Commonwealth of Pennsylvania
Department of Conservation and Natural Resources
Bureau of Forestry

2011 High Conservation Value Forests

Analysis & Identification

November 15, 2011

Table of Contents

Introduction & Background

Pennsylvania is fortunate to have 2.2 million acres of publicly-owned State Forest lands (SFL). These lands provide countless benefits and services to society, including clean air and water, recreation opportunities, wood products, and habitats for thousands of plants and animals. The Department of Conservation & Natural Resources (DCNR), Bureau of Forestry (BOF) manages State Forest lands for these resources. Management decisions, both policy and on-the-ground, are guided by many sources of information including laws and regulations; public input; the State Forest Resource Management Plan (SFRMP); leases and agreements; and guidelines and procedures.

Pennsylvania state forests are also certified by the Rainforest Alliance under the Forest Stewardship Council™ (FSC) standards. The FSC® is an independent organization supporting environmentally appropriate, socially beneficial, and economically viable management of the world's forests. Timber harvested from Pennsylvania's state forests is FSC® certified. This ensures that the chain-of-custody from the forestland to the mill can be continued and that products are coming from forests managed in an environmentally responsible manner.

FSC certification prioritizes the protection of particularly valuable forest ecosystems. FSC introduced the concept of High Conservation Value Forests (HCVF) to ensure identification and proper management of forest areas with exceptional conservation value. This HCVF Analysis & Identification describes the process followed to identify what high conservation values were present on State Forest lands and how they will be managed.

Analysis Process

In order to comply with Principle 9 of the FSC U.S. Forest Management Standards, the BOF followed the FSC-U.S. Draft high conservation Value Forest Assessment Framework (Framework) to evaluate and assess areas for inclusion as HCVFs. This Framework provided guidance on questions to be asked for each area and potential data sources for review. The BOF used these questions and data as a guide to make a final determination of the presence or absence of an HCVF.

High Conservation Value Forests are identified under Principle 9 of the FSC US Forest Management Standard as follows. HCVF's are those that possess one of more of the following High Conservation Values (HCV):

1. HCV forest areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g., endemism, endangered species, refugia), including Rare, Threatened and Endangered species and their habitats;

2. HCV forest areas containing globally, regionally or nationally significant large landscape level forests, contained within, or containing the management unit, where viable

populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance;

3. HCV forest areas that are in or contain rare, threatened or endangered ecosystems;

4. HCV forest areas that provide basic services of nature in critical situations (e.g., watershed protection, erosion control);

5. HCV forest areas fundamental to meeting basic needs of local communities (e.g., subsistence, health); or,

6. HCV forest areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).

While the BOF believes that all state forest lands are of highest conservation value on many different levels, areas not designated as such are not less important nor does it mean that these areas are not protected. The BOF utilizes many programs and designations in its protection and enhancement of these lands. The HCV analysis identifies the areas of highest importance and follows a very specific guidance outlined by the Forest Stewardship Council.

Implementation & Management

The areas which have been identified as High Conservation Value Forests will be mapped and managed in a manner that will maintain and/or enhance the values for which they have been designated. To accomplish this, the BOF is developing management plans for each High Conservation Value. Each HCV Management & Monitoring Framework can be found linked to this document within each HCV section.

Management & Monitoring plans will describe the measures necessary to ensure the maintenance and'/or enhancement of the High Conservation Values present in each HCVF area. These areas will be monitored on a 5 year rotation comprising 20% of the area annually in order to ensure that these values are sustained. In situations where an attribute is showing signs of decline the BOF will work with its partners in revising the management plan to address the issue.

Under FSC guidance (Principles 6 and 9 of the US Forest Management Standard) no High Conservation Value Forest can be converted to a non-forest land use.

> FSC Definition of "non-forest land": Non-forest land consists of land that is managed for reasons other than the production of forest products, values, or amenities. Non-forest land includes land that does not classify as a forest ecosystem (including old agricultural fields, grasslands). "Non-forest land uses" include land that is forested, but current zoning and/or conditional use permits present intentions for future conditions of the land that will result in the loss of, or degradation of, production of forest products, values or amenities (e.g., commercial or industrial development, residential use). (6.10)

Lands that are converted for forest management purposes (e.g. roads, landings, management buildings) are not included in calculations of this limit. (6.10.a)

Given these definitions areas identified as HCVF are only located in areas where DCNR owns the subsurface minerals rights to alleviate any potential to convert HCVF to a non-forest use. Also under this guidance, roads can also be considered a non-forest land use. A road which is built for the purpose of timber management would not be considered conversion. If that same road however were to be built for any oil, gas or mineral extraction that activity would then be considered conversion since FSC does not feel that these activities (oil, gas or mineral extraction) are a legitimate forest land use. With that being said, designated High Conservation Value Forests can still be managed for normal timber operations as long as those practices do not negate the value for which it was identified.

High Conservation Values, Analysis and Management Plans

The BOF followed the Framework to select appropriate data sources for each value and designated those areas with highest value found on State Forest lands. For each HCV, the following information is provided:

- Summary of FSC's HCV Framework
- BOF data selected
- Total Number of HCV areas selected for that value
- Total Acreage of HCV areas selected for that value
- HCV Management and Monitoring Framework for that value
- Example Maps for that value

Example Mapping

Due to the sensitivity of many of the values that the HCVF are designated, Example Maps are shown to describe how the areas were delineated and defined. Many data sources provide specific detail on Rare, Threatened, and Endangered species and ecosystems; protected water sources; and cultural areas. To maintain their integrity, the BOF will not provide location mapping of these areas, but will describe their designation in further detail after they have been finalized.

High Conservation Value 1:

1.1 & 1.2

HCV 1: Forest areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g., endemism, endangered species, refugia).	
Definition of 'Significant concentrations of biodiversity values': areas that contain concentrations of rare/threatened/endangered species, natural communities, or other biodiversity values that occur in numbers, frequency, quality, and/or density that are sufficiently outstanding to be considered unique or highly important in comparison with other areas within the ***ecoregion*** within which the FMU is located. **Definition of Region/Ecoregion:** For the purposes of HCVF assessment, the ecoregion will in most cases be consistent with the scale of the USFS Section within which the ownership is located (see Ecoregion Map). If data for the region are limited, or in the cases of very small ecological sections, a larger area may be considered if justified.). Where justified by available data, a comparable classification system (e.g., TNC's Ecoregion Map) may be used. Data sources include: State Natural Heritage Programs; State conservation, fish and wildlife Agencies; State Wildlife Action Plan US Fish and Wildlife Service; National Marine Fisheries Service; Nature Serve; Conservation groups whose primary mission is science-based biodiversity protection and management (e.g., The Nature Conservancy, Audubon). ;Local experts (e.g. scientists, tribal experts) ; Forest Management Unit (FMU) cover type maps and forest inventory data;US Forest Service (USFS) Ecoregions	
Guiding Questions	**Guidance**
1.1. Does all or part of the FMU contain an area that is legally protected or managed primarily for concentrations of biodiversity values that are significant at the ***ecoregion*** or larger scale**,** or is such an area proposed for protection?	See guidance and definitions above.
1.2. Does all or part of the FMU contain an area with significant ***concentrations of rare, threatened or endangered species or rare ecological communities***, **endemic** (range restricted) species and/or natural communities that are significant at the ecoregion scale?	See guidance and definitions above. In most cases these areas are likely to be known to state conservation agencies (e.g. Natural Heritage and wildlife). However, not all "concentrations" identified by an agency may meet the intent of this HCV. This could also include areas with mapped significant seasonal concentrations of species (e.g., migratory staging areas).

DCNR BOF Data Selected for Guidance HCV 1.1

- **Wild Plant Sanctuaries**: Area nominated by DCNR, BOF that supports viable populations of native plant species of special concern; suitable habitat or plant community.

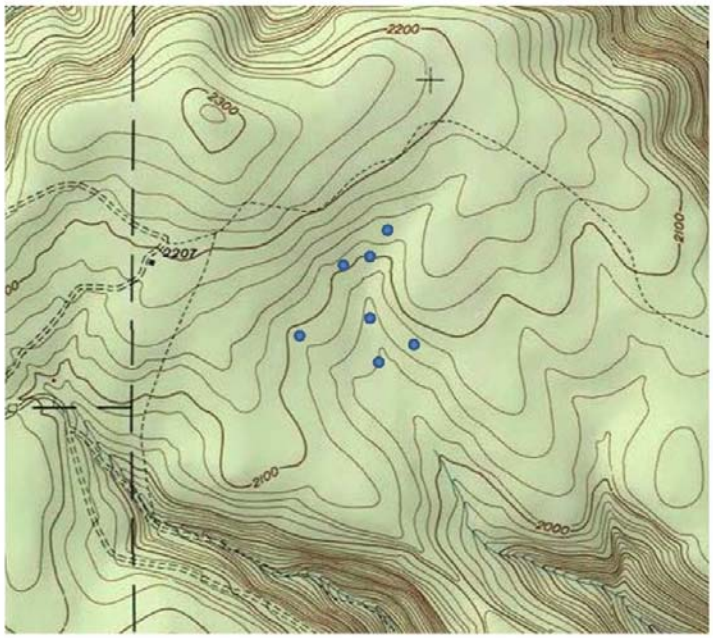
Total Number of HCV 1.1 Areas: 43

Total Acres of HCV 1.1: 8973.9

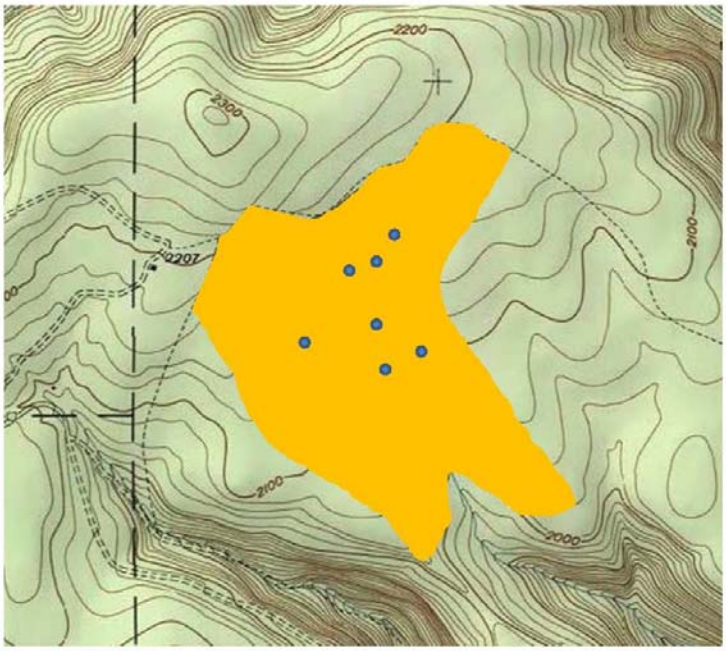
Management & Monitoring Framework: HCV 1.1

Mapping Example:

Example of HCVF 1.1 – Plant Sanctuaries – A number of sensitive plants are located within a specific area.



Example of HCVF 1.1 – Plant Sanctuaries – Boundaries are delineated based on the plants habitat needs and any available identifiable boundaries.



DCNR BOF Data Selected for Guidance HCV 1.2

Focus Areas which encompass concentrations have been identified using both a weighted raster analysis and a hot spot GIS analysis of state and federal ranked element occurrences. These Ecological Focus Areas have been delineated using the following data.

- **PA Natural Heritage Program, County Natural Areas Inventory, Biodiversity Areas**

These polygons, created by PA Natural Heritage Program biologists with input from DCNR, PA Game Commission and PA Fish and Boat Commission provided boundaries for many known populations of Rare, Threatened or Endangered species as well as delineated potential habitat areas and supporting landscapes.

- **PA Natural Heritage Program, Species Occurrences**

Rare, Threatened, Endangered, Candidate, and Tentatively Undetermined plant and animal species were used to assess areas for their concentration of biodiversity values. For more information: http://www.naturalheritage.state.pa.us/

- **Pennsylvania Audubon Important Bird Areas**

The PA Ornithological Technical Committee has identified over 80 IBA sites encompassing over two million acres of Pennsylvania's public and private land. These areas include migratory staging areas, winter roost sites and prime breeding areas for songbirds, wading birds, and other species. These Areas were used to further expand boundaries for Focus Areas and to ensure that some of the most ecologically critical bird habitat in the PA State Forest system was included in further analysis. For more information and maps of these IBAs, please visit: http://iba.audubon.org/iba/viewState.do?state=US-PA

- **Pennsylvania Important Mammal Areas**

The Important Mammal Areas were created by the PA Mammal Technical Committee to promote the conservation of mammals by identifying sites or regions that include habitats critical to their survival, and to educate the public about mammals and their needs.

- **Allegheny Woodrat Habitat Data**

The PA Game Commission has also provided additional data to DCNR which indicate appropriate geology and habitat for Allegheny woodrats across PA as well as data representing known metapopulations for this species. This information has been collected and analyzed by Game Commission biologists and was used in this anlalysis to better delineate Focus Areas which included known Allegheny Woodrat populations on State Forest lands.

- **Conservation Opportunity Areas (Western PA Conservancy)**

"…places in Pennsylvania that represent clusters of Species of Greatest Conservation need, most critically imperiled plant species, and associated habitats where collaborative conservation action should be targeted."

- **Resiliency and Connectivity Analysis (TNC; considered):** Identifies large forest patches with exceptional resilience and connectivity in a regional context. BOF lands ranked highly in this analysis.

- **Active River Area Model & Northeast Aquatic Habitat Classification System (TNC; considered):** Identifies forested headwaters as well as high value riparian corridors and floodplains.

- **NWI Wetlands**
- **Topography**
- **Natural / Man-made features (features that provide distinct boundary identification)**

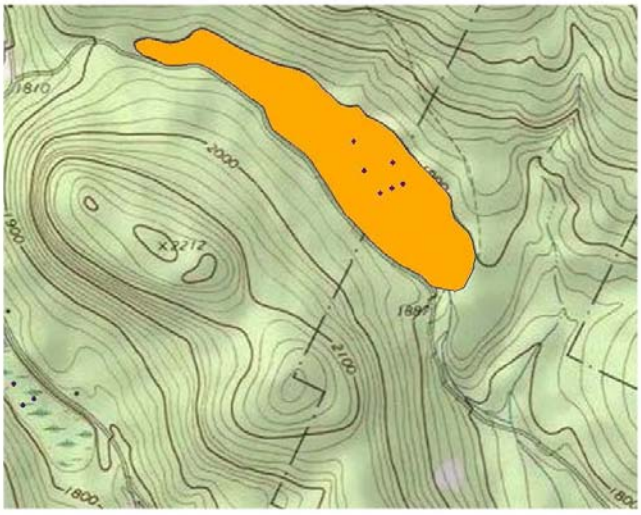
Total Number of HCV 1.2 Areas: 23
Total Acres of HCV 1.2: 34065

Management & Monitoring Framework: HCV 1.2

Mapping Examples: HCV 1.2

Example of HCV 1.2 delineation – Ecolologically Significant Concentrations - A number of less common, rare, threatened or endangered plant and animal species are found within a wetland.

Example of HCV1.2 – Ecolologically Significant Concentrations - The entire wetland, because it is habitat that supports the identified concentration, is delineated as HCVF 1.2. delineation is made against physical features where possible such as along a road, trail or some other physical feature.



High Conservation Value 2:

2.1 & 2.2

HCV 2. Forest areas containing globally, regionally or nationally significant large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.

Definition of 'Large landscape-level forests': Relatively contiguous areas of forest (which may be crossed by land management roads or public roads). At the minimum these forests are likely to be thousands or tens of thousands of acres in size. However, "large" is relative to ecoregion landscape context (particularly the size of forested blocks in the ecoregion) and might be smaller or larger than this figure as indicated by consultation with regional experts. In ecoregions where natural forests are heavily fragmented by forest type conversion or land use conversion, the increased value of smaller occurrences of remaining natural forest should also be included in the assessment.

Definition of 'Significant': The forest is significant in the ecoregion due to its size, condition, and/or importance to biodiversity conservation. Factors to consider include:

Rarity of forests of this size and quality within the ecoregion
Less affected by anthropogenic factors than similar areas in the ecoregion.

Guidance:
The general approach in assessing for HCV 2 is to compare forest characteristics (such as extent and intensity of harvest practices, forest communities, successional stages, structures, and species composition and abundance) with natural forests that have only been subject to natural disturbance processes or minimal human intervention.

Guiding Questions	Guidance
2.1. Does all or part of the FMU contain a globally, regionally or nationally **significant** large landscape-scale forest where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance? What would happen to regional biodiversity if the characteristics of this forest (e.g., age class structure or relative species abundance) were significantly altered?	Areas with this HCV include: 1. Landscape-scale natural forests that have experienced lesser levels of past human disturbance (e.g., minimal timber harvesting) or other management (e.g. fire suppression), or areas within such forests (e.g., part or all of ownerships or management units). Managed forests that are rare at the ecoregion or larger scale because they contain forest communities with successional stages, forest structures, and species composition that are similar in distribution and abundance to natural forests that have been only subject to natural disturbance processes or minimal human intervention., This would also include areas (e.g., part or all of ownerships or management units) within such forests. Because these are managed forests they would not likely contain old growth, but nonetheless they would typically contain an abundance older forest attributes (biologically mature or late successional) characteristic of the forest type, as indicated by tree species composition, tree size, or other attributes

	applicable to the forest community type, such as coarse woody debris, snags, herb diversity, structural understory diversity, and the lack of invasive plant species.
2.2. Does all or part of the FMU contain a landscape-scale forest recognized as being significant to biodiversity conservation at the ecoregion scale because it contains landscape-scale biodiversity values that are not present on other forests due to landscape-scale habitat modifications on surrounding lands, (such as land use conversion or forest management practices that have significantly altered forest biodiversity values)? What would happen to regional biodiversity if the characteristics of this forest (e.g., age class structure or relative species abundance) were significantly altered?	Areas with this HCV include: Forests recognized as being regionally significant at the ecoregion or larger scale by conservation organizations due to the unusual landscape-scale biodiversity values provided by size and condition of the forest relative to regional forest land cover and land use trends. Forests that provide regionally significant habitat connectivity between larger forest areas. Examples: HCVFs in this group are likely to be comparatively intact landscape-scale forests in developed regions (including regions where forests have been converted to agricultural use), relatively mature landscape-scale forests in regions where short-rotation forestry is the norm, and "island" forests isolated by agriculture or natural changes in vegetation (e.g., isolated mountain ranges surrounded by grassland).

DCNR BOF Data Selected for Guidance HCV 2.1 & 2.2

The BOF felt that both its Natural Areas and Wild areas most closely met the intent of these specific criteria. While Wild Areas meet the size criteria, Natural Areas are generally smaller in size. The BOF proposes that Natural Areas greater than 2,000 acres be utilized under this criteria, the BOF felt that this size limit met the intent of the guidance.

- DCNR **Natural Areas** Greater than 2,000 acres (excludes the Bucktail Natural Area as the area was legislated and does not truly reflect the definition of a Natural Area)

- DCNR **Wild Areas** *(Excludes portions of the Quehanna because the Quehanna Wild Area was legislated and does not fit the true definition of a Wild Area. It is felt that portions of the area do in fact fit the designation and therefore includes ROS primitive and semi-primitive non-motorized portions of the Quehanna Wild Area)*

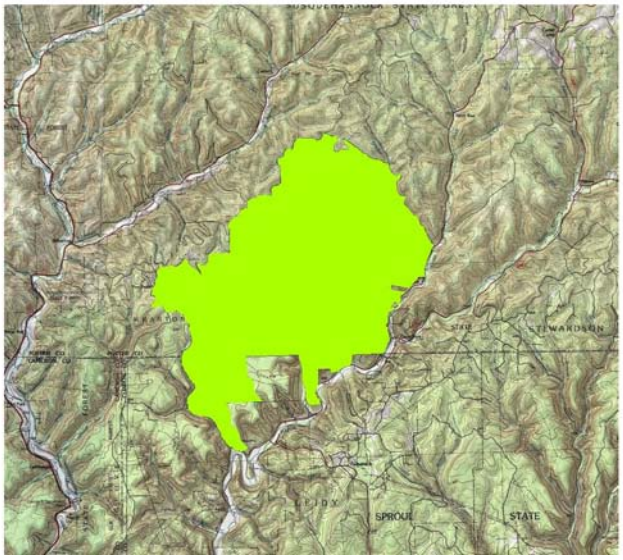
Total Number of HCV 2.1 & 2.2 Areas: 30

Total Acres of HCV 2.1 & 2.2: 139,174

Management & Monitoring Framework: HCV 2.1 & HCV 2.2

Mapping Examples: HCV 2.1 & 2.2

Example of HCVF 2.1 & 2.2– Natural Areas and Wild Areas directly fit into the guidance of HCV 2.1 as large landscape level forests having lesser levels of past human disturbance and also 2.2 having values provided by size and condition relative to regional land use trends.



High Conservation Value 3:

3.1, 3.2 & 3.3

HCV 3. Forest areas that are in or contain rare, threatened or endangered ecosystems.

Guidance: Rare, threatened and endangered ecosystems include old growth, roadless areas, and other ecosystems that are considered 'rare' at a global, regional, or local (state) level.
Distinctiveness in terms of size, quality (particularly lack of human disturbance), or location within the ecosystem's geographic range may be considered in assessing ecosystem rarity.
For areas that have not been surveyed by state Natural Heritage programs or other plant community experts, forest manager should conduct a survey for assemblages of HCV3 attributes.
For old growth, stand-level assessments are appropriate
For roadless areas, cover type maps, and site reconnaissance information is appropriate.

Definition of Old growth: (1) the oldest seral stage in which a plant community is capable of existing on a site, given the frequency of natural disturbance events, or (2) a very old example of a stand dominated by long-lived early- or mid-seral species The onset of old growth varies by forest community and region. For example, in the Pacific Coast region, old growth often begins around 200-250 years of age, whereas in the Northeast old growth is generally begins at 150-200 years after stand-replacing disturbances. Depending on the frequency and intensity of disturbances, and site conditions, old-growth forest will have different structures, species compositions, and age distributions, and functional capacities than younger forests. Old-growth and late successional stands and forests include: A) ***Type 1 Old Growth:*** stands that have never been logged and that display late successional/old-growth characteristics. B) ***Type 2 Old Growth:*** stands that have been logged, but which retain significant late-successional/old-growth structure and functions.

Definition of Roadless Area: Roadless areas are forested areas without evidence of roads or skid trails.

Data sources: Sources of information may include but are not limited to:
FMU cover type maps and forest inventory data
Nature Serve
State Natural Heritage Programs
Conservation NGOs
Local experts (e.g. scientists, tribal experts)
For Rare ecosystems, the primary data sources is the rare ecosystem information gathered as per Criteria 6.1, 6.2 and 6.4 in the FSC-US Forest Management Standard.

Guiding Questions	Guidance
3.1. Does the FMU contain old growth stands?	Regional: Regionally-specific assessment tools have been developed to help identify old growth and/or late successional forests. Examples include those developed by the State of Washington DNR, State of Minnesota DNR, and by the Manomet Center for Conservation Sciences (Maine). These tools are not definitive for the purposes of the HCVF assessment but may be of practical value to the land manager. Other regional definitions and studies should be considered where available.

3.2. Does the FMU contain or is it part of a roadless area >500 acres in size **or** that has unique roadless area characteristics?	Definition: See definition and guidance above Guidance on size: 500 acres is a general size guideline, not a definitive minimum, and generally applies to "block" shaped areas rather than linear figures such as riparian zone. Note: the HCV only occurs within the roadless area and does not apply to the entire FMU.
3.3. Does the FMU contain any other rare, threatened, or endangered ecosystem?	See definition and guidance above.

DCNR BOF Data Selected for Guidance HCV 3.1

- DCNR Natural Areas (NA's designated for containing Old Growth stands)

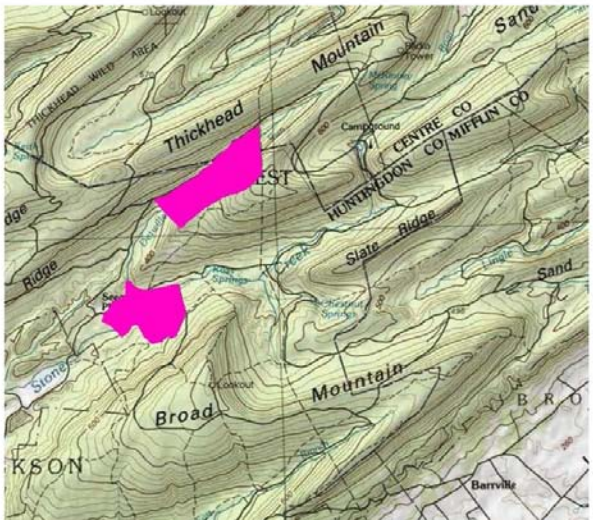
Total Number of HCV 3.1 Areas: 16

Total Acres of HCV 3.1: 20,012

Management & Monitoring Framework: HCV 3.1

Mapping Examples: HCV 3.1

Example of HCVF 3.1 – Old Growth - Natural Areas which contain old growth stands such as Alan Seeger and Detweller Run Natural Areas are easily incorporated into the 3.1 designation. As other stands mature they will be added into the HCV 3.1 category.



DCNR BOF Data Selected for Guidance HCV 3.2

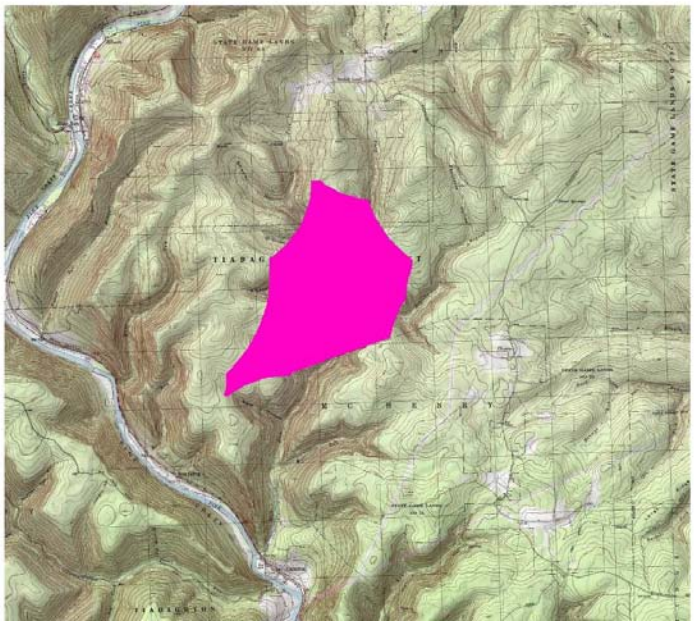
- DCNR Recreation Opportunity Spectrum, Primitive areas: (at least one mile from all motorized trails roads and railroads) of the areas delineated; those *which contain administrative roads & ROWs were removed for the HCV criteria)*

Total Number of HCV 3.2 Areas: 8
Total Acres of HCV 3.2: 25,119

Management & Monitoring Framework: HCV 3.2

Mapping Examples: HCV 3.2

Example of HCVF 3.2 - Roadless Area Characteristics – identified using the Recreation Opportunity Spectrum (ROS) Primitive Data. Remote areas at least one mile from a motorized trail, road or railroad, only primitive areas which do not contain administrative roads or rights of way were included.



DCNR BOF Data Selected for Guidance HCV 3.3

- DCNR TNC WPC **-** County Natural Area Inventories (Natural Communities). Communities of the State Rank S1 through S2 were included.

Total Number of HCV 3.3 Areas: 12

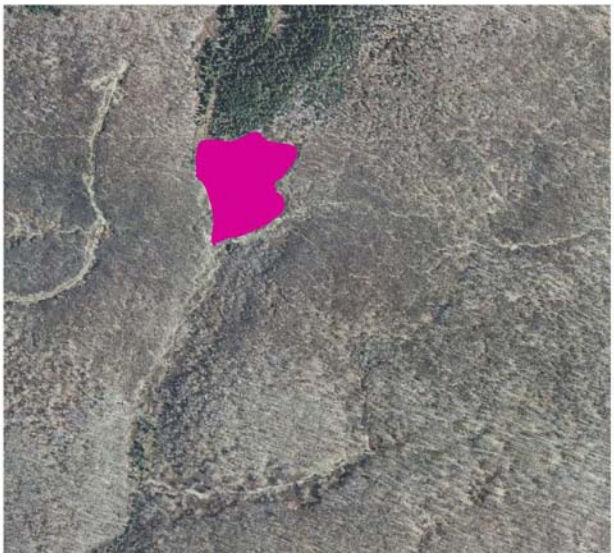
Total Acres of HCV 3.3: 957

Management & Monitoring Framework: HCV 3.3

Mapping Examples: HCV 3.3

Example of HCVF 3.3 - Other rare, threatened or endangered ecosystems - State Ranked S1-S2 Natural Communities (includes several palustrine forest types, scrub oak communities and other rare, threatened or endangered ecosystems).

Example of HCVF 3.3 - Other rare, threatened or endangered ecosystems - State Ranked S1-S2 Natural Communities (includes several palustrine forest types, scrub oak communities and other rare, threatened or endangered ecosystems). Delineated based on habitat components.



High Conservation Value 4:

4.1, 4.2, 4.3 & 4.4

HCV 4. Forest areas that provide basic services of nature in critical situations (e.g., watershed protection, erosion control).

Intent: HCV 4 is focused on basic services of nature for human needs.

Guidance on 'critical situations' – general. FSC-US cannot provide clear thresholds on when an area provides critical protection. An operable question to help address this question may be, "What is the impact of converting the forest in question to a non-forest use?"

Guidance on 'critical situations' – watershed protection: A forest that is part of a local drinking water catchment or irrigation supply system, or is a critical source for a remote location (i.e., water is pumped to a remote location) may be considered a 'critical situation', particularly when people are dependent on the guarantee of water for drinking or irrigation, or where the regulation of water flow guarantees the existence of fishing grounds or agricultural land on which the local people are dependent, protects downstream communities from flooding, or provides critical protection to rare, threatened, or endangered aquatic species.

Data sources: Data sources may include, but are not limited to:

Soil, watershed and aquifer maps
Hydrologists and soil scientists in state or federal agencies or research institutions.
Local or regional water management districts.

Guiding Questions	Guidance
4.1. Is all or part of the FMU owned or managed for the primary purpose of providing a source of community drinking water?	
4.2. Does all or part of the FMU play a 'critical watershed role' in protecting community drinking water supplies?	See guidance on "Critical situations – watershed protection" above.
4.3. Does all or part of the FMU include extensive floodplain or wetland forests that are critical to mediating flooding or in controlling stream flow regulation and water quality?	See guidance for "Critical situations" above.
4.4. Is all or part of the FMU critical to control erosion, landslides, or avalanches that would threaten local communities?	See guidance

DCNR BOF Data Selected for Guidance HCV 4.1 & 4.2

Currently, the BOF is waiting on an updated data layer from the PA Department of Environmental Protection (DEP) to include in HCV 4.1 & 4.2. The data has not yet

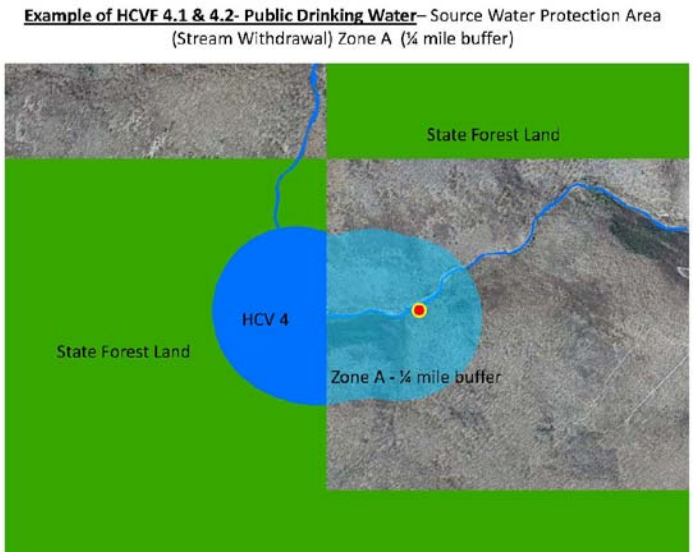
been received and therefore no acres have been mapped or calculated under these criteria at this current time. As soon as this data is acquired these acres will be implemented in the HCVF system. The data includes:

- DEP public drinking water wells and emergency water supply wells - Wellhead Protection Areas (Zone 1- 100 to 400 feet depending on site-specific source and aquifer characteristics)
- DEP public drinking water withdrawal points –Surface Water Protection Areas (Reservoir polygons and included ¼ mile buffers - Zone A)

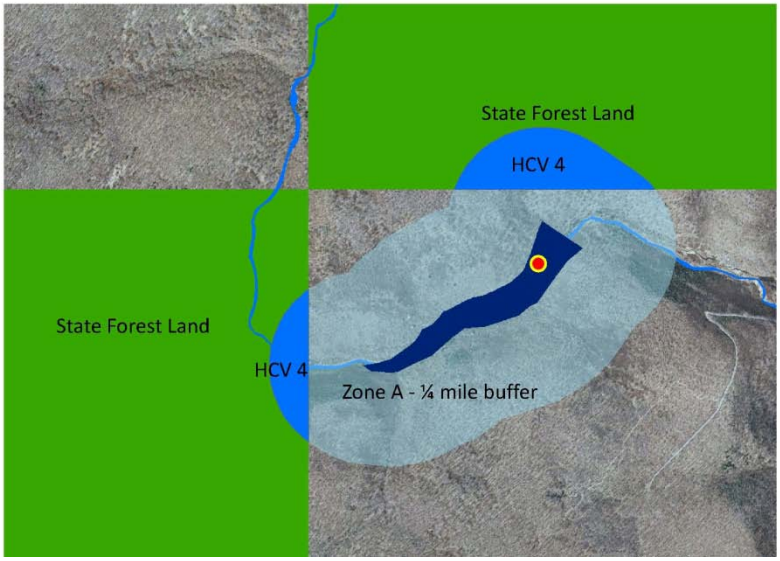
Total Number of HCV 4.1 & 4.2 Areas: TBD
Total Acres of HCV 4.1 & 4.2: TBD

Management & Monitoring Framework: HCV 4.1 & 4.2

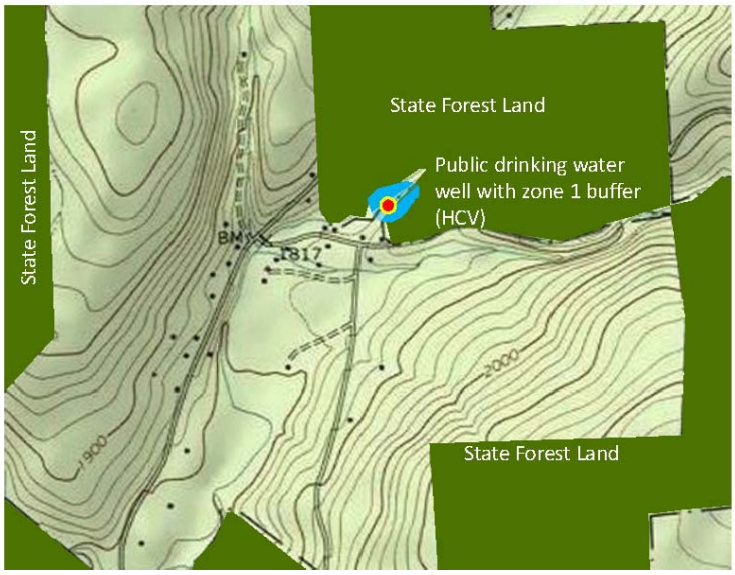
Mapping Examples: HCV 4.1 & 4.2



Example of HCVF 4.1 & 4.2- Public Drinking Water– Source Water Protection Area (Reservoir Withdrawal) Zone A (¼ mile buffer)



Example of HCVF 4.1 & 4.2- Public Drinking Water– Source Water Protection Area (Public Drinking Water Well) Well Head Protection Zone 1 -100 to 400 feet



DCNR BOF Data Selected for Guidance HCV 4.3

- Coastal Floodplains – areas of state forest land within the coastal floodplains (includes Little Tinicum island only)

At this point in time an accurate data set for functional floodplains does not exist. Therefore the BOF has only included Coastal Floodplains at this time. The BOF will include inland functional floodplains in the future when an accurate data set is available.

Total Number of HCV 4.3 Areas: 1
Total Acres of HCV 4.3: 200

Management & Monitoring Framework: HCV 4.3

Mapping Examples: HCV 4.3

Example of HCVF 4.3 – extensive floodplain or wetland forests that are critical to mediating flooding or in controlling stream flow regulation and water quality or provides critical protection to rare, threatened, or endangered aquatic species.

Example of HCVF 4.3 – extensive floodplain or wetland forests that are critical to mediating flooding or in controlling stream flow regulation and water quality or provides critical protection to rare, threatened, or endangered aquatic species.

DCNR BOF Data Selected for Guidance HCV 4.4

No Data Selected

Although the BOF has areas which may be more prone to erosion, it does not feel that these areas provide any risk to local communities. Additionally these areas of higher erosion potential are set aside by means of zoning constraints that currently protect this value.

High Conservation Value 5:

5.1

HCV 5. Forest areas fundamental to meeting basic needs of local communities (e.g., subsistence, health, well-being).

Guidance and Definitions

Definition of 'basic human needs': Local people use the area to obtain resources on which they are critically dependent. This may be the case if local people harvest food products from the forest, or collect building materials or medicinal plants where no viable alternative exists. Forest uses such as recreational hunting or commercial timber harvesting (i.e., that is not critical for local building materials) are not basic human needs.

Definition of 'fundamental': Loss of the resources from this area would have a significant impact in the supply of the resource and decrease local community well-being. FSC-US has not set a threshold to determine the amount of basic human needs that constitute "fundamental." Outside of the US, precedent has been set in at least one HCVF "toolkit" at 25% (Indonesia; see Rayden 2008).

Data sources: In most cases assessment of local community rights (i.e., legal or customary tenure or use rights) and Native American rights consistent with Criterion 2.2, Principle 3, and Criterion 4.4 will be sufficient to determine if there is potential for this HCV to occur on the forest. HCV 5 sits alongside these requirements as additional safeguards for exceptional circumstances. Sources of assessment information may include but are not limited to:

- Native American tribes, bands, and organizations
- Community groups dependent upon the forest for basic needs as identified
- Fed and state govt agencies with responsibilities to Native American groups and local communities
- Anthropologists or social scientists with local forest expertise

Guiding Questions	Guidance
5.1. Is all or part of the FMU fundamental to the basic needs of a local community?	See definitions and guidance above.

DCNR BOF Data Selected for Guidance HCV 5.1

No Data Selected

The BOF has sought data that might be incorporated into this HCV criteria. Past attempts to identify these areas through letters to tribes which have had a connection to state forest lands have not resulted in a response of concern in these lands.

Through consultation with the Pennsylvania Historic and Museum Commission, National Congress of American Indians, National Congress of State Legislatures, US Forest Service - Regional Tribal Relations Specialists, and the Pennsylvania State University Anthropology Department it has become evident that additional fervor is necessary in order to establish the involvement of these tribes. The BOF is currently seeking other alternatives to establish a working relationship with Native American tribes with a connection to state forest lands.

Due to the lack of response from tribes and also through knowledge of our field staff in each of our districts who work in all of these areas on a daily basis we have determined that no portion

of our lands currently serve this purpose. Should the BOF discover any area used for this purpose it will be incorporated into HCV 5.

High Conservation Value 6:

6.1, 6.2 & 6.3

HCV 6. Forest areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities). Definition of 'cultural significance':

These include religious/sacred sites, burial grounds or sites at which regular traditional ceremonies take place. They may also include outstanding natural landscapes that have evolved as a result of social, economic, administrative, and/or religious imperative (i.e., fossils, artifacts, areas representing a traditional way of life); or areas that by virtue of their natural properties possess significant religious, artistic or cultural association.

Definition of 'critical': Loss of cultural resources from this area would have a significant impact to the traditional cultural identity of local and regional communities.

Data sources: In most cases, assessments of local community rights (i.e., legal or customary tenure or use rights) and Native American rights consistent with Criterion 2.2, Principle 3, and the social impact evaluation of Criterion 4.4 will be sufficient to determine if there is potential for this HCV to occur on the forest. HCV 6 sits alongside these requirements as additional safeguards for exceptional circumstances. Sources of assessment information may include but are not limited to:

Native American tribes, bands, and organizations
Fed and state govt agencies with responsibilities to Native American groups and local communities
Anthropologists or social scientists with local forest expertise
State cultural heritage list

Guiding Questions	Guidance
6.1. Does all or part of the FMU contain specific forest area that is critical to the tribe and local community's cultural identity?	See definitions and guidance above.
6.2. Are significant cultural features created intentionally by humans present?	
6.3. Are outstanding natural landscapes present that have evolved as a result of social, economic, administrative, and/or religious imperative?	

DCNR BOF Data Selected for Guidance HCV 6.1

- **PMHC Pass Data** – includes identified burial grounds.

DCNR BOF Data Selected for Guidance HCV 6.2

- **PMHC Pass Data** – includes areas where artifacts have been recorded

Total Number of HCV 6.1 & 6.2 Areas: 125

Total Acres of HCV 6.1 & 6.2: 268

Management & Monitoring Framework: HCV 6.1 & 6.2

Mapping Examples: HCV 6.1 & 6.2

Example of HCVF 6 – Significant Archeological Site

DCNR BOF Data Selected for Guidance HCV 6.3

- **None**
  - Under our interpretation of this criteria it is the BOF's belief that these areas are primarily a DCNR State Park feature. It is believed that this designation includes places such as the Pine Creek Gorge and similar areas and are held and maintained within the DCNR Bureau of State Parks and are generally not held within the DCNR Bureau of Forestry System.

APPENDIX 1:

Summary Table of High Conservation Value Forest Areas

HCV Criteria	Value	Data Selected	Number of Areas	Number of Acres
HCV 1:	HCV forest areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g., endemism, endangered species, refugia), including RTE species and their habitats;			
1.1	Areas legally protected or managed primarily for concentrations of biodiversity values that are significant at the ***ecoregion*** or larger scale	Wild Plant Sanctuaries	43	8,974
1.2	Significant ***concentrations of rare, threatened or endangered species or rare ecological communities***	Focus Areas	23	34,065
HCV 2:	HCV forest areas containing globally, regionally or nationally significant large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance;			
2.1	**Significant** large landscape-scale forest where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance. Areas which have experienced lesser levels of past human disturbance (e.g., minimal timber harvesting) or other management.	Wild and Natural Areas	30	139,174
2.2	Areas significant to biodiversity conservation at the ecoregion scale because it contains landscape-scale biodiversity values that are not present on other forests due to landscape-scale habitat modifications on surrounding lands	Wild and Natural Areas	30	139,174
HCV 3:	HCV forest areas that are in or contain rare, threatened or endangered ecosystems;			
3.1	Areas that contain old growth stands	Old Growth Natural Areas	16	20,012
3.2	Roadless Areas or areas with roadless area characteristics	ROS Primitive Roadless Areas	8	25,119
3.3	Other rare, threatened or endanged ecosystems	Natural Communities (S1-S2)	12	958
HCV 4:	HCV forest areas that provide basic services of nature in critical situations (e.g., watershed protection, erosion control);			
4.1	Areas providing a source of community drinking water	Public Drinking Water Sources	TBD	TBD
4.2	Areas protecting community drinking water supplies	Public Drinking Water Sources	TBD	TBD
4.3	Extensive floodplain or wetland forests that are critical to mediating flooding or in controlling stream flow regulation and water quality.	Coastal Floodplains	1	200
4.4	Areas critical to control erosion, landslides, or avalanches that would threaten local communities.	None	0	0

HCV 5:	HCV forest areas fundamental to meeting basic needs of local communities (e.g., subsistence, health);			
5	Areas fundamental to the basic needs of a local community (subsistence)	None	0	0
HCV 6:	HCV forest areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).			
6.1	Specific forest area that is critical to the tribe and local community's cultural identity	CRGIS Forest PASS Data - Burial Grounds	125	268
6.2	Significant cultural features created intentionally by humans	CRGIS Forest PASS Data - Archeological Sites	125	268
6.3	Outstanding natural landscapes present that have evolved as a result of social, economic, administrative, and/or religious imperative	None	0	0

HCV 1 Total	38,426*
HCV 2 Total	139,174
HCV 3 Total	45,559
HCV 4 Total	200
HCV 5 Total	0
HCV 6 Total	268
TOTAL HCVF Acres	177,312 *

***Total acreages for HCV are not dually counted. There is some overlap among differing HCV criteria, therefore totals are not an exact sum of each specific HCV criteria but rather a total number of actual acres reflected as HCVF.**

APPENDIX 2:

High Conservation Value Forests

Timeline and Analysis Process

Each year a portion of the bureau's management practices and operations are evaluated and every 5 years a comprehensive audit is conducted to ensure compliance with the FSC® standards. As a result of the 2010 annual audit the Bureau of Forestry (BOF) was asked to re-evaluate its areas which had been designated as High Conservation Value Forests (HCVF) outlined in Principle 9 of the FSC US Forest Management Standard. For more information on forest certification and past audits click here.

In April of 2011 the DCNR, Bureau of Forestry informed its Ecosystem Management Advisory Committee of its need to conduct a new analysis to more accurately identify High Conservation Value Forests. During this time principal 9 of the FSC US Forest Management Standard was outlined and a plan for the analysis was presented. The BOF then held a series of 4 day-long internal meetings to discuss past HCVF decisions and the FSC HCVF Assessment Framework and what data might be available to meet the outlined criteria.

Known existing relevant data was sought from agencies and organizations and then incorporated into an Arc GIS map to view intricacies and implications of the data. Once a base line of data was developed and an understanding of the HCV concept was fully recognized the BOF reviewed the concept and data with its staff. A meeting was then conducted on August 03, 2011 with its Ecosystem Management Advisory Committee for feedback and discussion. The committee was given 2 weeks to fully assimilate and review the FSC HCVF Assessment Framework and HCV concept and to return formal comments or suggestions for the BOF's analysis.

New data suggestions were analyzed and where appropriate integrated. The map files and data were made available to all management staff to look at and review. A special HCVF meeting was then held on August 31, 2011 which included all management staff in order to outline any additional comments or concerns. The managers were given an additional 1.5 weeks to fully examine the data with their respective staff and to provide additional formal comment.

Now that those formal comments have been received, evaluated and incorporated and management plans and monitoring protocols are verified the analysis is being posted on the PA DCNR BOF public website for further public and stakeholder review. Additionally a letter will be sent to stakeholders to be sure the process is adequately utilized. A one month comment period is being given and advisory committee members and staff will have additional time to comment during this period.

This document outlines the initial completion of the HCVF areas. Where space and resources allow all roads and rights-of-way have been buffered 100 feet and 200 feet respectively in these areas in order to allow for any future expansion. In instances where that expansion may

threaten the value for which the area was designated the BOF has retained the area as HCVF in order to fully protect that value.

Once all comments and suggestions from this public review period have been evaluated and appropriate changes made to the analysis, the areas will be finalized and incorporated into the plans and operations of the DCNR Bureau of Forestry by the close of the 2011 calendar year. This will adequately put the BOF in conformance with the FSC standard. Periodically and specifically during the State Forest Resource Management Plan update/revision, the HCV concept will again be addressed with the public and stakeholders. The BOF will continue to analyze new data on a routine basis and implement new HCV areas where applicable.

Appendix 3:

Pennsylvania Species of Special Concern Occurrences found within Proposed HCVF Areas

S1 **Critically Imperiled** - Critically imperiled in the nation or state because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state.

S2 **Imperiled** - Imperiled in the nation or state because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state.

S3 **Vulnerable** - Vulnerable in the nation or state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 **Apparently Secure** - Uncommon but not rare; some cause for long-term concern due to declines or other factors.

S5 **Secure** - Common, widespread, and abundant in the nation or state.

Plant Species

Acontum reclinatum (S1)
Actaea podocarpa (S3)
Ageratina aromatica (S3)
Amaranthus cannabinus (S3)
Amelanchier sanguinea (S2)
Andromeda polifolia (S3)
Aplectrum hyemale (S3)
Arceuthobium pusillum (S2)
Arethusa bulbosa (S1)
Aristida purpurascens (S1)
Asclepias variegata (S1)
Astragalus canadensis (S2)
Baptisia australis (S2)
Bartonia paniculata (S3)
Bidens discoidea (S3)
Bidens laevis (S1)
Carex bauxbaumii (S3)
Carex bicknellii (S1)
Carex bullata (S1)
Carex disperma (S3)
Carex lasiocarpa (S3)
Carex limosa (S2)
Carex oplicosperma (S2)
Carex paupercula (S3)
Carex polymorpha (S1)
Carex retrorsa (S1)
Carex richardsonii (S1)
Carex sprengelii (S3)
Cerastrium velutinum var. villosissimum (S1)
Chionanthus virginicus (S2S3)
Cryptogramma stelleri (S1)
Cuscuta pentagona (S2)
Deschampsia cespitosa (S2S3)
Dicanthelium annulum (S2)
Lathyrus ochroleucus (S1)
Liatris scariosa (S2)
Linum intercursum (S1)
Listera smallii (S3)
Lobelia dortmanna (S2)
Lupinus perennis (S3)
Lycopus rubellus (S1)
Lygodium palmatum (S4)
Lysimachia hybridia (S1)
Magnolia virginiana (S2)
Nymphoides cordata (S2)
Oclemena nemoralis (S1)
Oxydendrum arboreum (S3S4)
Oxypolis rigidior (S3)
Packera anonyma (S2)
Penstemon canescens (S3)
Phermeranthus teretifolius (S2)
Physalis virginiana (S1S2)
Pinus echinata (S1S2)
Platanthera blephariglottis (S2S3)
Platanthera ciliaris (S2)
Platanthera hookeri (S1)
Pluchea odorata (S1)
Polygala Polygama (S1)
Potamogeton confervoides (S2)
Potamogeton richardsonii (S3)
Quercus falcata (S1)
Quercus phellos (S2)
Sagittaria calycina var. spongiosa (S1)
Schoenoplectus fluviatilis (S3)
Schoenoplectus smithii (S1)
Schoenoplectus torreyi (S1)
Scirpus ancistrochaetus (S1)
Scirpus pedicellatus (S1)

Dicanthelium oligosanthes (S2S3)
Dicentra eximia (S1)
Echinochloa walteri (S1)
Eleocharis obtusa var. peasei (S1)
Eleocharis parvula (S1)
Elymus trachycaulus (S3)
Euphorbia purpurea (S1)
Eurybia radula (S2)
Fimbristylis annua (S2)
Fraxinus quadrangulata (S1)
Galium latifolium (S3)
Galium trifidum (S3)
Gaultheria hispidula (S3)
Gaylussacia brachycera (S1)
Goodyera tesselata (S1)
Heteranthera multiflora (S1)
Hieracium trailii (S1)
Hypericum densiflorum (S3)
Hypericum stragulum (S2)
Iris verna (S1)
Isoetes valida (S1S3)
Juniperus communis (S2)
Lactuca hirsuta (S3)
Scleria pauciflora (S2)
Sisyrinchium atlanticum (S1)
Solidago speciosa var. speciosa (S3)
Solidago uliginosa (S2)
Sorbus decora (S1)
Sporobolus heterolepis (S1)
Stellaria borealis (S1S2)
Symphyotrichum depauperatum (S2)
Symphyotrichum praealtum (S3)
Taedinia montana (S1)
Tipularia discolor (S3)
Trillium cernuum (S2)
Utricularia cornuta (S2)
Uvularia pudica (S3)
Veratrum virginicum (S1)
Viola selkirkii (S3S4)
Woodwardia areolata (S2)
Xyris torta (S1)
Zizania aquatica (S3)

Community Types

Acidic shrub swamp (S3)
Black spruce – tamarack palustrine woodland (S2)
Big bluestem – Indian grass river grassland (S3)
Common cattail – sphagnum moss (SNR)
Ephemeral/vernal pools (S3)
Graminoid marsh (S3)
Hemlock – mixed hardwood palustrine forest (S3S4)
Hemlock palustrine forest (S3)
Leatherleaf – bog rosemary peatland (S2S3)
Leatherleaf – cranberry peatland (S2S3)
Leatherleaf – sedge wetland (S3)
Northern conifer swamp (S3S4)
Pitch pine – Scrub oak woodland (S2S3)Red spruce – mixed hardwood palustrine forest (S3)
Robust emergent marsh (S2)
Scrub oak shrubland (S3)
Sedge – grass colony (SNR)
Serpentine pitch pine – oak forest
Speckled alder swamp (SNR)
Sphagnum – beaked rush peatland (S3)
Three-way sedge – sphagnum moss (SNR)

Terrestrial Invertebrates

Amblyscirtes vialis (S2)
Anisota stigma (S1S2)
Anthocharis midea (S3)
Apharetra dentata (S2)
Aplectoides condita (S2S3)
Apodrepanulatrix liberaria (S1S3)
Artace cribraria (S1)
Atrytonopsis hianna (S2)
Callophrys gryneus (S3)
Callophrys irus (S2)
Caripeta aretaria (S1S2)
Carterocephalus palaemon mandan (S2)
Catocala sp. 1 nr. Jair (S1)
Chaetaglaea cerata (S2S3)
Chlosyne harrisii (S3)
Hemileuca maia (S1S2)
Hesperia leonardus (S3)
Hesperia metea (S2)
Homomelina laeta
Hypagyrtis esther (S2S3)
Idaea eremiata (S1)
Idaea violacearia (S1)
Itame sp. 1 nr. Inextricata (S1)
Lagoa cripata (S1)
Lycaena epixanthe (S2)
Merope tuber (SU)
Metaxaglaea semitaria (S2)
Papaipema sp. 1 (S2)
Parahypenodes quadralis (SU)
Platyperigea meralis (S1)

Cincindela unipunctata (S1)
Cisthene packardii (S1S3)
Cisthene plumbea (S1)
Citheronia regalis (SU)
Crambidia pura (SU)
Diarsia rubifera (SU)
Elaphria cornutinis (SU)
Epiglaea apiata (S3S4)
Erastria coloraria (S1)
Erynnis persius persius (S1)
Euphyes dion (S2)
Glena cognataria (S1)
Psectraglaea carnosa (S1)
Renia sp. 1 nr. discoloralis (S1?)
Richia acclivis (S1S2)
Sideridis maryx (S1)
Sphinx gordius (S1S3)
Sutyna private teltowa (S1)
Tolype notialis (S1)
Xestia elimata (S2S3)
Zale curema (S1)
Zale oblique (S1)
Zale squamularis (S2S3)
Zale submediana (S2)
Zanclognatha martha (S1S2)

Reptiles, Amphibians, Fish, Aquatic Invertebrates

Alasmidonta marginata (S4)
Alasmidonta undulata (S3S4)
Alasmidonta varicosa (S2)
Aneides aeneus (S1)
Crotalus horridus (S3S4)
Epioblasma torulosa rangiana (S2)
Lasmigona subviridis (S2)
Lithobates sphenocephalus utricularius (S1)
Opheodrys aestivus (S1)
Pleurobema clava (S1S2)
Psuedemys rubriventris (S2S3)
Quadrula cylindrical (S1)
Scaphiopus holbrookii (S1)
Stygobromus allegheniensis (S2S3)
Villosa fabalis (S1S2)

Birds, Mammals

Asio flammeus (S1)
Haliaeetus leucocephalus (S2)
Myotis leibii (S1)
Myotis septentrionalis (S1)
Neotoma magister (S3)
Sorex palustris albibarbis (S3)

Federally Listed Plants and Animals

Epioblasma torulosa rangiana (S2)
Pleurobema clava (S1S2)
Scirpus ancistrochaetus (S1)

APPENDIX 4:

FSC-US DRAFT HIGH CONSERVATION VALUE FOREST
ASSESSMENT FRAMEWORK

Revised: July 7, 2010
Please address comments to: Gary Dodge, Director of Science and Certification, FSC-US; gdodge@fscus.org
High Conservation Value Forests (HCVFs) are managed to protect and maintain their identified high conservation value attributes. In some cases, active management is consistent with these attributes, and in other cases (e.g., most old growth forests), active management is specifically precluded.
FSC introduced the concept of High Conservation Value Forests (HCVFs) in 1999 to ensure identification and proper management of forest areas with exceptional conservation value. FSC defines High Conservation Value Forests as those that possess one or more of the following High Conservation Values (HCVs):

1. HCV forest areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g., endemism, endangered species, refugia);
2. HCV forest areas containing globally, regionally or nationally significant large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance;
3. HCV forest areas that are in or contain rare, threatened or endangered ecosystems;
4. HCV forest areas that provide basic services of nature in critical situations (e.g., watershed protection, erosion control);
5. HCV forest areas fundamental to meeting basic needs of local communities (e.g., subsistence, health); or,
6. HCV forest areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).

How to use the framework:
The High Conservation Value Forest (HCVF) Assessment Framework is a guidance document to help land managers identify if High Conservation Values (HCVs) are present on the forest. The Framework includes a set of six tables, one for each HCV. The land manager is not required to use this Assessment Framework in identifying HCVs on their FMU; however, compliance with Principle 9 of the FSC-US Forest Management Standard requires that the HCVF assessment is consistent with the assessment process, definitions, data sources, and other guidance described in the US National HCVF Assessment Framework.
A "No" answer to the questions in this Framework means that the forest operation does not include HCVs with the characteristics indicated by that question and associated guidance. A "Yes" answer will generally indicate the presence of an HCV. However, final determination of the presence or absence of an HCV should be made by the forest owner or manager based on the weight of available evidence, including data and applicable consultations.
As required in Indicator 9.1.c in the FSC-US Forest Management Standard, the report summarizing the HCVF assessment will vary depending on the size and complexity of the FMU

and the HCVs identified. At minimum, the assessment shall describe data considered, stakeholders consulted, and conclusions regarding identified High Conservation Values.
This Assessment Framework is also applicable for conducting assessments for controlled wood as per FSC-STD-30-010.
Guidance on Assessment Process: Data gathered to address rare or important ecological features associated with Criteria 6.1, 6.2, 6.3, and 6.4 should be the starting point for this assessment. If there is a concentration of these values and additional conservation is warranted

to ensure that the integrity of the area as a whole is maintained, then HCVF designation is warranted.

Existing assessments of biodiversity values undertaken by public agencies and/or other conservation groups may be used when considering if this HCV is present. When a property adjacent to an area with known biodiversity values has not been surveyed for ecological values, then consultation with an outside expert may be necessary to determine if the High Conservation Values also occur on the FMU.

Initial consultation for HCVs 1-3 is generally with state Natural Heritage programs and state wildlife agencies. The US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service should be consulted if the state conservation agency does not have USFWS location information.

In some regions TNC's Ecoregional Assessments may also identify areas with significant concentrations of biodiversity values. While areas identified on these maps are not intended to be HCVF as defined below, the compilation of data and consultation with TNC may provide useful information.

Additional consultation may be appropriate if the FMU is adjacent to an identified area with regionally significant concentrations of biodiversity values, or if the FMU contains ecosystems and site conditions that are similar to such areas.

On large FMUs, for HCVF Attributes 1-4, an FMU-specific assessment including on-site review may be appropriate if the FMU has not been assessed by a qualified ecologist and evidence suggests that HCVs may be present.

HCV 1: Forest areas containing globally, regionally or nationally significant concentrations of biodiversity values (e.g., endemism, endangered species, refugia).
Definition of 'Significant concentrations of biodiversity values': areas that contain concentrations of rare/threatened/endangered species, natural communities, or other biodiversity values that occur in numbers, frequency, quality, and/or density that are sufficiently outstanding to be considered unique or highly important in comparison with other areas within the ***ecoregion*** within which the FMU is located. **Definition of Region/Ecoregion:** For the purposes of HCVF assessment, the ecoregion will in

most cases be consistent with the scale of the USFS Section within which the ownership is located (see Ecoregion Map). If data for the region are limited, or in the cases of very small ecological sections, a larger area may be considered if justified.). Where justified by available data, a comparable classification system (e.g., TNC's Ecoregion Map) may be used.

Guidance on Data sources: The rigor of the assessment, including choices of data sources consulted, is based on the likelihood of HCVs on the FMU and the risk of negative impacts to the HCVs. Data sources include:

- State Natural Heritage Programs
- State conservation, fish and wildlife Agencies
- State Wildlife Action Plan
- US Fish and Wildlife Service
- National Marine Fisheries Service
- Nature Serve
- Conservation groups whose primary mission is science-based biodiversity protection and management (e.g., The Nature Conservancy, Audubon).
- Local experts (e.g. scientists, tribal experts)
- Forest Management Unit (FMU) cover type maps and forest inventory data
- US Forest Service (USFS) Ecoregions See Appendix D http://www.fs.fed.us/land/ecosysmgmt/colorimagemap/ecoreg1_provinces.html; or

http://nationalatlas.gov/natlas/Natlasstart.asp click on *Biology/Ecoregion Bailey/Province and Section*.

Guiding Questions	Guidance
1.1. Does all or part of the FMU contain an area that is legally protected or managed primarily for concentrations of biodiversity values that are significant at the ***ecoregion*** or larger scale**,** or is such an area proposed for protection?	See guidance and definitions above.
1.2. Does all or part of the FMU contain an area with significant ***concentrations of rare, threatened or endangered species or rare ecological communities***, **endemic** (range restricted) species and/or natural communities that are significant at the ecoregion scale?	See guidance and definitions above. In most cases these areas are likely to be known to state conservation agencies (e.g. Natural Heritage and wildlife). However, not all "concentrations" identified by an agency may meet the intent of this HCV. This could also include areas with mapped significant seasonal concentrations of species (e.g., migratory staging areas). If state-level conservation rankings are available, they

	should be considered in the assessment. If state-level rankings are not available, then managers should seek the best available data.

Draft -- FSC-US HCVF Assessment Framework 4 Draft -- FSC-US HCVF Assessment Framework 5

HCV 2. Forest areas containing globally, regionally or nationally significant large landscape level forests, contained within, or containing the management unit, where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance.
Definition of 'Large landscape-level forests': Relatively contiguous areas of forest (which may be crossed by land management roads or public roads). At the minimum these forests are likely to be thousands or tens of thousands of acres in size. However, "large" is relative to ecoregion landscape context (particularly the size of forested blocks in the ecoregion) and might be smaller or larger than this figure as indicated by consultation with regional experts. In ecoregions where natural forests are heavily fragmented by forest type conversion or land use conversion, the increased value of smaller occurrences of remaining natural forest should also be included in the assessment. The forest may be in single or multiple ownerships. **Definition of 'Significant':** The forest is significant in the ecoregion due to its size, condition, and/or importance to biodiversity conservation. Factors to consider include: • Rarity of forests of this size and quality within the ecoregion • Less affected by anthropogenic factors than similar areas in the ecoregion. See additional guidance below. **Definition of Ecoregion**: See definition in HCV 1 ***Data sources:*** See HCV 1 Guidance on Assessment Process. **Guidance:** Areas with HCV 2 are less likely to be mapped than areas qualifying for HCV 1. When it is not clear if this value is present, then analysis of forest inventory and cover type data should be used to determine if HCV 2 occurs on the FMU. The general approach in assessing for HCV 2 is to compare forest characteristics (such as extent and intensity of harvest practices, forest communities, successional stages, structures, and species composition and abundance) with natural forests that have only been subject to natural disturbance processes or minimal human intervention. Aerial photography or

satellite images of the surrounding landscape should also be considered.

Guiding Questions	Guidance
2.1. Does all or part of the FMU contain a globally, regionally or nationally **significant** large landscape-scale forest where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance? What would happen to regional biodiversity if the characteristics of this forest (e.g., age class structure or relative species abundance) were significantly altered?	Areas with this HCV include: 1. Landscape-scale natural forests that have experienced lesser levels of past human disturbance (e.g., minimal timber harvesting) or other management (e.g. fire suppression), or areas within such forests (e.g., part or all of ownerships or management units). 2. Managed forests that are rare at the ecoregion or larger scale because they contain forest communities with successional stages, forest structures, and species composition that are similar in distribution and abundance to natural forests that have been only subject to natural disturbance processes or minimal human intervention., This

would also include areas (e.g., part or all of ownerships or management units) within such forests. Because these are managed forests they would not likely contain old growth, but nonetheless they would typically contain an abundance older forest attributes (biologically mature or late successional) characteristic of the forest type, as indicated by tree species composition, tree size, or other attributes applicable to the forest community type, such as coarse woody debris, snags, herb diversity, structural understory diversity, and the lack of invasive plant species.

In some regions, Landfire's FRCC index can be used to identify these areas that have landscape scale expressions of low ecological departure from natural conditions (e.g. FRCC 1). These data may be used to supplement analyses based for Guidance conditions 1 and 2, above.
Examples: HCVFs in this group are more likely to be in public ownership, although areas in private ownership may that have experienced low levels of timber harvesting could also qualify if they are part of landscape-scale forests as described above.

2.2. Does all or part of the FMU contain a landscape-scale forest recognized as being significant to biodiversity conservation at the ecoregion scale because it contains landscape-scale biodiversity values that are not present on other forests due to landscape-scale habitat modifications on surrounding lands, (such as land use conversion or forest management practices that have significantly altered forest biodiversity values)? What would happen to regional biodiversity if the characteristics of this forest (e.g., age class structure or relative species abundance) were significantly altered?	Areas with this HCV include: a) Forests recognized as being regionally significant at the ecoregion or larger scale by conservation organizations due to the unusual landscape-scale biodiversity values provided by size and condition of the forest relative to regional forest land cover and land use trends. b) Forests that provide regionally significant habitat connectivity between larger forest areas. See guidance above. These would typically be managed forests. Examples: HCVFs in this group are likely to be comparatively intact landscape-scale forests in developed regions (including regions where forests have been converted to agricultural use), relatively mature landscape-scale forests in regions where short-rotation forestry is the norm, and “island” forests isolated by agriculture or natural changes in vegetation (e.g., isolated mountain ranges surrounded by grassland).

HCV 3. Forest areas that are in or contain rare, threatened or endangered ecosystems.

Guidance: Rare, threatened and endangered ecosystems include old growth, roadless areas, and other ecosystems that are considered 'rare' at a global, regional, or local (state) level.

• Distinctiveness in terms of size, quality (particularly lack of human disturbance), or location within the ecosystem's geographic range may be considered in assessing ecosystem rarity.

• For areas that have not been surveyed by state Natural Heritage programs or other plant community experts, forest manager should conduct a survey for assemblages of HCV3 attributes.

• For old growth, stand-level assessments are appropriate

• For roadless areas, cover type maps, and site reconnaissance information is appropriate.

Definition of Old growth: (1) the oldest seral stage in which a plant community is capable of existing on a site, given the frequency of natural disturbance events, or (2) a very old example of a stand dominated by long-lived early- or mid-seral species The onset of old growth varies by forest community and region. For example, in the Pacific Coast region, old growth often begins around 200-250 years of age, whereas in the Northeast old growth is generally begins at 150-200 years after stand-replacing disturbances. Depending on the frequency and intensity of disturbances, and site conditions, old-growth forest will have different structures, species compositions, and age distributions, and functional capacities than younger forests. Old-growth and late successional stands and forests include: A) ***Type 1 Old Growth:*** stands that have never been logged and that display late successional/old-growth characteristics. B) ***Type 2 Old Growth:*** stands that have been logged, but which retain significant late-successional/old-growth structure and functions.

Definition of Roadless Area: Roadless areas are forested areas without evidence of roads or skid trails.

Data sources: Sources of information may include but are not limited to:

• FMU cover type maps and forest inventory data

• Nature Serve

• State Natural Heritage Programs

• Conservation NGOs

• Local experts (e.g. scientists, tribal experts)

• For Rare ecosystems, the primary data sources is the rare ecosystem information gathered as per Criteria 6.1, 6.2 and 6.4 in the FSC-US Forest Management Standard.

Guiding Questions	Guidance
3.1. Does the FMU contain old growth stands?	National: See guidance and definition above and the appendix for regional variation. Regional: Regionally-specific assessment tools have been developed to help identify old growth and/or late successional forests. Examples include those developed

by the State of Washington DNR, State of Minnesota DNR, and by the Manomet Center for Conservation Sciences (Maine). These tools are not definitive for the purposes of the HCVF assessment but may be of practical value to the land manager. Other regional definitions and studies should be considered where available.	
3.2. Does the FMU contain or is it part of a roadless area >500 acres in size or that has unique roadless area characteristics?	Definition: See definition and guidance above Guidance on size: 500 acres is a general size guideline, not a definitive minimum, and generally applies to "block" shaped areas rather than linear figures such as riparian zone. Note: the HCV only occurs within the roadless area and does not apply to the entire FMU.
3.3. Does the FMU contain any other rare, threatened, or endangered ecosystem?	See definition and guidance above.

HCV 4. Forest areas that provide basic services of nature in critical situations (e.g., watershed protection, erosion control).	
Intent: HCV 4 is focused on basic services of nature for human needs. **Guidance on 'critical situations' – general**. FSC-US cannot provide clear thresholds on when an area provides critical protection. An operable question to help address this question may be, "What is the impact of converting the forest in question to a non-forest use?" **Guidance on 'critical situations' – watershed protection:** A forest that is part of a local drinking water catchment or irrigation supply system, or is a critical source for a remote location (i.e., water is pumped to a remote location) may be considered a 'critical situation', particularly when people are dependent on the guarantee of water for drinking or irrigation, or where the regulation of water flow guarantees the existence of fishing grounds or agricultural land on which the local people are dependent, protects downstream communities from flooding, or provides critical protection to rare, threatened, or endangered aquatic species. ***Data sources:*** Data sources may include, but are not limited to: • Soil, watershed and aquifer maps • Hydrologists and soil scientists in state or federal agencies or research institutions. • Local or regional water management districts.	
Guiding Questions	**Guidance**
4.1. Is all or part of the FMU owned or managed for the primary purpose of providing a source of community	

drinking water?	
4.2. Does all or part of the FMU play a 'critical watershed role' in protecting community drinking water supplies?	See guidance on "Critical situations – watershed protection" above.
4.3. Does all or part of the FMU include extensive floodplain or wetland forests that are critical to mediating flooding or in controlling stream flow regulation and water quality?	See guidance for "Critical situations" above.
4.4. Is all or part of the FMU critical to control erosion, landslides, or avalanches that would threaten local communities?	See guidance for "Critical situations" above.

HCV 5. Forest areas fundamental to meeting basic needs of local communities (e.g., subsistence, health, well-being).

Guidance and Definitions

Definition of 'basic human needs': Local people use the area to obtain resources on which they are critically dependent. This may be the case if local people harvest food products from the forest, or collect building materials or medicinal plants where no viable alternative exists. Forest uses such as recreational hunting or commercial timber harvesting (i.e., that is not critical for local building materials) are not basic human needs.

Definition of 'fundamental': Loss of the resources from this area would have a significant impact in the supply of the resource and decrease local community well-being. FSC-US has not set a threshold to determine the amount of basic human needs that constitute "fundamental." Outside of the US, precedent has been set in at least one HCVF "toolkit" at 25% (Indonesia; see Rayden 2008).

Data sources: In most cases assessment of local community rights (i.e., legal or customary tenure or use rights) and Native American rights consistent with Criterion 2.2, Principle 3, and Criterion 4.4 will be sufficient to determine if there is potential for this HCV to occur on the forest. HCV 5 sits alongside these requirements as additional safeguards for exceptional circumstances. Sources of assessment information may include but are not limited to:

- Native American tribes, bands, and organizations
- Community groups dependent upon the forest for basic needs as identified
- Federal and state government agencies with responsibilities to Native American groups and local communities
- Anthropologists or social scientists with local forest expertise

Guiding Questions	Guidance
5.1. Is all or part of the FMU fundamental to the basic needs of a local community?	See definitions and guidance above.

HCV 6. Forest areas critical to local communities' traditional cultural identity (areas of cultural, ecological, economic or religious significance identified in cooperation with such local communities).	
Definition of 'cultural significance': These include religious/sacred sites, burial grounds or sites at which regular traditional ceremonies take place. They may also include outstanding natural landscapes that have evolved as a result of social, economic, administrative, and/or religious imperative (i.e., fossils, artifacts, areas representing a traditional way of life); or areas that by virtue of their natural properties possess significant religious, artistic or cultural association. **Definition of 'critical':** Loss of cultural resources from this area would have a significant impact to the traditional cultural identity of local and regional communities. **Data sources:** In most cases, assessments of local community rights (i.e., legal or customary tenure or use rights) and Native American rights consistent with Criterion 2.2, Principle 3, and the social impact evaluation of Criterion 4.4 will be sufficient to determine if there is potential for this HCV to occur on the forest. HCV 6 sits alongside these requirements as additional safeguards for exceptional circumstances. Sources of assessment information may include but are not limited to: • Native American tribes, bands, and organizations • Federal and state government agencies with responsibilities to Native American groups and local communities • Anthropologists or social scientists with local forest expertise • State cultural heritage list	
Guiding Questions	**Guidance**
6.1. Does all or part of the FMU contain specific forest area that is critical to the tribe and local community's cultural identity?	See definitions and guidance above.
6.2. Are significant cultural features created intentionally by humans present?	
6.3. Are outstanding natural landscapes present that have evolved as a result of social, economic, administrative, and/or religious imperative?	

Appendix 1: Regional variation and guidance

Ozark Ouachita:

• roadless areas (areas without roads, logging roads, or skid trails), larger than 500 acres;
• habitats for threatened or endangered species, either intact or in need of restoration;
• unique and sensitive geomorphic features, such as caves and rock outcrops;
• and buffers designed to protect their integrity, and forested wetlands or glades, including springs, fens, and seeps.

Lake States:

Examples of forest areas that *may have* high conservation value attributes include, but are not limited to:
Central Hardwoods:
• Old growth
• Old forests/mixed age stands that include trees >160 years old
• Municipal watersheds –headwaters, reservoirs
• Rare, Threatened, and Endangered (RTE) ecosystems, as defined by GAP analysis, Natural Heritage Inventory, and/or the World Wildlife Fund's Forest Communities of Highest Conservation Concern, and/or Great Lakes Assessment
• Intact forest blocks in an agriculturally dominated landscape (refugia)
• Intact forests >1000 ac (valuable to interior forest species)
• Protected caves
• Savannas
• Glades
• Barrens
• Prairie remnants

North Woods/Lake States
• Old growth
• Old forests/mixed age stands that include trees >120 years old
• Blocks of contiguous forest, > 500 ac, which host RTEs
• Oak savannas
• Hemlock-dominated forests •
Pine stands of natural origin
• Contiguous blocks, >500 ac, of late successional species, that are managed to create old growth
• Fens, particularly calcareous fens
• Other non-forest communities, e.g., barrens, prairies, distinctive geological land forms, vernal pools
• Other sites as defined by GAP analysis, Natural Heritage Inventory, and/or the World Wildlife Fund's Forest Communities of Highest Conservation Concern

Note: In the Lake States-Central Hardwoods region, old growth (see Glossary) is both rare and invariably an HCVF.

Note: Old forests may or may not be designated HCVFs. Old forests that either have or are developing old-growth attributes, but which have been previously harvested, may be designated HCVFs.
Appalachia:
Forest and community types in the Appalachia region that have HCVF attributes include, but are not limited to:
•
Old-growth oak-hickory (Quercus spp.-Carya spp.) forests on the Cumberland Plateau and on the Highland Rim of Tennessee
• Mixed mesophytic cove sites on the Cumberland Plateau
• Limestone glades in Tennessee and Kentucky

• Pocosins (evergreen shrub bogs) and other mountain bogs in Virginia, Tennessee, and North Carolina
• other forest and woodland plant community types listed by NatureServe as critically endangered, endangered, or vulnerable (G1-G3, N1-N3, and S1-S3) in the region, unless further refined by consultations with heritage programs, local native plant societies, local experts, and ENGOs;
•
un-entered old-growth stands and intact old-growth forests;
• roadless areas (areas without roads, logging roads, or skid trails), larger than 500 acres;
•habitats for threatened or endangered species;
• unique and sensitive geophysical features, such as caves and rock outcrops; and
• forested wetlands or glades, such as springs, fens, and seeps.
• Spruce-fir (Picea rubens-Abies fraseri) forests in southern Appalachia
• Atlantic white-cedar (Chamaecyparis thyoides) stands Red spruce (Picea rubens) forests in central Appalachia

NorthEast:

• Examples include the riverbank areas of the St. John's River in Maine, the "Yellow Bog area" within the Nulhegan watershed of northeastern Vermont, and the Southeastern Massachusetts Bioreserve.
• More common in the northeast are discrete areas of biodiversity value (i. e., they generally contain one rare natural community or an endangered species or two) that are not part of a network of isolated but interconnected habitats that would lead to HCVF status at the landscape scale.
• The best examples are in public and/or private conservation ownership such as the Big Reed Preserve in Maine, parts of the White Mountain National Forest in New Hampshire and Maine, and parts of the Adirondack and Catskill Parks in New York.
• There are areas of a few thousand acres in northern Maine where species composition and structure closely approach natural conditions due to light harvest history and a relatively long time (30-50 years) since the last harvest.
• Note: Rare, threatened, or endangered (hereafter collectively referred to as “rare”) ecosystems belong to a subset of natural communities state-ranked as S1, S2, or S3 or

G1, G2,or G3 by state Natural Heritage programs. Rare ecosystems may also include outstanding examples of more common (ranked S4 or S5) community types. Rare natural communities that are not extensive in area may be adequately protected under Criterion 6.2 and/or 6.4.

• In the Northeast, rare communities or assemblages of communities dominated by a rare community that approach or exceed 500 acres (200 ha) in area are normally delineated and managed as rare ecosystems under HCVF.

• Other factors that may be considered include, but are not limited to, Relative rarity of S3-ranked communities (which may range from 21 to 100 examples in a state), Distinctiveness in terms of size (a smaller or larger threshold than 500 acres might be appropriate, depending on the size range of the community type), quality (particularly lack of human disturbance), or location within the community's geographic range, Vulnerability to degradation, and Proximity to protected examples of the same ecosystem type.

• Due to their rarity in the Northeast, intact old growth forests (see glossary), which represent an extremely rare stage of what may be a common natural community type, normally qualify as "rare, threatened, or endangered ecosystems" under the HCVF definition.

• Note: Examples of forest areas that provide basic services of nature in critical situations in the northeast are watersheds that supply water for municipalities (examples may include Quabbin Reservoir in Massachusetts, the Croton Reservoir in New York and Sebago Lake in Maine). There are few areas within the forest regions of New York and New England that provide basic services of nature in critical situations above and beyond the ecosystem services provided by all forests.

Appendix 2: References

Rayden, T. 2008. ***Assessment, management and monitoring of High Conservation Value Forest: a practical guide for forest managers.*** Proforest, Oxford, England. http://www.proforest.net/publication/pubcat.2007-01-19.4709481979 (last accessed 2/10/09).

Stewart, C., G. Perpetua, T. Rayden, and R. Nussbaum. 2008. ***Good Practice Guidelines for High Conservation Value Assessments: practical guide for practitioners and auditors.*** Proforest, Oxford, England. http://www.proforest.net/publication/pubcat.2007-01-19.4709481979 (last accessed 2/10/09).

Proforest 2003. ***High Conservation Value Forest Toolkit***. http://www.hcvnetwork.org/resources/global-hcv-toolkits.