ground conditions. While past attempts to find a feasible alternative route for this trail were unsuccessful, it will be considered again if resource damage occurs. No other motorized use is allowed within the site per RNA standards and 2004 CNNF Forest Plan designation as a semi-primitive non-motorized Management Area.

The current rule guiding motorized access on the Chequamegon-Nicolet National Forest is contained in the Travel Management Project Decision Notice and Motorized Vehicle Use Map (USDA Forest Service 2012). This map shows roads available for motorized use. No new roads or trails are planned. Native-surface collector roads left over from past management needs are growing in and will be treated if necessary to restore hydrologic, geomorphic, and ecological processes and properties.

d. HISTORICAL INFORMATION

(1) RESEARCH/EDUCATION USE AND INTEREST: HISTORY OF ESTABLISHMENT

Research/Education use:

The RNA contains four baseline vegetation monitoring plots established by the Forest Service in 1990 that have been re-measured four times (see Section e (1)- *Permanent Research Plots*). University botany, ecology, and geology classes have visited many portions of this large site. St Peters Dome is found in Great Wisconsin Birding & Nature Trail Guide: Lake Superior Region and is a Forest Service Wildflower Viewing Area (USDA Forest Service 2014).

History of establishment:

This area has long been known as a special place by both visitors and managers. There have been no timber harvests since 1973 (CNNF stand records). The CNNF began a forest-wide ecological inventory to identify high quality ecological features in the early 1990s (Parker 1999). St Peters Dome was one of the highest ranking sites based on its ecological values. It was assigned a high conservation priority and deferred from management activity. About the same time, the Eastern Region and Northern Research Station undertook a gap analysis of high-quality examples of alliances (ecological communities) within each subsection (Tyrrell et al 2000). This site filled several cells in that gap analysis.

The Natural Heritage Inventory Section of the Bureau of Endangered Resources (Wisconsin DNR) worked closely with Forest ecologists in evaluating this site, making numerous field visits and assisting with ecological inventory and evaluation. They completed a *Site Evaluation* (Smith & Meyer 1986) and recommended St Peters Dome for protection.

The Wisconsin Department of Natural Resources is also interested in achieving ecosystem representation within the State Natural Area Network. They signed a Memorandum of Understanding (MOU) in 2008 with the CNNF to co-designate all current and future RNAs and Forest Special Management Areas (SMAs) as State Natural Areas (WI DNR 2011).

St Peters Dome was identified as a Candidate RNA in the Draft Forest Plan and analyzed in the Environmental Impact Statement. It was recommended for designation as a Research Natural Area in the Land and Resource Management Plan Record of Decision (USDA Forest Service 2004c).

A 2008 region-wide analysis was conducted in conjunction with the Northern Research Station to evaluate all candidate RNAs in the Eastern Region. Based on this analysis, the Eastern Regional Office recommended St Peters Dome for establishment.

(2) CULTURAL/HERITAGE

St. Peter's Dome RNA contains no recorded Native American cultural heritage sites within its boundary (US Forest Service 2003b). There was a campground just east of Morgan Falls that was decommissioned in the 1960s and only a small stone well and fireplace structures remain along the trail to the Dome.

While other Indian tribes currently live in Wisconsin, Ojibwe tribes specifically retained the right to hunt, fish, and gather on lands that make up the CNNF through a series of session treaties. The Forest Service (and Eastern Region, Northern Research Station and USFS Law Enforcement) recognizes treaty rights through a "Memorandum of Understanding" with eleven sovereign and federally recognized tribes of Ojibwe Indians (Tribal-USDA MOU). Today, these treaty rights are being exercised by Ojibwe Indian tribes under rules promulgated and enforced by the tribes. One of these rules recognizes twelve existing RNAs on the CNNF as "Tribal Research Natural Areas" because it is important to protect the unique features that these areas provide. The rule prohibits gathering in Tribal RNAs except for tribally-permitted ceremonial use.

At the time of establishment St Peters Dome RNA has not been adopted as an Ojibwe Tribal RNA which would require that tribal members follow the gathering regulation in the MOU. The CNNF is continuing to work with the Ojibwe Tribes to protect these unique features and to provide for the exercise of treaty-reserved rights. Upon establishment, the Tribes will have an opportunity to also designate it as a Tribal RNA (Tribal-USDA MOU). The 2004 CNNF Forest Plan includes an objective (USDA Forest Service 2004c p. 1-7) that "nothing in this Forest Plan or its implementation (i.e. establishing the RNA) is intended to modify, abrogate, or otherwise adversely affect tribal reserved or treaty guaranteed rights applicable within the CNNF".

(3) DISTURBANCE HISTORY

As most of northern Wisconsin, much of this site was harvested to varying degrees during the cutover era of the late 1800s but pockets of old-growth remain (Spickerman 1996). White pine and eastern hemlock appear to have been the preferred timber species with hardwoods cut to a lesser extent. There has been no cutting within the site since the 1970s. In the prior decades, management consisted of hardwood thinning to 70-80 basal area, elm salvage, scarification for yellow birch establishment, and a small aspen clear cut (CNNF stand records). Generally the steep-sided hills and gorges were not logged and support pockets of large old-growth eastern hemlock, eastern white pine, and northern white cedar. One thirty inch (76 cm) DBH northern white cedar observed in 2012 may be an ancient tree on the order of hundreds of years old (Spickerman, pers comm).

Evidence of small scale granite mining in the early part of the 1900s can be seen along the trail to the *Dome*. The quarry appears to have been operated by the Primax Corp. of Mellen WI with most of the activity happening in the very late 1960's into the early 1970's. The road coming from the south, now the snowmobile trail, was built in 1967 to access the quarry site which operated for only a few years. Only a small amount of rock was ever removed from this area. Forest Service Cultural Resource Inventory documentation on the quarry based on examination of 1939 aerial photos asserts there was mining activity as early as the 1930's. CNNF employees re-examined 1939 photos now available digitally and believe what was thought of as a quarry was in fact, the clear-cut dome and exposed bedrock on the dome's southwest flank where the hiking trail now passes (Spickerman pers. comm.).

(4) OCCURRENCE OF EXOTIC SPECIES

The CNNF has developed an invasive plant strategy (USDA Forest Service 2009) that utilizes adaptive pest management to discover, prioritize, and control non-native invasive plants wherever they occur. Research Natural Areas are high priority for invasives control. Non-native plants observed on trails include orange hawkweed (*Hieracium aurantiacum*) and common mullein (*Verbascum thapsus*) which have been hand-pulled several times.

e. OTHER INFORMATION

(1) ANY PERMANENT RESEARCH PLOTS AND/OR PHOTO POINTS

Beginning in 1990, the CNNF established an extensive set of long-term monitoring plots on the western portion of the forest. The intent was to provide baseline data and a means by which managed forests could be rigorously compared to unmanaged forests for forest health and biodiversity indicators (Vora 1997). St Peters Dome RNA contains four control (unmanaged) plots. Information on this monitoring is available from the CNNF RNA coordinator at Park Falls.

Previous inventories include a WI DNR Natural Heritage Evaluation of selected plant communities (1995), proactive rare plant surveys by the CNNF (1990-1997), and Northland College student survey (1996).

The Station Director shall establish and maintain a system for archiving data and reports from the RNA in a manner that will facilitate the exchange and transfer of information among Stations and scientists. Research data files are maintained by the following office: Chequamegon-Nicolet National Forest, 1170 Fourth Avenue South, Park Falls WI 54552.

Plant collections will be housed at a herbarium located at the University of Wisconsin-Madison Herbarium or a place approved by the Station Director. All animal specimens collected in the course of research will be properly preserved and maintained within the Chequamegon-Nicolet National Forest Supervisor's office or a designated university.

(2) BIBLIOGRAPHY

A listing of citations used in this document, useful references, reports, and journal articles that resulted from study within this RNA are listed in Appendix 2 – *Bibliography*.

(3) POTENTIAL RESEARCH TOPICS

Potential research topics include: Braun's hollyfern, forest succession, dolomite bedrock-controlled communities, and cliff communities with possible ancient trees. More information is needed on bats, aquatic fauna, amphibians, reptiles, and invertebrates. The interior of this site is remote and has low numbers of white-tailed deer due to the steep hills and cliffs and the very deep snow in winter. Because of this there are extensive areas of Canada yew that may be important given its reduction elsewhere in the state.

The Northern Research Station along with the Chequamegon-Nicolet National Forest shall encourage the use of this RNA by scientists and educators. This site has been co-designated by the State of Wisconsin as a State Natural Area and as such appears on their web site (WI DNR 2011).

f. EVALUATION OF SPECIFIC MANAGEMENT RECOMMENDATIONS ON THE RESEARCH NATURAL AREA

(1) POTENTIAL OR EXISTING CONFLICTS; PRINCIPAL MANAGEMENT ISSUES

Forest Service lands to the north and east of St. Peter's Dome RNA are designated for *No Vegetation Management* (6A) and *Special Management Area* (8F) (Figure 11) in the 2004 CNNF Forest Plan. These designations are compatible with RNA status since no timber harvest occurs and natural processes guide the composition and structure. Federal lands to the south are in Management Area 2B *Northern Hardwood: interior forest / restoration emphasis*; an alternative management area managed for larger diameter trees and longer harvest rotations. Management conflicts on boundaries with federal ownership will be minimal.

There is one private forty acre (16 ha) inholding near the southwest corner. The western boundary of the RNA is the proclamation boundary of the National Forest. To the south, across Forest Road 199, half of the 1.5 mile (2.4 km) boundary is private land (see *Identification Section: Boundary Map* and Figure 11).

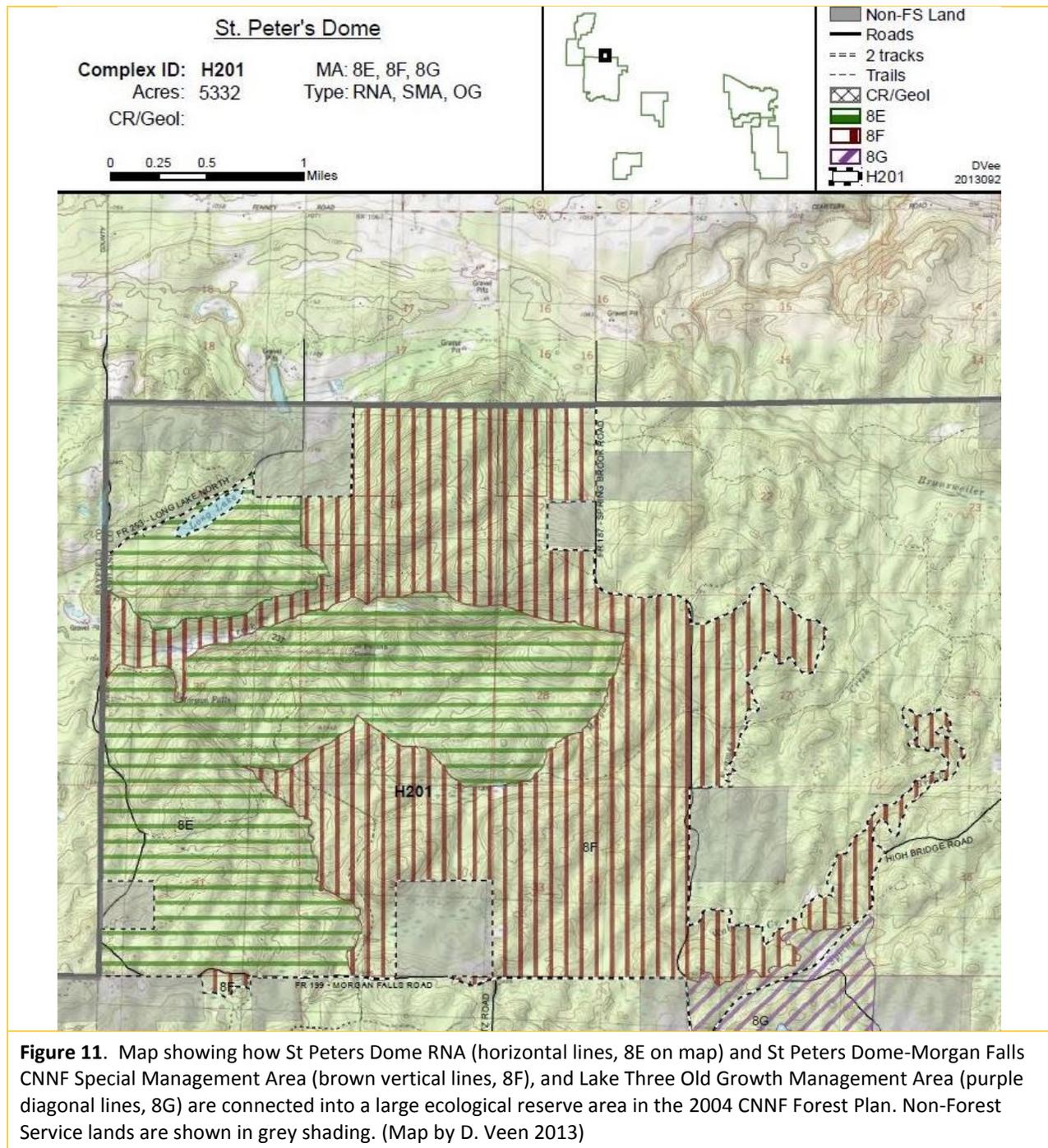
Recreation use holds the highest potential for management conflicts. The entire RNA is within a semi-primitive non-motorized area except for a popular snowmobile trail that traverses the RNA north/south across one portion (see *Boundary Map*). Past use of this trail over frozen ground has not affected the function of the ecosystem. The district has failed to find a practicable alternative route for this trail in the past. If resource degradation occurs the trail will have to be moved. There are no other roads open to motorized vehicle use within the RNA (USDA Forest Service 2012). There is a narrow hiking trail up to "The Dome" that is monitored regularly and no conflicts exist. The hiking trail and Morgan Falls are not within the boundary of the RNA but are regularly monitored for resource damage.

Non-native invasive plants are a potential threat and are a focus of regularly monitoring. See section d.(4) *Occurrence of Exotic Species* for discussion.

Protection and maintenance of St. Peter's Dome Lake RNA is the responsibility of the Great Divide Ranger District, Chequamegon-Nicolet National Forest.

(2) SPECIAL MANAGEMENT AREA IF THE RESEARCH NATURAL AREA IS WITHIN ONE

The St Peters Dome RNA is does not include any lands designated by congress in any special management category.



g. PHOTOGRAPHS

All photographs used in this Establishment Record are the property of CNNF but not copyrighted. Some older slides from the 1990s that have been scanned are with the site file housed in the Park Falls office of the CNNF. An electronic file is part of this establishment record.



Figure 12. Canada yew (*Taxus canadensis*) persists in the site mainly because it is protected from deer browsing due to the steep terrain and deep winter snows. (Photo by S. Spickerman)



Figure 13. Spreading woodfern (*Dryopteris expansa*) is a rare species in Wisconsin. To date on the CNNF it has only been found in moist rocky areas such as found in St Peters Dome RNA. (Photo by S. Spickerman)

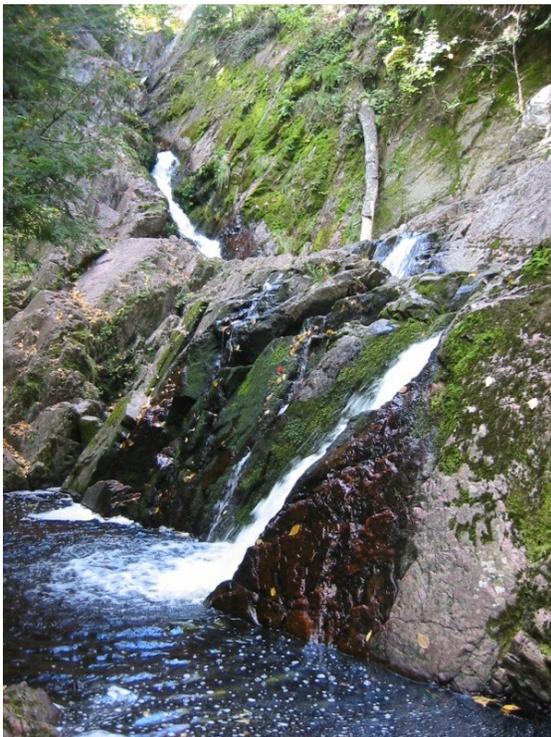


Figure 14. The RNA protects the upper reaches of the stream that forms Morgan Falls, one of the highest waterfalls in the state. The falls are within a Forest Special Management Area. (Photo by S. Spickerman)



Figure 15. Large, old-growth eastern hemlock (*Tsuga canadensis*) occur scattered and in patches throughout St Peters Dome RNA. (Photo by S. Spickerman)

APPENDIX 2 BIBLIOGRAPHY

Below is all literature cited in this establishment record including references useful for researchers and journal articles or publications that have resulted from studies conducted on the site.

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APPENDIX 3 FOREST MANAGEMENT AREA DIRECTION

The management prescription for the St Peters Dome RNA is embodied in the management area (MA) direction and guidance presented in the Chequamegon-Nicolet National Forests 2004 Land and Resource Management Plan under Management Area 8E - Existing and Candidate Research Natural Areas (USDA Forest Service 2004b pg 3-50). A copy of that management prescription follows:

MA 8E Existing and Candidate Research Natural Areas (RNA)

Theme

In this document, the term RNA will refer to both Existing and Candidate Research Natural Areas. MA 8E is characterized by ecologically significant natural features, representative ecosystems, and/or unique areas managed as Candidate or Existing Research Natural Areas. A broad representation of Forest community types is included in this MA. In combination with other RNAs in the nation, they form a national network of ecological areas for research, monitoring, education, and maintenance of biological diversity.

Landscape Description

MA 8E is characterized by nearly level to steep topography with slope gradients ranging from 0 to 30%. Glacial landforms include drumlin ground moraine, collapsed and uncollapsed outwash plains, washed moraines and eskers. The soils range from sandy to silty in the surface over loamy to sandy sediments. Soil moisture regimes range from dry to mesic and nutrient status ranges from poor to rich. A broad array of Forest Habitat Types and LTAs are represented in this MA.

Desired Future Condition

Landscape Composition and Structure

RNAs are chosen as high quality representatives of ecological communities found on the Forest. In general, they exhibit minimal evidence of past human disturbance, and contain all or most species characteristic of that community in the region. They may range in size from less than 100 acres to thousands of acres. They are generally well buffered from incompatible activities on nearby lands. RNAs are meant to include a representation of ecological types and vegetative cover across the Forest. However, composition results primarily from natural ecological processes rather than human-caused activities. As a result, late-successional upland types such as northern hardwoods, northern hardwood/hemlock, and mixed-conifers dominate the MA. A variety of wetland types may be present, from small isolated ponds and bogs to large (over 1000 acre) wetland complexes.

Site-Level Composition and Structure

Compositional diversity typically reflects late successional mature conditions. Dominant upland tree species are sugar maple, hemlock, yellow birch, basswood, and American beech. Lowland areas support tree species such as black spruce, northern-white cedar, and tamarack. Shade-intolerant species such as aspen, white birch, and jack pine are uncommon, limited to areas affected by natural disturbance such as windfall. Ground flora reflects the full diversity of native upland and lowland communities, and is generally unaffected by invading exotics. Structural diversity is complex, with features such as super-canopy trees, snags, den trees, downed woody debris, and canopy gaps commonly found.

Disturbance Regime

Natural ecological processes and natural disturbances shape the landscape-level and site-level vegetation composition. Components of the natural disturbance regime include individual tree throw and infrequent

larger scale blowdown, infrequent low-intensity fire, insect damage, and beaver flooding. Timber harvesting does not occur.

Standards and Guidelines

Minerals

Standard:

- Prohibit the development of new sources of common variety minerals.

Guidelines:

- Surface disturbing mineral activities and will be approved or disapproved on a case-by- case basis where minerals are federally owned. Whenever possible surface disturbance will be limited.
- When surface disturbing mineral exploration and development of reserved and outstanding mineral rights is proposed, consider reasonable alternatives that minimize impacts to RNA values.
- Acquisition of reserved and outstanding mineral rights will be considered on a willing seller / willing buyer basis.
- Existing common variety minerals developments may be utilized. Consider RNA values if full utilization requires vegetation disturbance.

Biological Diversity

Guideline:

- Use native plant species for restoration activities. Use non-native plant species only if they are needed to prevent irreversible resource damage.

Vegetation

Standard:

- Prohibit domestic livestock grazing.

Guidelines:

- Vegetation management is not permitted unless the desired vegetation type would be lost or degraded without treatment. Management practices will approximate the vegetation and processes that govern natural succession.
- Hazard trees may be cut but not removed.

Special Forest Products

Guideline:

- Prohibit the gathering of special forest products for personal use or commercial sale.

Wildlife and Fish

Guideline:

- Wildlife and fish habitat manipulation will not be permitted unless it's consistent with RNA objectives and is needed to maintain the character or purpose of the area.

Fire Management

Guidelines:

- Allow prescribed fire within a prescription designed to accomplish specific RNA objectives where it is part of the natural disturbance regime, where it is needed to maintain or restore ecosystems, and where it is called for in the establishment record.
- Minimize the disturbance of soil and water resources by designing fire suppression activities to fit each individual situation.

Insects and Disease

Guideline:

- Minimize the disturbance of soil and water resources. Minimize control actions against native insects and diseases, and native plant and animal pests. Allow limited control actions to protect adjacent resources or the features for which the research natural area was established.

Recreation

Standard:

- Prohibit recreational use that threatens or interferes with the objectives or purposes for which the RNA was established.

Guidelines:

- Do not install signs or construct trails or other improvements unless they contribute to RNA objectives or area protection.
- Prohibit the use of horses, bicycles, and motorized vehicles on RNA trails.

Heritage Resources

Guideline:

- Protect significant heritage resources by dispersing or limiting public use of RNAs.

Lands

Guideline:

- Clearly identify RNA boundaries, monument corners, and turning points.

Special Uses

Standard:

- Prohibit the establishment of new facilities and corridors for utility rights-of-way.

Guideline:

- Do not issue special use permits except as mandated by law or agreement. Exceptions may be made for research or educational activities. Phase out existing special use permits when feasible.

Facilities

Guideline:

- Do not construct buildings unless they are needed to meet RNA objectives. Existing structures may be maintained.

Transportation Systems

Guidelines:

- Do not construct new roads.
- Restore all decommissioned roads to some level of landscape restoration.

Research

Standard:

- Permit educational and research use as long as it will not result in unacceptable impacts to RNA values.

APPENDIX 4 WISCONSIN NATURAL HERITAGE WORKING LIST – RANK DEFINITIONS

The Wisconsin NHI Working List records which elements are tracked in the state. The working list is revised as species' populations change (increase or decrease) and as knowledge about their status and distribution in Wisconsin increase. The Working List presented here was revised in **2012**. Definitions of ranks are provided below, along with definitions for other abbreviations used in the Working List.

US Status: Current federal protection status designated by the Office of Endangered Species, U.S. Fish and Wildlife Service indicating the biological status of a species in Wisconsin. LE = listed endangered; LT = listed threatened; PE = proposed as endangered; NEP = nonessential experimental population; C = candidate for future listing; CH = critical habitat

State Status: Protection category designated by the Wisconsin DNR. END = Endangered; THR = Threatened; SC = Special Concern.

WDNR and federal regulations regarding Special Concern species range from full protection to no protection. The current categories and their respective level of protection are as follows: SC/P = fully protected; SC/N = no laws regulating use, possession, or harvesting; SC/H = take regulated by establishment of open closed seasons; SC/FL = federally protected as endangered or threatened, but not so designated by WDNR; SC/M = fully protected by federal and state laws under the Migratory Bird Act.

Special Concern species are those species about which some problem of abundance or distribution is suspected but not yet proved. The main purpose of this category is to focus attention on certain species before they become threatened or endangered.

Global Element Ranks

G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or very few remaining individuals or acres) or because of some factor(s) making it especially vulnerable to extinction.

G2 = Imperiled globally because of rarity (6 to 20 occurrences or few remaining individuals or acres) or because of some factor(s) making it very vulnerable to extinction throughout its range.

G3 = Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range (e.g., a single state or physiographic region), or because of other factor(s) making it vulnerable to extinction throughout its range; typically 21-100 occurrences.

G4 = Uncommon but not rare, (although it may be quite rare in parts of its range, especially at the periphery) and usually widespread. Typically >100 occurrences.

G5 = Common, widespread, and abundant (although it may be quite rare in parts of its range, especially at the periphery). Not vulnerable in most of its range.

GH = Known only from historical occurrence throughout its range, with the expectation that it may be rediscovered.

GNR = Not ranked. Replaced G? rank and some GU ranks

GU = Currently unrankable due to lack of data or substantially conflicting data on status or trends. Possibly in peril range-wide, but status is uncertain.

GX = Presumed to be extinct throughout its range (e.g. Passenger pigeon) with virtually no likelihood that it will be rediscovered.

Species with a questionable taxonomic assignment are given a "Q" after the global rank.

Subspecies and varieties are given subranks composed of the letter "T" plus a number or letter. The definition of the second character of the subrank parallels that of the full global rank. (Examples: a rare subspecies of a rare species is ranked G1T1; a rare subspecies of a common species is ranked G5T1.)

State Element Ranks

S1 = Critically imperiled in Wisconsin because of extreme rarity, typically 5 or fewer occurrences and/or very few (<1000) remaining individuals or acres, or due to some factor(s) making it especially vulnerable to extirpation from the state.

S2 = Imperiled in Wisconsin because of rarity, typically 6 to 20 occurrences and/or few (1000-3000) remaining individuals or acres, or due to some factor(s) making it very vulnerable to extirpation from the state.

S3 = Rare or uncommon in Wisconsin, typically 21-100 occurrences and/or 3000-10,000 individuals.

S4 = Apparently secure in Wisconsin, usually with >100 occurrences and >10,000 individuals.

S5 = Demonstrably secure in Wisconsin and essentially ineradicable under present conditions.

SNA = Accidental, non-native, reported, but unconfirmed, or falsely reported.

SH = Of historical occurrence in Wisconsin, perhaps having not been verified in the past 20 years, and suspected to be still extant. Naturally, an element would become SH without such a 20-year delay if the only known occurrence were destroyed or if it had been extensively and unsuccessfully looked for.

SNR = Not Ranked, a state rank has not yet been assessed.

SU = Currently unrankable. Possibly in peril in the state, but status is uncertain due to lack of information or substantially conflicting data on status or trends.

SX = Apparently extirpated from the state.

State Ranking of Long-Distance Migrant Animals

Ranking long distance aerial migrant animals presents special problems relating to the fact that their non-breeding status (rank) may be quite different from their breeding status, if any, in Wisconsin. In other words, the conservation needs of these taxa may vary between seasons. In order to present a less ambiguous picture of a migrant's status, it is necessary to specify whether the rank refers to the breeding (B) or non-breeding (N) status of the taxon in question. (e.g. S2B,S5N).

(http://dnr.wi.gov/org/land/er/wlist/06_2011_Working_List.pdf Last Revised: May 31, 2012)

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APPENDIX 6 LEGAL DESCRIPTION

The St Peters Dome RNA consists of two blocks of land separated from each other by Morgan Creek Special Management Area (see Identification Section: *Boundary Map* and Figure 11). The **north portion** of the RNA is smaller and surrounds Long Lake. The **south portion** is larger and lies south.

St. Peters Dome – north portion T 45 N R 04 W Section 19, 20, 30 (Marengo Lake Quad).
 Located on the Great Divide Ranger District of the Chequamegon-Nicolet National Forest in Ashland County in the State of Wisconsin.

Beginning at the East ¼ corner of Section 19,
 Thence south along the East line of Section 19, approximately 1367 feet to the South ROW of an old road used as a ski trail (GIS mapped as FR W217102),
 Thence southeasterly along the South ROW of FR W217102 approximately 225 feet to an unnamed stream,
 Thence southeasterly along the unnamed stream 719.26 feet,
 Thence Southwesterly the following courses:

Direction	Distance in feet
S 18 E	270.00
N 59 W	101.40
N 85 W	62.38
S 88 W	92.12
S 60 W	61.90
S 35 W	78.22
S 1 E	108.49
S 6 E	112.62
S 34 W	69.16
S 54 W	74.86
S 78 W	77.92
S 90 W	170.70
S 78 W	81.22
S 78 W	108.06

to the north ROW of FR W217105,
 Thence Southwesterly along the north ROW of FR W217105 4165.00 feet,
 Thence northwesterly the following courses:

Direction	Distance in feet
N 84 W	100.34
N 76 W	80.42
N 29 W	57.31
N 21 W	174.86
N 79 W	142.88
N 63 W	86.57
N 49 W	156.28
N 44 W	141.55
N 34 W	60.97
N 19 W	187.00

N 39 W	148.79
N 60 W	77.70
N 81 W	112.29
N 69 W	93.31
N 56 W	88.41
N 55 W	101.79
N 79 W	86.25
N 79 W	85.37

to the West line of Section 19,

Thence north along the West line of Section 19 approximately 945 feet to the South ROW of FR 253,

Thence along the South ROW of 253 approximately 4800 feet to the East 1/16 line of Section 19,

Thence South along the East 1/16 line approximately 760 feet to the SE 1/16 corner of Section 19,

Thence East along the East-West ¼ line approximately 1320 feet to the East ¼ corner of Section 19 which is the Point of Beginning.

St. Peters Dome – south portion T 45 N R 04 W, Section 28, 29, 30, 31, and 32 (Marengo Lake Quad and Mineral Lake Quad).

Beginning at the Southwest Corner of Section 32,

Thence west along the south line of Section 31 approximately 1288 feet to the north ROW of FR 199,

Thence along the north ROW of FR 199 approximately 1755 feet to the South line of Section 31,

Thence along the south line of Section 31 approximately 2522 feet to the Southwest corner of Section 31,

Thence north along the west line of Section 31, approximately 1305 feet to the South 1/16 corner of sections 31 and 36,

Thence east along the South 1/16 line of Section 31, approximately 1500 feet to the Southwest 1/16 corner of Section 31,

Thence north along the West 1/16 line of section 31, approximately 1310 feet to the Center west 1/16 corner of Section 31,

Thence west along the East-west 1/4 line approximately 1480 feet to the West ¼ corner of Section 31,

Thence north along the West line of Section 31, approximately 2620 feet to the Southwest corner of Section 30,

Thence north along the west line of Section 30 approximately 2620 feet to the West ¼ corner of Section 30,

Thence north along the west line of Section 30 approximately 140 feet to an unnamed stream,

Thence northeasterly following unnamed stream 316.00 feet,

Thence northeasterly the following courses:

Direction	Distance in feet
N 37 E	86.01
N 45 E	179.86
N 33 E	117.27
N 87 E	190.11
S 70 E	314.08
S 88 E	157.87
N 79 E	165.75
N 80 E	144.87

N 85 E	183.84
S 86 E	188.38
S 58 E	197.74
S 17 E	416.17
S 12 W	433.02
S 58 E	106.01
N 81 E	159.92
N 11 E	430.38
N 4 W	637.93
N 35 E	168.23
N 65 E	171.92
N 43 E	100.03
N 35 E	89.95
N 71 E	109.07
N 53 E	88.63
N 79 E	97.83
N 77 E	109.01
N 82 E	133.23
N 85 E	188.80
S 83 E	125.01
N 74 E	138.04
N 6 E	134.75

to Morgan Creek,
 Thence northeasterly following Morgan Creek 4027 feet,
 Thence northeasterly the following courses:

Direction	Distance in feet
N 54 E	12.40
N 54 E	353.36
S 89 E	351.40
N 88 E	351.41
N 70 E	293.08
N 70 E	84.46

to the North line of Section 29,
 Thence along North line of Section 29, 815.83 feet,
 Thence southeasterly the following courses:

Direction	Distance in feet
S 48 E	21.94
S 43 E	223.19
S 59 E	166.81
S 70 E	227.04
S 81 E	468.75
N 84 E	512.22
S 70 E	637.64
S 68 E	320.88

to Morgan Creek,
 Thence southeasterly along Morgan Creek approximately 8550 feet to the North ROW of FR 385A,

Thence northwesterly along the north ROW of FR 385A approximately 1070 feet to the North ROW of FR385AA,

Thence northwesterly along the north ROW of FR 385AA 3373.13 feet,

Thence northwesterly the following courses:

Direction	Distance in feet
N 42 W	43.20
N 49 W	210.07
S 62 W	52.49

to an unnamed creek,

Thence southwesterly following unnamed creek, approximately 3723 feet to the intersection of another unnamed creek,

Thence following that unnamed creek southeasterly approximately 8145 feet to the South line of Section 32,

Thence along the south line of Section 32, approximately 1470 feet to the Point of Beginning.

/s/ Randy Erickson _____ March 18, 2013
Randy Erickson Date
Land Surveyor, Chequamegon-Nicolet National Forest