HIXON FOREST:
COMPREHENSIVE FOREST MANAGEMENT PLAN

LANDOWNER: CITY OF LACROSSE
PARKS, RECREATION AND FORESTRY
LACROSSE, WI

PREPARED BY:
REYCO FOREST MANAGEMENT LLC
BILL REYNOLDS
EAGLE RIVER, WI

PLAN START DATE: JULY 1, 2018
PLAN END DATE: DECEMBER 31, 2068
PLAN DURATION: 50 YEARS

CONTACT INFORMATION:

Landowner name and contact information:

City of LaCrosse
Parks, Recreation, and Forestry
Hixon Forest
400 LaCrosse St
LaCrosse, Wi 54601
Phone: 608 789 7533
Email: Recreation@cityoflacrosse.org

Plan Writer name and contact information:

Bill Reynolds
Reyco Forest Management LLC
3005 Pine Island Lake Road
Eagle River, Wi 54521

Certifications and Qualifications

1. Bachelor of Science Degree in Forest Resource Management,
2. Master of Science Degree in Land and Resource Management Planning,
3. USDA Natural Resources Conservation Service (NRCS) Technical Service Provider (TSP) in both Wisconsin and Michigan.
4. Wisconsin Department of Natural Resources Certified Plan Writer (CPW) and Cooperating Forester (CF).
5. USDA Forest Service (retired) Environmental Coordinator, Forest Planner and Program Manager(s),
6. USDA Forest Service (retired) Certified Silviculturist.
7. Certified Tree Farm Inspector for Michigan and Wisconsin.
8. Certified Conflict Mediator trained via USDA Forest Service and Michigan Supreme Court.

Property Location: 2600 Old Quarry Road, LaCrosse, Wi. Township 16 North, Range 7 west, parts of sections 33, 34 and 35
Total Plan Acreage: 747.48 acres woodland and 106.52 acres of prairie lands for a total of 854 acres.
Plan Start Date: JULY 1, 2018 **Plan End Date:** DECEMBER 31, 2068 **Plan Duration:** 50 YEARS

Signature Blocks:

Plan Writer Contact Information				
Name: Bill Reynolds Signature:	Company: Reyco Forest Management			Phone Number (715) 891-2778 (715) 479-7906
Address 3005 Pine Island Lake Road	City Eagle River	State WI	Zip Code 54521	E-mail reycoforestry@gmail.com

Hixon Forest Contact Information				
Name Jay Odegaard, CPRP Signature:				Contact Information Phone: 608 789 7593
Address: City of Lacrosse Parks, Recreation, and Forestry, 400 LaCrosse Street County: LaCrosse	City: Lacrosse	State WI	Zip Code 54601	E-mail: odegaardj@cityoflacrosse.org

Hixon Forest Signature. To be signed by person representing Hixon Forest for acceptance of Hixon Comprehensive Integrated Forest Management Plan.		
Name (please print)	Signature	Date Signed

Table of Contents

Executive Summary

The Hixon Forest: Comprehensive Forest Management Plan (HFMP) represents the logical next step forward built on the Hixon Forest 2014-2020 Management Alternatives and Vegetation Inventory Summary (HIMAVIS) completed in February, 2014. The HFMP is organized in to five (5) sections that serve as "building blocks" to facilitate effective and efficient integrated land and resource(s) management of the Hixon Forest. Those five sections are: I. Introduction, II. Inventory, III. Implementation, IV. Monitoring and V. Appendix.

This Plan serves as a "guide to action" and, as such, serves as a bridge and conduit from previous efforts to collect and document biological and social data in an organized systematic strategy to allocate resources and social management actions that serve to respond to identified issues, concerns and opportunities. By design, implementation of the HFMP is a dynamic and "ever adjusting" process that is "nimble" enough to reflect the fluid nature of changing issues, public involvement, fiscal resources and management opportunities. The current HFMP goals are the key "drivers" and "guideposts for the Hixon Forest Management Plan.

Goals

1. To foster management of Hixon Forest as a natural resource first.
2. Protect significant natural areas, restoring natural habitats.
3. Provide opportunities for education.
4. Provide low impact recreation.
5. Promote the overall health of the forest.

Key aspects of the HFMP include:

1. The Inventory section comprised of individual specific Resource Prescriptions for each of the forty nine (49) forest and prairie stands that make up the Hixon Forest. Each Resource Prescription includes a Current Conditions Narrative description, Forest Stand level Description of resources, values and issues, and Stand level management recommendations.

2. An Implementation section comprised of goal oriented "tools" such as Visual Quality Objectives (VQO), the Recreation Opportunity Spectrum (ROS), the Wildlife Habitat Suitability Index (WHI) and the Hixon Forest Stand specific Five year Vegetation Management Action Plan nested within a 50 year Planning Horizon.

3. A Monitoring section that anchors to the "Limits of Acceptable Change (LAC) process. The LAC process is designed to assist in determining and monitoring follow up management actions based on actual physical, biological and social impacts. Impacts are determined by established monitoring indicators and relevant standards for those indicators.

4. The HFMP will provide the City of LaCrosse Parks, Recreation and Forestry Department the foundation to informatively construct their Annual Program of Work and Budget based upon identified Goals and cost/income estimates down to the stand level.

In summary, the HFMP is a "living plan developed in the spirit of a dynamic process" that is designed to be flexible down to the basic "building block" (stand) level. It is intended to facilitate effective and efficient planned proactive implementation of integrated resource and social management actions for achievement of HFMP Goals (as stated above) in response to current and future issues, concerns and opportunities.

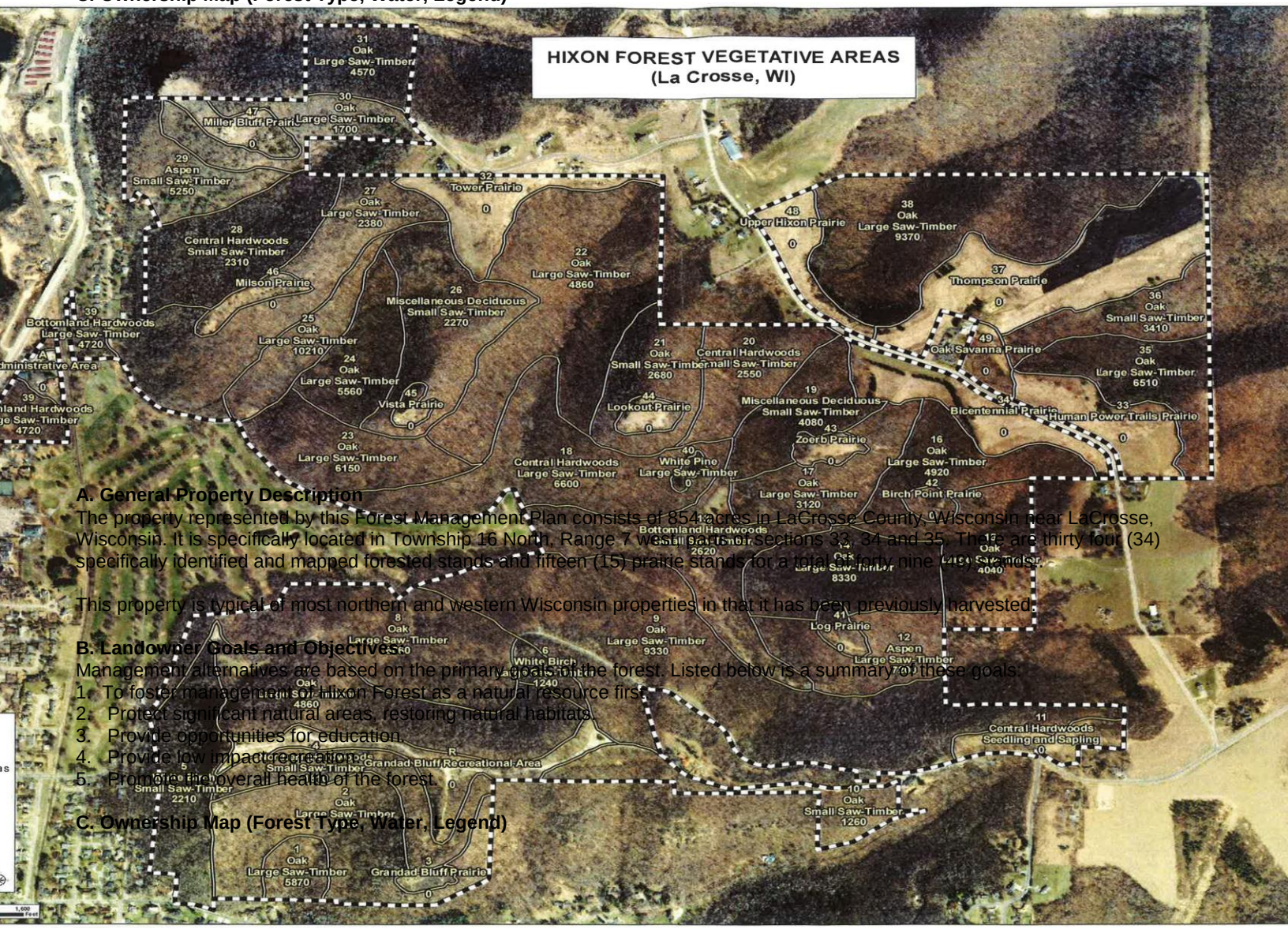
I. Introduction

A. General Property Description
The property represented by this Forest Management Plan consists of 854 acres in LaCrosse County, Wisconsin near LaCrosse, Wisconsin. It is specifically located in Township 16 North, Range 7 west, parts of sections 33, 34 and 35. There are thirty four (34) specifically identified and mapped forested stands and fifteen (15) prairie stands for a total of forty nine (49) stands..

This property is typical of most northern and western Wisconsin properties in that it has been previously harvested.

B. Landowner Goals and Objectives:
Management alternatives are based on the primary goals of the forest. Listed below is a summary of these goals:
1. To foster management of Hixon Forest as a natural resource first.
2. Protect significant natural areas, restoring natural habitats.
3. Provide opportunities for education.
4. Provide low impact recreation.
5. Promote the overall health of the forest.

C. Ownership Map (Forest Type, Water, Legend)



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C. Ownership Map (Forest Type, Water, Legend)

D. Stand Assessment Method:

Planning Steps

Step 1 – Identify Problems and Opportunities
Step 2 – Determine Objectives
Step 3 – Inventory Resources
Step 4 – Analyze Resource Data
Step 5 – Formulate Alternatives
Step 6 – Evaluate Alternatives
Step 7 – Make Decisions
Step 8 – Implement the Plan
Step 9 – Evaluate the Plan

Forest/Resource Inventory Methodology used to develop Hixon Forest: Comprehensive Forest Management Plan

The following process, methods and tools are used to develop the **Hixon Forest: Comprehensive Forest Management Plan**.

1. Establish landowner objectives and special needs by visiting with landowner.
2. Identify resource concerns and locate relevant existing data.
3. Establish boundary, stand locations and relevant features on aerial photo and topo map. Tools used include:
    a. Web Soil Survey to prepare Soils Report to identify soil(s) limitations and suit abilities,
    b. FGIS Mapping Program to identify property on aerial photo. Outline property boundary and individual stand boundaries, map roads, trails and streams (and other relevant features) with Garmin 62st handheld GPS device. FGIS is also used to calculate individual stand acres.
4. Aerial photos and maps assembled to prepare for and conduct field visit. In addition, also reference relevant local County aerial photos and maps.
    a. 10 BAF (basal area factor) prism or angle gauge used to establish tree stocking basal area in square feet per acre in enough random variable plots to estimate the overall stand basal area, normally 1 plot per 2 acres minimum dependent upon circumstances. This process takes place for each identified stand.
    b. Establish tree site index by identifying the representative dominant or co-dominant tree's age and height. A Suunto Clinometer is used to establish tree height and a Mora Increment Borer is used to identify age. Spencer Loggers Tape used to identify dbh (diameter breast height) and relevant distances. Stand pulpwood and sawtimber volumes determined via Biltmore stick, relevant Formulas, volume tables and Tally forms.
    c. Document existing stand data on Field Tally Form re: Primary Forest type, Secondary Forest type and Understory Forest type.
5. Complete Hixon Forest Management Plan in Office using Microsoft Windows

II. Inventory

A. Resource(s) Description(s)

1. Resource Concerns

This Forest Management Plan represents planned conservation treatments to treat the following resource concerns identified for this property: Reference USDA Natural Resources Conservation Service.

1. Degraded Plant Condition – Inadequate structure and composition.
2. Inadequate Habitat for Fish and Wildlife – Habitat degradation. Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife, or invertebrate species.

2. Special Environmental Concerns

1. Endangered and Threatened Species – A review of the Natural Resources Heritage Inventory (NHI) will be done prior to implementation of any practice on this property. This list contains native species known or suspected to be rare and/or declining in the state, natural communities and natural features occurring in Wisconsin.
2. Archaeological and Historical Information: A review of archaeological and historical records will be done prior to implementation of any practice on this property..
3. Invasive Species – Identified in the Hixon Forest 2014-2020 Management Alternatives and Vegetation Inventory Summary (HiMAVIS).

3. Potential Invasive Species - Gypsy Moth

Gypsy moth, an invasive species, is an insect that defoliates trees, such as, oaks, aspen, basswood, paper birch, tamarack and willows. Pines, spruces and hemlock can be defoliated if in proximity to favored hardwoods. Heavy defoliation from gypsy moth outbreaks is expected to occur on average about every 10 years. Tree mortality often follows defoliation. In the first wave of outbreaks, 20% of the area defoliated can be expected to have greater than 50% tree mortality. Most mortality occurs in suppressed or weak (low vigor) trees of species preferred by gypsy moth.

Despite gypsy moth, you can grow oak and other favored species. Defoliation of your forest can result in the death of some trees, but most trees usually fully recover. Mortality is typically the result of multiple stresses occurring together. Defoliation, drought frost, windstorms, other insects, diseases and overcrowding are all tree stressors. Trees with low reserves of starch in their roots are also less able to recover from stresses. Managing your forest to keep trees healthy is your best defense in reducing losses from gypsy moth outbreaks. Completing the regularly scheduled thinnings that are required in your management plan will promote and even rate of growth and minimize dramatic surges in growth that can deplete root reserves. Thinning reduced mortality in stands the most when they were conducted 4 – 10 years prior to defoliation. Thinning can cause short term stress as trees draw on root reserves to support top growth; if possible, avoid thinning within one or two growing seasons of heavy defoliation or drought.

To avoid stacking stresses and risking significant mortality in your stand(s), you should conduct a survey of gypsy moth egg masses to predict the likelihood of defoliation prior to establishing a partial harvest or thinning. If sampling indicates a density of gypsy moth egg masses greater than 1000 per acre, you should delay harvesting or thinning until the outbreak is past and the trees have recovered. Aerial spraying to suppress an outbreak may be an option for protecting regeneration or high value timber. If defoliation does resulting significant mortality in a stand, a salvage harvest may be appropriate; consult with your forester in this event. Information on gypsy moth and how to predict outbreaks is available at gypsymoth.wi.gov or by calling 1 800-642-MOTH.

D. Wildlife Species Habitat on the Hixon Forest

1. Major game wildlife habitat includes:

Whitetail deer transition and bedding cover, Turkey transition cover. Small mammal and predator, such as raccoon, fox, coyote, wolf, bear, snowshoe hare, gray squirrel transition cover.

2. Major non game wildlife habitat include:

Neo-tropical migratory song birds.

3. Habitat Overview:

Primarily mid successional and climax vegetation seral stages.

B. Resource(s) Prescriptions

Stand 1	Primary Forest Type: Oak Large Sawtimber lightly stocked (O15+[1]) Secondary timber type: Central Hardwoods Poletimber medium stocked (CH0511[2]) Understory: Central Hardwoods	5.36 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is primarily oak large sawtimber with a secondary timber type of central hardwoods (*basswood, hackberry, shagbark hickory and white oak*). Terrain includes multiple ravines. Invasive species include heavy Buckthorn and Japanese barberry infestation. There is reported evidence of neighbor encroachment.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ATISa habitat type
Forest Type/Species	

	Oak	Central Hardwoods				Total
Basal area	23	74				97
Volume – cords	0	7				7
Volume – thousand board feet (mbf)	2.376	3.494				5.870
Estimated Value – cords	0	$938				$938
Estimated Value - mbf	$2356	$3465				$5821
Total						$6759

Forest Health (Insects, disease, invasive species, timber productivity)	Some potential oak wilt. Heavy Buckthorn and light Japanese barberry infestations. Oak site index is 61.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged red oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand. This should be accomplished via a Commercial Timber Sale. The machinery type to be used will be dependent on resource needs, landowner goals and Timber Purchaser capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn and Japanese barberry (ongoing) 12/2020 - Two stage shelterwood harvest 12/2025 - Site preparation for natural regeneration 12/2030 - Tree establishment by planting if natural regeneration fails 12/2040 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic Considerations	Eliminate neighbor encroachment impacts, e.g. hunting stands, cut wood.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $3175 12/2020 - Two stage shelterwood harvest income estimate: $4055 12/2025 - Site preparation for natural regeneration cost estimate: $1100 12/2030 - Tree establishment by planting @400 trees/acre cost estimate: $1629 12/2040 – Overstory removal harvest after seedlings are established income estimate:$2704

Stand 2	Primary Forest Type: Oak Large Sawtimber medium stocked (O15+[2]) Secondary timber type: Central Hardwoods Poletimber lightly stocked (CH0511[1]) Understory: Central Hardwoods	31.1 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is primarily oak large sawtimber with a secondary timber type of central hardwoods (*basswood, hackberry, shagbark hickory and white oak*). Terrain includes multiple ravines. Invasive species include heavy Buckthorn and Japanese barberry infestation. There is reported evidence of neighbor encroachment.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ATISa habitat type

Forest Type/Species	Oak	Central Hardwoods				Total
Basal area	25	56				81
Volume – cords	8	5				13
Volume – thousand board feet (mbf)	1.522	2.478				4
Estimated Value – cords	$6220	$3888				$10108
Estimated Value - mbf	$8757	$3465				$12222
Total	$14977	$7353				$22330

Forest Health (Insects, disease, invasive species, timber productivity)	Some potential oak wilt. Heavy Buckthorn infestations. Oak site index is 65.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged red oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand. This should be accomplished via a Commercial Timber Sale. The machinery type to be used will be dependent on resource needs, landowner goals and Timber Purchaser capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn and Japanese barberry (ongoing) 12/2020 - Two stage shelterwood harvest 12/2025 - Site preparation for natural regeneration 12/2030 - Tree establishment by planting if natural regeneration fails 12/2040 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	An exit/entrance point off of Ebner Coulee Road would make this stand much more accessible for recreation use.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $18422 12/2020 - Two stage shelterwood harvest income estimate: $13398 12/2025 - Site preparation for natural regeneration cost estimate: $6384 12/2030 - Tree establishment by planting @400 trees/acre cost estimate: $9454 12/2040 – Overstory removal harvest after seedlings are established income estimate:$8932

Stand 3	Primary Type: Grandad Bluff Prairie	1.52 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is made up of small patches of dry prairies or "goat" prairies growing on south or southwest facing steep hillsides. They occur throughout the property in separate small areas (1-5 acres). Dry prairies are unique to the bluffs of this area and provide special habitat to animals and plants. They need work to maintain them as open so they do not fill in with woody vegetation, such as, prickly ash, white birch and cedar. The maintenance needed can be ongoing and done with volunteers or as possible by using hand tools to cut vegetation and by using prescribed fire. Individual areas can be expanded as possible.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ATISa habitat type
Forest Type/Species	n/a
Forest Health (Insects, disease, invasive species, timber productivity)	Moderate Buckthorn and Japanese Barberry infestations.
Fish & Wildlife Habitat Management	Maintain opening for birds and small mammals edge effect.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is to maintain and expand this dry prairie that is unique to the bluffs of this area and provide special habitat to animals and plants. The primary Resource Concern is Inadequate Habitat for Fish and Wildlife – Habitat degradation. – Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife or invertebrate species. The primary goals for this stand are 1. Control invasive species, and 2. Maintain and expand prairie openings. Options to accomplish include force account staff work, volunteers and partnership arrangements. Equipment to be used will be dependent on resource needs, landowner goals and workforce capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Control invasive species, 2. Maintain and expand prairie openings. and 3. Establish wildlife and pollinator Habitat for game and non-game (neo-tropical migratory songbird) habitat diversity.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn and Japanese barberry (ongoing) 12/2019 – Develop and establish a 50 year Cooperative Volunteer and Partnerships Goat Prairie Maintenance Agreement with organized financial and human support. Consider special interest groups and work for school credit programs. 12/2020 – Establish Stewardship Program in cooperation with timber sale program of work. 12/2020 - Develop Brush Disposal Plan (BD Plan).
Best Management Practices for Soil and Water	BMPs: Protecting Resources – 1. Operate mechanical equipment on the contour where necessary to minimize erosion.2. Minimize raking in areas, or under conditions, in which soil could erode and enter waterbodies. Two preferred practices are: a. shearing and raking when soil is frozen and b. raking lightly to remove slash only. 3. Suspend operations during wet periods if equipment begins to cause excessive soil disturbance. 4. Use patch scarification or low intensity prescribed burns on sites that have steep slopes, erodible or saturated soils, and on sites that drain to surface water.
Aesthetic and Recreation Considerations	Establish perimeter design and layout criteria to encourage a natural irregular edge appearance.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $900 12/2019 -: Develop and establish a 10 year Cooperative Volunteer and Partnerships Goat Prairie Maintenance Agreement: internal force account 12/2020 -: Establish Stewardship Program in cooperation with timber sale program of work. Internal force account 12/2020 - Develop Brush Disposal Plan (BD Plan). Internal force account

Stand 4	Primary Forest Type: Northern Hardwood Small Sawtimber lightly stocked (1115[1]) Secondary timber type: Aspen Poletimber medium stocked (CH0511[2]) Understory: Central Hardwoods	14.78 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is primarily northern hardwoods small sawtimber with a secondary timber type of aspen poletimber. It is an old quarry site. The ash in the overstory is the primary type but the aspen and birch in the sub canopy will probably be the next dominant type soon. A 8- inch birch was aged at 36 years old. There is a trail (looks unofficial) that starts near a parking lot and comes down from the ridge road to this stand, it switches back twice, and looks like an old quarry trail that heads downhill from this stand. There are many Scenic views of the cliffs that were created by quarrying. This area could be developed for more intensive recreation- people e were already using it at the time of this inventory. The birch, aspen and cedar add to the aesthetics of the area. Releasing any oaks from competition (TN 1) and exotic invasive species management {HM 6) are not of high priority. Harvest ash in this stand (T3) if timber harvesting is done in any nearby stand.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ATiDe(Pr) habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	<table><tr><td>Northern Hardwoods</td><td>Aspen</td><td></td><td></td><td></td><td>Total</td></tr><tr><td>56</td><td>13</td><td></td><td></td><td></td><td>69</td></tr><tr><td>4</td><td>3</td><td></td><td></td><td></td><td>13</td></tr><tr><td>1.184</td><td>0</td><td></td><td></td><td></td><td>4</td></tr><tr><td>$1478</td><td>$1109</td><td></td><td></td><td></td><td>$2587</td></tr><tr><td>$3237</td><td>$0</td><td></td><td></td><td></td><td>$3237</td></tr><tr><td>$4715</td><td>$1109</td><td></td><td></td><td></td><td>$5824</td></tr></table>
Forest Health (Insects, disease, invasive species, timber productivity)	Heavy buckthorn, light honeysuckle, light Japanese barberry infestations. White ash site index is 55.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy uneven aged northern hardwood stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Improve uneven aged stand structure to improve forest health. This should be accomplished via a Commercial Timber Sale. The machinery type to be used will be dependent on resource needs, landowner goals and Timber Purchaser capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Aggressive treatment to eradicate buckthorn. 2. Establish wildlife and pollinator habitat for game and non-game (neo-tropical migratory songbird) habitat diversity. 3. Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.4. Post-harvest stocking level goal is 80 square feet/acre basal area.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn and Japanese barberry (ongoing) 12/2020 – Selection cut harvest that follows Northern Hardwood Order of Removal guidance. 12/2021 – Woody residue treatment
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	This area could be developed for more intensive recreation- people e were already using it at the time of this inventory. The birch, aspen and cedar add to the aesthetics of the area.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal: buckthorn and Japanese barberry cost estimate: $8795 12/2020 – Selection cut harvest that follows Northern Hardwood Order of Removal guidance: income estimate: $1922. 12/2021 – Woody residue treatment cost estimate: $1841

Stand 5	Primary Forest Type: White Birch Small Sawtimber medium stocked (1115[2])	
	Secondary timber type: Mixed Deciduous Poletimber lightly stocked (CH0511[1])	
	Understory: Central Hardwoods	19.68 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is the hill below the cliffs of Grandad's Bluff and overlooks that faces the city. The boundary of this stand is the property boundary and abuts numerous houses. Close to Bliss Road there is a significant amount of litter and trash. It would be nice to limit the littering In this area. A hiking trail below the Grandad cliffs could be constructed If desired. Various sized rocks that have come from the cliff are scattered throughout stand. Black locust, basswood, cottonwood, and elm are common in this stand. Better trees including walnuts grow in the south portion of the stand, and the old quarry trail switches back from its mostly downhill southern direction and runs north downhill through this part of the stand. A power line runs along Bliss Road in this stand. Neither Invasive species management (HM 6) nor spreading walnut seed is high priority. **Managing the walnut in the southern portion of the stand is recommended.** An 11-inch ash tree 45 feet tall was aged to be 35 years old in this stand.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ArCi-Ph habitat type

Forest Type/Species	White Birch	Mixed Deciduous				Total
Basal area	32	49				81
Volume – cords	3	4				13
Volume – thousand board feet (mbf)	.605	1.605				2.210
Estimated Value – cords	$1476	$1968				$3444
Estimated Value - mbf	$2203	$5843				$8046
Total	$3679	$7811				$11490

Forest Health (Insects, disease, invasive species, timber productivity)	Heavy buckthorn, light honeysuckle, light oriental bittersweet infestations. White birch site index is 40.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy new even aged white birch stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Naturally regenerate even aged white birch to improve forest health. This should be accomplished via a Commercial Timber Sale.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Aggressive treatment to eradicate buckthorn. 2. Establish wildlife and pollinator habitat for game and non-game (neo-tropical migratory songbird) habitat diversity. 3. Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.4. Post-harvest stocking level goal is 40% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn, honeysuckle and oriental bittersweet. 12/2020- Two stage shelterwood harvest 12/2021- Site preparation for natural regeneration 12/2026 – Overstory removal harvest after seedlings are established 12/2030 – Woody residue treatment
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	It would be nice to limit the littering In this area. A hiking trail below the Grandad cliffs could be constructed If desired.. A power line runs along Bliss Road in this stand.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal: buckthorn, honeysuckle, oriental bittersweet cost estimate: $11657 12/2020- Two stage shelterwood harvest income estimate: $6894 12/2021- Site preparation for natural regeneration cost estimate: $4040 12/2026 – Overstory removal harvest after seedlings are established income estimate: $4596 12/2030 – Woody residue treatment

Stand 6	Primary Forest Type: White Birch Small Sawtimber medium stocked (1115[1]) Secondary timber type: Northern Hardwood Poletimber lightly stocked (CH0511[1]) Understory: Northern Hardwood	3.37 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is steep, west facing and located along Bliss Road. It would be better managed as a hill prairie and would be quite scenic since it is close to a well-traveled road. Prairies need work to keep them open so they do not fill in with woody vegetation such as prickly ash, paper birch, and cedar. That maintenance needed can be ongoing and done with volunteers or as possible, by using hand tools (HM 6) to cut vegetation and by using prescribed fire (HM 7).

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ATiDe habitat type
Forest Type/Species	White Birch / Mixed Deciduous / / / / Total
Basal area	10 / 45 / / / / 55
Volume – cords	0 / 4 / / / / 13
Volume – thousand board feet (mbf)	.550 / .690 / / / / 1.240
Estimated Value – cords	$0 / $337 / / / / $337
Estimated Value - mbf	$343 / $430 / / / / $773
Total	$343 / $767 / / / / $1110
Forest Health (Insects, disease, invasive species, timber productivity)	Heavy buckthorn, light Japanese barberry, light oriental bittersweet infestations. White birch site index is 40.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS

Desired Future Condition (DFC) Narrative	The DFC for this stand is to allow natural succession on the steep slopes with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2.allow natural Succession to take place without ground disturbing activities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Aggressive treatment to eradicate buckthorn. 2. Allow natural succession to take place.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn, honeysuckle and oriental bittersweet.
Best Management Practices for Soil and Water	BMP: Spill Response – Maintain a spill containment and clean up kit appropriate for the site as well as all materials on the operation, and report all spills. BMP: Mixing and loading operations – Mix and load pesticides outside of riparian management zones and where practical, in upland areas, BMP: Timing and weather conditions – Apply chemicals only under favorable weather conditions. BMP: Applying pesticides – Prevent chemical leaks from equipment. Check all equipment for leaking hoses, connections, and nozzles. Calibrate spray equipment to apply chemicals uniformly and in the correct quantities.
Aesthetic and Recreation Considerations	Maintenance needed can be ongoing and done with volunteers or as possible, by using hand tools (HM 6) to cut vegetation and by using prescribed fire (HM 7).
Financial Management (yearly breakdown)	12/2019 - Invasive species removal: buckthorn and Japanese barberry cost estimate: $1996

Stand 7	Primary Forest Type: Oak Large Sawtimber medium stocked (O15+[2]) Secondary timber type: Northern Hardwoods Poletimber lightly stocked (CH0511[1]) Understory: Central Hardwoods	33.95 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is between Bliss Road and the top ridge road. There is a utility clearance along Bliss Road in the northeast portion of this stand. Most of the stand is steep with rock outcrops. This stand will eventually turn into a northern hardwood stand of sugar maple and basswood. Any timber harvesting should probably occur from the ridge down and should stay 100 feet or so away from Bliss Road heading up the bluff. The invasive species work (HM 6) and ironwood/elm removal {TN 1) is a higher priority if a timber harvest (RA 6) is planned in this area. A timber harvest would focus on areas of ash and mature red oak {some mature trees can be left behind for aesthetic and wildlife purposes. A 20-inch red oak was aged at 139 years old. A 17-inch basswood was aged at 77 years old.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.					
Water (lakes, ponds, streams, etc)	n/a					
Wetlands	n/a					
Biological Diversity	ATISa habitat type					
Forest Type/Species	Oak	Northern Hardwoods				Total
Basal area	51	43				94
Volume – cords	2	5				7
Volume – thousand board feet (mbf)	3.18	1.680				4.860
Estimated Value – cords	$1698	$4244				$5942
Estimated Value - mbf	$19973	$10552				$30525
Total	$21671	$14796				$36467
Forest Health (Insects, disease, invasive species, timber productivity)	Some potential oak wilt. Heavy Buckthorn infestations. Oak site index is 65.					
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.					
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.					
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.					
Carbon cycle/climate change						
Fire Risk Management	low					

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged red oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand. This should be accomplished via a Commercial Timber Sale. The machinery type to be used will be dependent on resource needs, landowner goals and Timber Purchaser capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn and Japanese barberry (ongoing) 12/2020 - Two stage shelterwood harvest 12/2025 - Site preparation for natural regeneration 12/2030 - Tree establishment by planting if natural regeneration fails 12/2040 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	A timber harvest would focus on areas of ash and mature red oak {some mature trees can be left behind for aesthetic and wildlife purposes.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $20110 12/2020 - Two stage shelterwood harvest income estimate: $21880 12/2025 - Site preparation for natural regeneration cost estimate: $6969 12/2030 - Tree establishment by planting @400 trees/acre cost estimate: $10321 12/2040 – Overstory removal harvest after seedlings are established income estimate:$14587

Stand 8	Primary Forest Type: Oak Large Sawtimber medium stocked (O15+[2]) Secondary timber type: Central Hardwoods Poletimber lightly stocked (CH0511[1]) Understory: Central Hardwoods	36.28 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is located between the golf course and Bliss Road. There is heavy littering along Bliss Road. Ash and mature red oak can be harvested soon (RA 6). Areas of younger red oak and shagbark hickory can be thinned through instead of group removal. Invasive species management (HM 6) and ironwood, elm, boxelder, and bitternut hickory timber stand improvement work (TN 1) is a higher priority in this stand as the red oak is getting old and the ash may succumb to the emerald ash borer. A 24- inch burr oak was aged at 131years old.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ATISa habitat type

Forest Type/Species	Oak	Central Hardwoods				Total
Basal area	51	53				104
Volume – cords	2	5				7
Volume – thousand board feet (mbf)	3.276	3.384				4.860
Estimated Value – cords	$1814	$4535				$6349
Estimated Value - mbf	$21988	$22713				$44701
Total	$23802	$27248				$51050

Forest Health (Insects, disease, invasive species, timber productivity)	Some potential oak wilt. Heavy Buckthorn infestations. Oak site index is 65.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged red oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand. This should be accomplished via a Commercial Timber Sale. The machinery type to be used will be dependent on resource needs, landowner goals and Timber Purchaser capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn and Japanese barberry (ongoing) 12/2020 - Two stage shelterwood harvest 12/2025 - Site preparation for natural regeneration 12/2030 - Tree establishment by planting if natural regeneration fails 12/2040 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	This stand is located between the golf course and Bliss Road. There is heavy littering along Bliss Road. This presents an opportunity for partnerships and volunteerism.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $21490 12/2020 - Two stage shelterwood harvest income estimate: $30630 12/2025 - Site preparation for natural regeneration cost estimate: $7447 12/2030 - Tree establishment by planting @400 trees/acre cost estimate: $11029 12/2040 – Overstory removal harvest after seedlings are established income estimate:$20420

Stand 9	Primary Forest Type: Oak Large Sawtimber medium stocked (O15+[3]) Secondary timber type: Central Hardwoods Poletimber lightly stocked (CH0511[1]) Understory: Central Hardwoods	77.82 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is large, covering an expansive area. It is located mostly below and adjacent to Bliss Road but does include an area above Bliss Road. Trees next to Bliss Road provide a scenic byway for commuters and visitors. There are multiple small ravines throughout the stand and areas of small rock outcrops. This stand had to have work done to it to stabilize the road. That specific area has garlic mustard around. There is a significant amount of litter in it and could use 'no littering' signs posted. An 11-inch aspen was aged to be 31years old, a 23-inch red oak was aged at 118 years old, a 20-inch red oak was aged at 76 years old, a 20-inch red oak was aged at 74 years old, a 18-inch white oak was aged at 104 years old. The invasive species work (HM 6) will be critical to start before any timber is harvested. Timber harvests (RE 2) should try to regenerate oak and also work on pockets of aspen. leaving a 50-100ft. buffer of an area not harvested near Bliss Road is recommended.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.					
Water (lakes, ponds, streams, etc)	n/a					
Wetlands	n/a					
Biological Diversity	ArCiPh habitat type					
Forest Type/Species	Oak	Central Hardwoods				Total
Basal area	86	29				115
Volume – cords	2	2				4
Volume – thousand board feet (mbf)	7.826	1.504				9.330
Estimated Value – cords	$3891	$3891				$7782
Estimated Value - mbf	$112669	$21653				$134322
Total	$116560	$25544				$142104
Forest Health (Insects, disease, invasive species, timber productivity)	Some potential oak wilt. Heavy Buckthorn infestations. Oak site index is 65.					
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.					
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.					
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.					
Carbon cycle/climate change						
Fire Risk Management	low					

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged red oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand. This should be accomplished via a Commercial Timber Sale. The machinery type to be used will be dependent on resource needs, landowner goals and Timber Purchaser capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn and Japanese barberry (ongoing) 12/2021 - Two stage shelterwood harvest 12/2025 - Site preparation for natural regeneration 12/2030 - Tree establishment by planting if natural regeneration fails 12/2040 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	Trees next to Bliss Road provide a scenic byway for commuters and visitors.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $46097 12/2021 - Two stage shelterwood harvest income estimate: $85262 12/2025 - Site preparation for natural regeneration cost estimate: $15974 12/2030 - Tree establishment by planting @400 trees/acre cost estimate: $23657 12/2040 – Overstory removal harvest after seedlings are established income estimate:$56842

. Stand 10	Primary Forest Type: Oak Small Sawtimber lightly stocked (11151[1]) Secondary timber type: Central Hardwoods Poletimber lightly stocked (CH0511[2]) Understory: Central Hardwoods	13.01 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is located in two sections west of the intersection of Bliss Road and Grandad Bluff Road. They are both small in acreage but could not be lumped with other areas, so they got lumped together. The east section is a south facing hillside that has an old quarry, a grove of aspen and other hardwoods. It had some dead oaks in it. The tree aged for site index was hollow in the verv middle. The west section is near power lines and has shagbark hickory and black cherry. Any management done here can be included when nearby work is done. Both sections had power lines running adjacent and through them. Invasive species control is a lower priority here than in other stands.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.					
Water (lakes, ponds, streams, etc)	n/a					
Wetlands	n/a					
Biological Diversity	ArCiPh habitat type					
Forest Type/Species	Oak	Central Hardwoods				Total
Basal area	86	29				115
Volume – cords	2	2				4
Volume – thousand board feet (mbf)	7.826	1.504				9.330
Estimated Value – cords	$3891	$3891				$7782
Estimated Value - mbf	$112669	$21653				$134322
Total	$116560	$25544				$142104
Forest Health (Insects, disease, invasive species, timber productivity)	Some potential oak wilt. Heavy Buckthorn infestations. Oak site index is 65.					
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.					
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.					
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.					
Carbon cycle/climate change						
Fire Risk Management	low					

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged red oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Improve forest health by performing sanitation/salvage thinning of poorer quality trees. This should be accomplished via a Commercial Timber Sale. The machinery type to be used will be dependent on resource needs, landowner goals and Timber Purchaser capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 80 square feet per acre basal area.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn and Japanese barberry (ongoing) 12/2021 – Sanitation/salvage thinning 12/2030 – Sanitation/salvage thinning 12/2040 – Two stage shelterwood harvest down to 40 -60% crown closure 12/2045 – Overstory removal once seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	Both sections had power lines running adjacent and through them
Financial Management (yearly breakdown)	12/2019 - Invasive species removal: buckthorn cost estimate: $7706 12/2021 – Sanitation/salvage thinning income estimate: $28421 12/2030 – Sanitation/salvage thinning income estimate $28421 12/2040 – Two stage shelterwood harvest income estimate: $85262 12/2045 – Overstory removal once seedlings are established income estimate: $56842

Stand 11	Primary Forest Type: Central hardwood sapling medium stocked (0005[1]) Secondary timber type: GH 6.63 acres

A. CURRENT CONDITIONS NARRATIVE

This is a small hardwood plantation that is fenced to exclude deer. Locust posts were used with plastic fencing to make 6-foot exclusion. Oak, walnut, cherry and ash were planted- exact year planted was not known. This area can continue to be studied to determine what difference is found when excluding deer from tree plant1ngs and other areas. It is recommended (TN 1) to cut ash trees to release other trees and to prune (PR 4) trees that have low forks. The site index tree was aged just outside of the fencing.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.					
Water (lakes, ponds, streams, etc)	n/a					
Wetlands	n/a					
Biological Diversity	ATiDe (Pr) habitat type					
Forest Type/Species	Central Hardwoods					Total
Basal area	10					10
Volume – cords	3					3
Volume – thousand board feet (mbf)	.120					.120
Estimated Value – cords	$497					$497
Estimated Value - mbf	$147					$147
Total	$644					$644
Forest Health (Insects, disease, invasive species, timber productivity)	Reed canary grass light infestations. Big toothed Aspen site index is 82					
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.					
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.					
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.					
Carbon cycle/climate change						
Fire Risk Management	medium					

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	This area can continue to be studied to determine what difference is found when excluding deer from tree plant1ngs and other areas. The primary goals for this stand are 1. Control invasive species, and 2. Study deer exclosure impacts on tree plantings.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Invasive species removal: reed canary grass (ongoing). Select crop trees and release them from competing vegetation. When selecting the crop trees {trees allowed to grow into maturity) pick the best trees with straight stems, largest diameter and free of stem and crown defects with a spacing of 20 feet between trees (100 trees/ac). Some crop trees may have a fork near the top of the tree, Prune off the slowest growing branch leaving one main stem to form the crown of the tree. Prune a maximum 100 trees per acre. Locating crop trees and pruning them should be done every five years until the trees grow to an average diameter breast height of 12 inches.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: reed canary grass (ongoing) 12/2020 –This area can continue to be studied to determine what difference is found when excluding deer from tree plant1ngs and other areas.
Best Management Practices for Soil and Water	BMP: Spill Response – Maintain a spill containment and clean up kit appropriate for the site as well as all materials on the operation, and report all spills. BMP: Mixing and loading operations – Mix and load pesticides outside of riparian management zones and where practical, in upland areas, BMP: Timing and weather conditions – Apply chemicals only under favorable weather conditions. BMP: Applying pesticides – Prevent chemical leaks from equipment. Check all equipment for leaking hoses, connections, and nozzles. Calibrate spray equipment to apply chemicals uniformly and in the correct quantities.
Aesthetic and Recreation Considerations	Educational and partnership opportunity to interpret to the public what is being studied on this stand.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal: buckthorn cost estimate: $3927

Stand 12	Primary Forest Type: Aspen Large Sawtimber medium stocked (15+[1]) Secondary timber type: Miscellaneous deciduous Poletimber lightly stocked (MD0511[1]0 Understory: Central Hardwoods	15.90 acres

A. CURRENT CONDITIONS NARRATIVE

This stand runs from ridge to valley. It has pockets of aspen, and in some areas looks to have a two- aged structure -larger oak growing above younger oak and locust. Invasive species management (HM 6) is necessary. Harvesting aspen pockets (RE 1) and taking out mature oaks and possibly removing some locust (RAG) is recommended.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ArCi(Ph) habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	<table><tr><td>Aspen</td><td>Miscellaneous deciduous</td><td></td><td></td><td></td><td>Total</td></tr><tr><td>44</td><td>64</td><td></td><td></td><td></td><td>108</td></tr><tr><td>3</td><td>4</td><td></td><td></td><td></td><td>7</td></tr><tr><td>5.696</td><td>1.504</td><td></td><td></td><td></td><td>7.200</td></tr><tr><td>$1193</td><td>$1590</td><td></td><td></td><td></td><td>$2783</td></tr><tr><td>$9057</td><td>$4424</td><td></td><td></td><td></td><td>$13481</td></tr><tr><td>$10250</td><td>$6014</td><td></td><td></td><td></td><td>$16264</td></tr></table>
Forest Health (Insects, disease, invasive species, timber productivity)	Some potential oak wilt. Heavy Buckthorn infestations. Big toothed aspen site index is 75.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged stand of aspen saplings with a secondary stand of red oak saplings. With no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition and Inadequate Habitat for Fish and Wildlife – Habitat degradation. – Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife or invertebrate species. The primary goals for this stand are 1. Control invasive species, and 2. Improve forest health by performing sanitation/salvage thinning of poorer quality trees. This should be accomplished via a Commercial Timber Sale. The machinery type to be used will be dependent on resource needs, landowner goals and Timber Purchaser capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is full stocking (3) of aspen saplings in pockets adjacent to well stocked oak saplings.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn and Japanese barberry (ongoing) 12/2021 – Patch clearcuts of existing aspen pockets
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	Patch clearcuts to maintain existing visual quality.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal: buckthorn cost estimate: $9418 12/2021 – Patch clearcuts income estimate: $2783

Stand 13	Primary Forest Type: Bottomland hardwood Small Sawtimber medium stocked (BH1115[2]) Secondary timber type: Miscellaneous deciduous Poletimber lightly stocked (MD0511[1]) Understory: Central Hardwoods	27.38 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is the relatively flat lower (mouth) of multi le large ravines. It touches the golf course and contains an old earthen dam along with a grass opening that used to have a deer exclusion area. There are some very large cottonwood over 3 feet in diameter,100 feet tall, and estimated to average 100 years old in this stand. Other common trees include boxelder, hackberry, American elm, black locust, silver maple, and some walnuts. A nice walking bridge exists over a ravine in the southeast portion of the stand and a big trail was observed as being used by hikers and cross-country skiers. Invasive species work (HM 6) is moderately important in this stand and any garlic mustard treatment should focus on areas in the upper ravines and along paths (to reduce spreading). Harvest pockets of aspen (RE 1) soon...they are dying. Some aspen may not be able to be harvested due to the Phellinus fungus (conks). Direct seed walnuts and acorns into old deer exclusion and spread this seed throughout stand (PL3} in areas that are open and areas that have black locust or boxelder in them. Cut undesirable trees in areas where seed has been or will be spread (SP 1) and make sure seed can touch bare soil. It might be possible to thin out some black locust poles commercially. This stand could be considered to have two age groups- the larger and older cottonwood and the younger collection of other bottomland hardwoods.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ArCi(Ph) habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	<table><tr><td>Bottomland hardwood</td><td>Miscellaneous deciduous</td><td></td><td></td><td></td><td>Total</td></tr><tr><td>59</td><td>31</td><td></td><td></td><td></td><td>90</td></tr><tr><td>5</td><td>2</td><td></td><td></td><td></td><td>7</td></tr><tr><td>1.312</td><td>1.308</td><td></td><td></td><td></td><td>2.620</td></tr><tr><td>$3423</td><td>$1369</td><td></td><td></td><td></td><td>$4792</td></tr><tr><td>$6646</td><td>$6625</td><td></td><td></td><td></td><td>$13271</td></tr><tr><td>$10069</td><td>$7994</td><td></td><td></td><td></td><td>$18063</td></tr></table>
Forest Health (Insects, disease, invasive species, timber productivity)	Heavy Buckthorn infestation along with multiflora rose, honeysuckle, Japanese barberry, and garlic mustard. Green ash aspen site index is 110.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged bottom hardwood stand . The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure. The primary goals for this stand are 1. Control invasive species, and 2. Improve forest health by performing sanitation/salvage thinning of poorer quality trees. This should be accomplished via a Commercial Timber Sale. The machinery type to be used will be dependent on resource needs, landowner goals and Timber Purchaser capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 80 square feet per acre basal area.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn and Japanese barberry (ongoing) 12/2021 – Sanitation/salvage thinning harvest cut
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	A nice walking bridge exists over a ravine in the southeast portion of the stand and a big trail was observed as being used by hikers and cross-country skiers.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal: buckthorn cost estimate: $16219 12/2021 – Sanitation/salvage thinning income estimate: $2709

Stand 14	Primary Forest Type: Oak Large Sawtimber well stocked (O15+[3]) Secondary timber type: Central Hardwoods Poletimber lightly stocked (CH0511[1]) Understory: Central Hardwoods	21.22 acres

A. CURRENT CONDITIONS NARRATIVE

This stand runs from ridge to valley. It is separated from stand 15 by a fence and a significant change in invasive species (less in this stand). Invasive species management (HM 6) is necessary in this stand before any timber is harvested. Cutting or herbicide treatment of elm, hackberry, and other suppressed trees (SP6 or 8) before regenerating oak trees with a two-staged timber harvest {RE 4) is recommended. Harvest all oak trees around pockets of oak wilt. An 18-inch red oak was aged at 118 years; a 20-inch red oak was aged at 78 years.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ATiDe habitat type

Forest Type/Species	Oak	Central Hardwoods				Total
Basal area	84	21				105
Volume – cords	1	4				5
Volume – thousand board feet (mbf)	7.954	.376				8.330
Estimated Value – cords	$531	$2122				$2653
Estimated Value - mbf	$31225	$1476				$32701
Total	$31756	$3598				$35354

Forest Health (Insects, disease, invasive species, timber productivity)	Some potential oak wilt. Heavy Buckthorn and light Japanese barberry infestations. Oak site index is 61.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged red oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand. This should be accomplished via a Commercial Timber Sale. The machinery type to be used will be dependent on resource needs, landowner goals and Timber Purchaser capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn and Japanese barberry (ongoing) 12/2021 - Two stage shelterwood harvest 12/2025 - Site preparation for natural regeneration 12/2030 - Tree establishment by planting if natural regeneration fails 12/2040 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	n/a
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $12570 12/2021 - Two stage shelterwood harvest income estimate: $21212 12/2025 - Site preparation for natural regeneration cost estimate: $4356 12/2030 - Tree establishment by planting @400 trees/acre cost estimate: $6451 12/2040 – Overstory removal harvest after seedlings are established income estimate:$14142

Stand 15	Primary Forest Type: Oak Large Sawtimber well stocked (O15+[3]) Secondary timber type: Central Hardwoods Poletimber lightly stocked (CH0511[1]) Understory: Central Hardwoods	20.61 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is situated on both sides of a ravine and is mostly identified by its steepness and amazing amount of Japanese barberry. It is composed of old, possibly hollow, oak trees growing over the Japanese barberry. *There is a fence that separates it from stand 14. It appears that the neighbor has used and is using parts of this stand as his own, although this was not confirmed. Part of the stand was not inventoried due to a fence and the apparent use of grazing by the neighbor. Invasive species management (HM 6) is absolutely necessary here due to the age of the overstory and complete lack of any other vegetation besides barberry. It will be hard and expensive work and might best be accomplished by mechanical means (SP 5).

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ATiDe habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	<table><tr><td>Oak</td><td>Central Hardwoods</td><td></td><td></td><td></td><td>Total</td></tr><tr><td>54</td><td>8</td><td></td><td></td><td></td><td>62</td></tr><tr><td>0</td><td>0</td><td></td><td></td><td></td><td>5</td></tr><tr><td>3.969</td><td>.071</td><td></td><td></td><td></td><td>4.040</td></tr><tr><td>$0</td><td>$0</td><td></td><td></td><td></td><td>$0</td></tr><tr><td>$15133</td><td>$271</td><td></td><td></td><td></td><td>$15404</td></tr><tr><td>$15133</td><td>$271</td><td></td><td></td><td></td><td>$15404</td></tr></table>
Forest Health (Insects, disease, invasive species, timber productivity)	Some potential oak wilt. Heavy Japanese barberry and light buckthorn and honeysuckle infestations. Oak site index is 54.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged red oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand. This should be accomplished via a Commercial Timber Sale. The machinery type to be used will be dependent on resource needs, landowner goals and Timber Purchaser capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn and Japanese barberry (ongoing) 12/2021 - Two stage shelterwood harvest 12/2030 - Site preparation for natural regeneration 12/2035 - Tree establishment by planting if natural regeneration fails 12/2045 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Spill Response – Maintain a spill containment and clean up kit appropriate for the site as well as all materials on the operation, and report all spills. BMP: Mixing and loading operations – Mix and load pesticides outside of riparian management zones and where practical, in upland areas, BMP: Timing and weather conditions – Apply chemicals only under favorable weather conditions. BMP: Applying pesticides – Prevent chemical leaks from equipment. Check all equipment for leaking hoses, connections, and nozzles. Calibrate spray equipment to apply chemicals uniformly and in the correct quantities.
Aesthetic and Recreation Considerations	It appears that the neighbor has used and is using parts of this stand as his own, although this was not confirmed. Part of the stand was not inventoried due to a fence and the apparent use of grazing by the neighbor.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $12208 12/2021 - Two stage shelterwood harvest income estimate: $9242 12/2045 – Overstory removal harvest after seedlings are established income estimate:$6162

Stand 16	Primary Forest Type: Oak Large Sawtimber medium stocked (O15+[2]) Secondary timber type: Central Hardwoods Poletimber medium stocked (CH051[2]) Understory: Central Hardwoods	15.23 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is south of the field that has the entrance for the Bicentennial trailhead. It is composed of both sides of a ridge and has a small prairie within it (stand 3). This area would be a good place to give tours/field days to the public on exotic invasive species due to the variety of exotic species and ease of access. Invasive species work (HM 6) will need to be multifaceted due to the variety of exotic invasive species here. Site preparation for oak regeneration should take place before an oak regeneration harvest. Elm and suppressed tree removal (SP 6 or 8) should take place before a regeneration harvest of oak (RE 2).

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ATiDe habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	<table><tr><td>Oak</td><td>Central Hardwoods</td><td></td><td></td><td></td><td>Total</td></tr><tr><td>92</td><td>21</td><td></td><td></td><td></td><td>113</td></tr><tr><td>1</td><td>4</td><td></td><td></td><td></td><td>5</td></tr><tr><td>4.509</td><td>.411</td><td></td><td></td><td></td><td>4.920</td></tr><tr><td>$381</td><td>$1523</td><td></td><td></td><td></td><td>$1904</td></tr><tr><td>$12704</td><td>$1158</td><td></td><td></td><td></td><td>$13862</td></tr><tr><td>$13085</td><td>$2681</td><td></td><td></td><td></td><td>$15766</td></tr></table>
Forest Health (Insects, disease, invasive species, timber productivity)	Heavy Buckthorn and light Japanese barberry, oriental bittersweet and honeysuckle infestations. Oak site index is 66.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged red oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand. This should be accomplished via a Commercial Timber Sale. The machinery type to be used will be dependent on resource needs, landowner goals and Timber Purchaser capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn and Japanese barberry (ongoing) 12/2022 - Two stage shelterwood harvest 12/2025 - Site preparation for natural regeneration 12/2030 - Tree establishment by planting if natural regeneration fails 12/2040 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	This area would be a good place to give tours/field days to the public on exotic invasive species due to the variety of exotic species and ease of access.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $9021 12/2022 - Two stage shelterwood harvest income estimate: $9460 12/2025 - Site preparation for natural regeneration cost estimate: $3126 12/2030 - Tree establishment by planting @400 trees/acre cost estimate: $4630 12/2040 – Overstory removal harvest after seedlings are established income estimate:$6306

Stand 17	Primary Forest Type: Oak Large Sawtimber medium stocked (O15+[2]) Secondary timber type: Aspen Poletimber lightly stocked (CH051[1]) Understory: Central Hardwoods	15.19acres

A. CURRENT CONDITIONS NARRATIVE

This stand runs from ridge to valley. It has pockets of mature aspen and areas where older oak is growing above buckthorn. There are areas in this stand where oak trees are not mature. More black locust and paper birch are found near the ridge. Invasive species management is a high priority in this stand due to the age of the overstory. Harvesting timber in this stand would consist of harvesting aspen pockets (RE 1) and groups of mature oaks (RA 6) after the invasive species work has begun, especially in mature oak areas that are near oak wilt pockets. There is a goat prairie (stand 3) that occurs along the border of this stand and stand 19. An easy hiking trail could be developed from the trailhead of the Bicentennial Trail to this goat prairie.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ATiDe habitat type
Forest Type/Species	

	Oak	Central Hardwoods				Total
Basal area	42	29				71
Volume – cords	2	3				5
Volume – thousand board feet (mbf)	1.867	1.253				3.120
Estimated Value – cords	$760	$1139				$1899
Estimated Value - mbf	$5247	$3521				$8768
Total	$6007	$4660				$10667

Forest Health (Insects, disease, invasive species, timber productivity)	Heavy Buckthorn and light Japanese barberry and honeysuckle infestations. Oak site index is 63.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged red oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand. This should be accomplished via a Commercial Timber Sale. The machinery type to be used will be dependent on resource needs, landowner goals and Timber Purchaser capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn and Japanese barberry (ongoing) 12/2022 - Two stage shelterwood harvest 12/2025 - Site preparation for natural regeneration 12/2030 - Tree establishment by planting if natural regeneration fails 12/2040 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	There is a goat prairie (stand 3) that occurs along the border of this stand and stand 19. An easy hiking trail could be developed from the trailhead of the Bicentennial Trail to this goat prairie.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $8998 12/2022 - Two stage shelterwood harvest income estimate: $6400 12/2025 - Site preparation for natural regeneration cost estimate: $3119 12/2030 - Tree establishment by planting @400 trees/acre cost estimate: $4618 12/2040 – Overstory removal harvest after seedlings are established income estimate:$4267

Stand 18	Primary Forest Type: Central hardwood Large Sawtimber medium stocked (15+[2]) Secondary timber type: Central hardwood Poletimber lightly stocked (0511[1]) 33.73 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is located at the mouth of ravine north and east of the golf course. The area is gently sloped. This area is highly used. The tree species here is a mixture of hickory and oak and this area includes a scenic patch of large red and white pine trees along with small pockets of aspen. Groups of American elm are dying of Dutch elm disease. A 17-inch red pine was aged at 55 years old. Invasive species management (HM 6) is a high priority in this stand due to areas of maturing oak. Timber stand improvement work (TN 2)- cutting or girdling poor-formed American elm, bitternut hickory, and shagbark hickory is recommended. Harvesting pockets of aspen (RE 1) and groups of mature oak (RA 6}, after exotic invasive plant removal has started, is recommended. It may also be possible to spread walnuts in areas of dead elm trees.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.					
Water (lakes, ponds, streams, etc)	n/a					
Wetlands	n/a					
Biological Diversity	ATiDe (Pr) habitat type					
Forest Type/Species	Central Hardwoods					Total
Basal area	88					88
Volume – cords	6					6
Volume – thousand board feet (mbf)	6.600					6.600
Estimated Value – cords	$5060					$5060
Estimated Value - mbf	$41184					$41184
Total	$46244					$46244
Forest Health (Insects, disease, invasive species, timber productivity)	Buckthorn, Japanese barberry and honeysuckle infestations. Shagbark hickory site index is 87					
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.					
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.					
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.					
Carbon cycle/climate change						
Fire Risk Management	medium					

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	This area can continue to be studied to determine what difference is found when excluding deer from tree plant1ngs and other areas. The primary goals for this stand are 1. Control invasive species, and 2. Study deer exclosure impacts on tree plantings.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Invasive species removal. Harvest groups of aspen and elm. Thin hickory and oak. Select crop trees and release them from competing vegetation. When selecting the crop trees {trees allowed to grow into maturity) pick the best trees with straight stems, largest diameter and free of stem and crown defects with a spacing of 20 feet between trees (100 trees/ac). Some crop trees may have a fork near the top of the tree, Prune off the slowest growing branch leaving one main stem to form the crown of the tree. Prune a maximum 100 trees per acre. Locating crop trees and pruning them should be done every five years until the trees grow to an average diameter breast height of 12 inches.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal 12/2039 –Thin hickory and oak. Patch cut groups of aspen and elm.
Best Management Practices for Soil and Water	BMP: Spill Response – Maintain a spill containment and clean up kit appropriate for the site as well as all materials on the operation, and report all spills. BMP: Mixing and loading operations – Mix and load pesticides outside of riparian management zones and where practical, in upland areas, BMP: Timing and weather conditions – Apply chemicals only under favorable weather conditions. BMP: Applying pesticides – Prevent chemical leaks from equipment. Check all equipment for leaking hoses, connections, and nozzles. Calibrate spray equipment to apply chemicals uniformly and in the correct quantities.
Aesthetic and Recreation Considerations	This area is highly used. The tree species here is a mixture of hickory and oak and this area includes a scenic patch of large red and white pine trees along with small pockets of aspen.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal: buckthorn cost estimate: $19980 12/2039 –Thin hickory and oak. Patch cut groups of aspen and elm income estimate: $15261.

Stand 19	Primary Forest Type: Miscellaneous Deciduous Small Sawtimber medium stocked (MD1115[2]) Secondary timber type: Miscellaneous Deciduous Poletimber medium stocked (MD0511[2]) 13.89 acres

A. CURRENT CONDITIONS NARRATIVE

This stand runs from the ridge to a valley- Bicentennial trailhead to the old fenced-in field. There is a goat prairie along the ridge line. This stand has the Bicentennial Trail run through it. There are pockets of aspen and mature oak scattered throughout the hillside, although some oaks in the stand are relatively young. Invasive species treatment {HM 6) is a priority due to maturity of oak overstory. Harvest pockets of aspen (RE 1) and groups of mature oak (RA 6). Although an oak was used for the site index, a 14-inch black locust, 65 feet tall. was aged to be 39 years old and was used to determine 'year of origin' of stand. Also, a 12-inch aspen was aged at 44 years old1 and a 17-inch red oak was aged at 143 years old.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ArCl-Ph habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	Miscellaneous Deciduous | | | | | Total 104 | | | | | 104 9 | | | | | 9 4.080 | | | | | 4.080 $3125 | | | | | $3125 $10484 | | | | | $10484 $13609 | | | | | $13609
Forest Health (Insects, disease, invasive species, timber productivity)	Buckthorn, Japanese barberry and honeysuckle infestations. Shagbark hickory site index is 87
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	A diverse species and age mosaic that maximizes edge effect for wildlife. That is free from invasive species.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Invasive species removal. Harvest groups of aspen and oak (Patch cuts).
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal 12/2022 –Patch cut groups of aspen and oak.
Best Management Practices for Soil and Water	BMP: Spill Response – Maintain a spill containment and clean up kit appropriate for the site as well as all materials on the operation, and report all spills. BMP: Mixing and loading operations – Mix and load pesticides outside of riparian management zones and where practical, in upland areas, BMP: Timing and weather conditions – Apply chemicals only under favorable weather conditions. BMP: Applying pesticides – Prevent chemical leaks from equipment. Check all equipment for leaking hoses, connections, and nozzles. Calibrate spray equipment to apply chemicals uniformly and in the correct quantities.
Aesthetic and Recreation Considerations	This stand runs from the ridge to a valley- Bicentennial trailhead to the old fenced-in field. There is a goat prairie along the ridge line. This stand has the Bicentennial Trail run through it.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $8228 12/2022 –Patch cut groups of aspen and oak income estimate: $4083

Stand 20	Primary Forest Type: Central hardwood Small Sawtimber medium stocked 1115[2]) Secondary timber type: Central hardwood Poletimber medium stocked (0511[2]) 14.57 acres

A. CURRENT CONDITIONS NARRATIVE

This stand starts below the shoulder of the hill and runs through a small ravine all the way down to lower ravine. There were red oak of sawtimber-size seen that had smooth bark. Smooth bark on red oak normally indicates that the trees are healthy and vigorously growing. Invasive species management (HM 6) is a priority in this stand- especially in areas of oak wilt. A timber harvest can selectively remove individual trees that are less healthy vigorous and group openings(RA 6) can be created around existing pockets of oak wilt and in aspen pockets.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ATiDe habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	Central Hardwoods | | | | | Total 88 | | | | | 88 10 | | | | | 10 2.550 | | | | | 2.550 $3643 | | | | | $3643 $6873 | | | | | $6873 $10516 | | | | | $10516
Forest Health (Insects, disease, invasive species, timber productivity)	Oak wilt pockets, Buckthorn, Japanese barberry and honeysuckle infestations. Shagbark hickory site index is 79
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	A well-stocked even aged central hardwood stand with either none or a very low presence of tree mortality. The primary goals for this stand are 1. Control invasive species, and 2. Do periodic sanitation/salvage thinnings to remove trees per standard order of removal.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Invasive species removal. Remove heavy buckthorn and light infestations of honeysuckle and Japanese barberry. Harvest groups of aspen and oak afflicted with oak wilt.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal 12/2022 –Patch cut aspen and oak.
Best Management Practices for Soil and Water	BMP: Spill Response – Maintain a spill containment and clean up kit appropriate for the site as well as all materials on the operation, and report all spills. BMP: Mixing and loading operations – Mix and load pesticides outside of riparian management zones and where practical, in upland areas, BMP: Timing and weather conditions – Apply chemicals only under favorable weather conditions. BMP: Applying pesticides – Prevent chemical leaks from equipment. Check all equipment for leaking hoses, connections, and nozzles. Calibrate spray equipment to apply chemicals uniformly and in the correct quantities.
Aesthetic and Recreation Considerations	n/a
Financial Management (yearly breakdown)	12/2019 - Invasive species removal: buckthorn cost estimate: $8631 12/2022 –Patch cut groups of aspen and oak income estimate: $3155

Stand 21	Primary Forest Type: Oak Small Sawtimber medium stocked (O1115[2]) Secondary timber type: Central Hardwoods Poletimber lightly stocked (CH0511[1]) Understory: Central Hardwoods	14.89 acres

A. CURRENT CONDITIONS NARRATIVE

This stand occurs on both sides of a ridge down to a point past the shoulder of the hill. There were “smooth bark” red oaks growing on the east-facing hillside. In the middle is a goat prairie that is named "Look Out Point." A good trail exists from the bottom of Hixon Forest up to this point. Smooth bark on red oak generally indicates vigorous growth. More burr oak were seen on the west-facing hillside of this stand. A hiking trail could be established through this stand and stand 22 which would connect 'Look Out Point' to the open field {stand 32) near the Remote Communications Facility, which would connect a few trails. The goat prairie could be enlarged as resources and time allow. This area would be hard to manage for timber due to its steepness and lack of easy access.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ATiDe(Pr) habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	C Hdwds | | | | Total 79 | | | | 79 8 | | | | 8 2.680 | | | | 2.680 $2978 | | | | $2978 $7382 | | | | $7382 $10360 | | | | $10360
Forest Health (Insects, disease, invasive species, timber productivity)	Some potential oak wilt. Heavy Buckthorn infestations. Oak site index is 65.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged central hardwood stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Allow natural succession to take place.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Remove heavy buckthorn and light infestations of honeysuckle and Japanese barberry. Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn , honeysuckle and Japanese barberry (ongoing) 12/2022 - Two stage shelterwood harvest 12/2027 - Site preparation for natural regeneration 12/2032- Tree establishment by planting if natural regeneration fails 12/2037– Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	A hiking trail could be established through this stand and stand 22 which would connect 'Look Out Point' to the open field {stand 32) near the Remote Communications Facility, which would connect a few trails. There are rock outcrops throughout the stand and areas of dead elm trees. The goat prairie could be enlarged as resources and time allow.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $8820 12/2022 - Two stage shelterwood harvest income estimate: $6216 12/2027 - Site preparation for natural regeneration cost estimate: $3056 12/2032 - Tree establishment by planting @400 trees/acre cost estimate: $4527 12/2037 – Overstory removal harvest after seedlings are established income estimate:$4144

Stand 22	Primary Forest Type: Oak Large Sawtimber medium stocked (O1115[2]) Secondary timber type: Central Hardwoods Poletimber lightly stocked (CH0511[1]) Understory: Central Hardwoods	47.34 acres

A. CURRENT CONDITIONS NARRATIVE

This large stand is on both sides of a ravine and extends up the hill part of the way until it reaches the "shoulders" of the bluffs. It has multiple smaller ravines dissecting it at the top. A hiking trail could be established from the open field (stand 32} through this stand and to 'Look Out Point' in stand 21. Do not build trails during oak wilt season. This is an expansive stand and as a result there will be variances. Younger red oaks were seen on the east side of the ravine. The west side of the ravine had older oak- one was cored for an age and found to be hollow. A selection harvest (RA 7) that removes unhealthy or crowded trees is recommended combined with group openings (RA 6) in certain areas- on the west side of the ravine and especially in areas where oak wilt is seen. Invasive species removal (HM 6) is of moderate priority in this stand except in areas that will have groups of trees harvested, in which case those areas would be high priority.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ATiDe habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	Oak / C Hdwds / / / Total 67 / 23 / / / 90 4 / 2 / / / 6 4.548 / .312 / / / 4.860 $4734 / $2367 / / / $7101 $7382 / $2732 / / / $10114 $12116 / $5099 / / / $17215
Forest Health (Insects, disease, invasive species, timber productivity)	Some potential oak wilt. Heavy Buckthorn infestations. Oak site index is 65.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Remove heavy honeysuckle and light infestations of buckthorn and Japanese barberry. Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: :honeysuckle, buckthorn and Japanese barberry (ongoing) 12/2023 - Two stage shelterwood harvest 12/2028 - Site preparation for natural regeneration 12/2032- Tree establishment by planting if natural regeneration fails 12/2037– Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	A hiking trail could be established from the open field (stand 32} through this stand and to 'Look Out Point' in stand 21. Do not build trails during oak wilt season.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $28042 12/2023 - Two stage shelterwood harvest income estimate: $10329 12/2028 - Site preparation for natural regeneration cost estimate: $9717 12/2032 - Tree establishment by planting @400 trees/acre cost estimate: $14391 12/2037 – Overstory removal harvest after seedlings are established income estimate:$6886

Stand 23	Primary Forest Type: Oak Large Sawtimber medium stocked (O1115[2]) Secondary timber type: Central Hardwoods Poletimber lightly stocked (CH0511[1]) Understory: Central Hardwoods	18.55 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is at the bottom of the hill, just north of the golf course. This area has a mix of oak and hickory. It is located adjacent to the lower parking lot of Hixon. This area is highly used. Invasive species work {HM 6) in this stand is a priority in areas that have oak wilt and/or will be harvested. A group opening harvest {RA 6) is recommended in this stand and can be concentrated in areas of oak wilt or in aspen pockets. Combining nearby stands for timber harvesting at the same time will help make the sale of timber more merchantable/profitable. A 14-inch aspen was aged at 37 years old.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ATiDe habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	Oak / C Hdwds / / / Total 66 / 31 / / / 97 3 / 3 / / / 6 4.968 / 1.182 / / / 6.150 $1391 / $1391 / / / $2782 $17049 / $4056 / / / $21105 $18440 / $5447 / / / $23887
Forest Health (Insects, disease, invasive species, timber productivity)	Some potential oak wilt. Heavy Buckthorn infestations. Oak site index is 65.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Remove heavy honeysuckle and light infestations of buckthorn and Japanese barberry. Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: :honeysuckle, buckthorn and Japanese barberry (ongoing) 12/2023 – Two stage shelterwood harvest 12/2028 - Site preparation for natural regeneration 12/2032 - Tree establishment by planting if natural regeneration fails 12/2037 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	This stand is at the bottom of the hill, just north of the golf course. This area has a mix of oak and hickory. It is located adjacent to the lower parking lot of Hixon.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $10988 12/2023 - Two stage shelterwood harvest income estimate: $14332 12/2028 - Site preparation for natural regeneration cost estimate: $3808 12/2032 - Tree establishment by planting @400 trees/acre cost estimate: $5639 12/2037 – Overstory removal harvest after seedlings are established income estimate:$9555

Stand 24	Primary Forest Type: Oak Large Sawtimber medium stocked (O1115[2]) Secondary timber type: Oak Poletimber lightly stocked (O0511[1]) Understory: Central Hardwoods	14.13 acres

A. CURRENT CONDITIONS NARRATIVE

This stand runs from the bottom of the ravine up to a shoulder of a hill. It is just north of the main parking lot in lower Hixon. There are nice red oak and pockets of dead elm seen in this stand. The tree aged was 66 years old but other red oak looked to be over 100 years old, indicating a mixture of ages. Invasive species management (HM 6) should occur before any timber harvest. Managing this area for oak regeneration (RE 2) is recommended.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ArCi-Ph habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	Oak / Total 83 / 83 6 / 6 5.560 / 5.560 $2120 / $2120 $14534 / $14534 $16654 / $16654
Forest Health (Insects, disease, invasive species, timber productivity)	Some potential oak wilt. Buckthorn, Japanese barberry and honeysuckle infestations. Oak site index is 82.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Remove heavy honeysuckle and light infestations of buckthorn and Japanese barberry. Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: :honeysuckle, buckthorn and Japanese barberry (ongoing) 12/2023 – Two stage shelterwood harvest 12/2028 - Site preparation for natural regeneration 12/2032 - Tree establishment by planting if natural regeneration fails 12/2037 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	It is just north of the main parking lot in lower Hixon.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $8370 12/2023 - Two stage shelterwood harvest income estimate: $9992 12/2028- Site preparation for natural regeneration cost estimate: $2900 12/2032 - Tree establishment by planting @400 trees/acre cost estimate: $4296 12/2037 – Overstory removal harvest after seedlings are established income estimate:$6662

Stand 25	Primary Forest Type: Oak Large Sawtimber well stocked (O1115[3]) Secondary timber type: Central hardwood Poletimber lightly stocked (CH0511[1]) Understory: Central Hardwoods	11.24 acres

A. CURRENT CONDITIONS NARRATIVE

This stand occupies the area between the TNT trail and the ravine. It touches the lower parking area at Hixon. This area is highly used. The TNT trail has severe erosion problems and should either undergo significant rehabilitation work or be closed. If it is closed, it still would be in need of water diversions to stop the erosion that is occurring. A new trail was being built during this inventory. The timber here is some of the highest quality on the property.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ArCi-Ph habitat type
Forest Type/Species	

	Oak	C Hdwds			Total
Basal area	76	46			122
Volume – cords	4	2			6
Volume – thousand board feet (mbf)	5.280	4.930			10.210
Estimated Value – cords	$1124	$562			$1686
Estimated Value - mbf	$10979	$10251			$21230
Total	$12103	$10813			$22916

Forest Health (Insects, disease, invasive species, timber productivity)	Some potential oak wilt. Buckthorn, Japanese barberry and honeysuckle infestations. Oak site index is 82.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Remove medium infestations of buckthorn, and Japanese barberry. Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: :honeysuckle, buckthorn and Japanese barberry (ongoing) 12/2023 – Two stage shelterwood harvest 12/2028 - Site preparation for natural regeneration 12/2032 - Tree establishment by planting if natural regeneration fails 12/2037 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	This stand occupies the area between the TNT trail and the ravine. It touches the lower parking area at Hixon. This area is highly used. The TNT trail has severe erosion problems and should either undergo significant rehabilitation work or be closed. If it is closed, it still would be in need of water diversions to stop the erosion that is occurring. A new trail was being built during this inventory.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $6658 12/2023 - Two stage shelterwood harvest income estimate: $13750 12/2028- Site preparation for natural regeneration cost estimate: $2307 12/2032 - Tree establishment by planting @400 trees/acre cost estimate: $3415 12/2037 – Overstory removal harvest after seedlings are established income estimate:$9166

Stand 26	Primary Forest Type: Miscellaneous Deciduous Small Sawtimber lightly stocked (MD1115[1]) Secondary timber type: Oak Poletimber lightly stocked (MD0511[1]) 24.48 acres

A. CURRENT CONDITIONS NARRATIVE

This stand covers both sides of a ridge and includes a goat prairie (stand 3). It is the ridge that extends out from the open grass area (stand 32) off of Rim of the City Road. Unofficial hiking trails from the field to the goat prairie were seen and could be improved. The TNT trail runs through this stand. There are significant rock outcrops in the steep areas. There are also scenic cliff faces here that look to be the result of past quarrying. Invasive species work (HM 6) can be ongoing and the goat prairie can be expanded as time and resources allow. Timber management is not a priority in this stand.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ATiDe habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	Miscellaneous Deciduous | | | | | Total 78 | | | | | 78 7 | | | | | 7 2.270 | | | | | 2.270 $4284 | | | | | $4284 $10280 | | | | | $10280 $14564 | | | | | $14564
Forest Health (Insects, disease, invasive species, timber productivity)	Buckthorn, Japanese barberry and honeysuckle infestations. Shagbark hickory site index is 87
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	A diverse species and age mosaic that maximizes edge effect for wildlife. That is free from invasive species.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Invasive species removal. Allow natural succession.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal
Best Management Practices for Soil and Water	BMP: Spill Response – Maintain a spill containment and clean up kit appropriate for the site as well as all materials on the operation, and report all spills. BMP: Mixing and loading operations – Mix and load pesticides outside of riparian management zones and where practical, in upland areas, BMP: Timing and weather conditions – Apply chemicals only under favorable weather conditions. BMP: Applying pesticides – Prevent chemical leaks from equipment. Check all equipment for leaking hoses, connections, and nozzles. Calibrate spray equipment to apply chemicals uniformly and in the correct quantities.
Aesthetic and Recreation Considerations	Unofficial hiking trails from the field to the goat prairie were seen and could be improved. The TNT trail runs through this stand. There are significant rock outcrops in the steep areas. There are also scenic cliff faces here that look to be the result of past quarrying.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $14501

Stand 27	Primary Forest Type: Oak Large Sawtimber lightly stocked (O1115[1]) Secondary timber type: Central hardwood Poletimber lightly stocked (CH0511[1]) Understory: Central Hardwoods	32.89 acres

A. CURRENT CONDITIONS NARRATIVE

This stand runs from a ridge down to the TNT trail and is adjacent to the entrance road to the parking lot in lower Hixon. There is a goat prairie next to this stand. The lower portion of this stand is heavily infested with large buckthorn. A trail could be built from the lower parking lot through this stand and onto stand 28 and up the hill, which would allow both of those stands to be managed for invasive species and possibly timber (and used for recreation). There is a scenic 'unofficial' trail near sandy rock outcrops that could be made into a nice hiking trail. Invasive species management (HM 6) will be very hard here due to the density and lack of access. Timber management should not happen here until the exotic invasive plants have been removed or significantly reduced.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ArCi-Ph habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	Oak / C Hdwds / / / Total 36 / 31 / / / 67 3 / 2 / / / 5 1.180 / 1.200 / / / 2.380 $2467 / $1645 / / / $4112 $10979 / $7302 / / / $18281 $13446 / $8947 / / / $22393
Forest Health (Insects, disease, invasive species, timber productivity)	Some potential oak wilt. Buckthorn, Japanese barberry and honeysuckle infestations. Oak site index is 82.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Remove heavy infestations of buckthorn and light infestations of honeysuckle and Japanese barberry. Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: :honeysuckle, buckthorn and Japanese barberry (ongoing) 12/2024 – Two stage shelterwood harvest 12/2029 - Site preparation for natural regeneration 12/2034 - Tree establishment by planting if natural regeneration fails 12/2039 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Spill Response – Maintain a spill containment and clean up kit appropriate for the site as well as all materials on the operation, and report all spills. BMP: Mixing and loading operations – Mix and load pesticides outside of riparian management zones and where practical, in upland areas, BMP: Timing and weather conditions – Apply chemicals only under favorable weather conditions. BMP: Applying pesticides – Prevent chemical leaks from equipment. Check all equipment for leaking hoses, connections, and nozzles. Calibrate spray equipment to apply chemicals uniformly and in the correct quantities.
Aesthetic and Recreation Considerations	There is a scenic 'unofficial' trail near sandy rock outcrops that could be made into a nice hiking trail.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $19482 12/2024 - Two stage shelterwood harvest income estimate: $13436 12/2039 – Overstory removal harvest after seedlings are established income estimate:$8957

Stand 28	Primary Forest Type: Central hardwood Small Sawtimber lightly stocked 1115[1]) Secondary timber type: Central hardwood Poletimber medium stocked (0511[2]) 22.62 acres

A. CURRENT CONDITIONS NARRATIVE

This stand extends from the ridge down to the property boundary, which abuts houses. The northern boundary of the stand is a ravine. There are pockets of aspen and birch scattered throughout the oak woodlands. A small pine plantation exists in this stand and is next to an old trail. A trail could be built from the lower Hixon parking lot through stand 27,into this stand and connect to an existing overgrown trail that would need to be rehabilitated, but already has a quality ravine crossing and connects to a trail in stand 29. This would allow these areas to be managed for invasive species and possibly timber (and have the trail used for recreation). Invasive species management (HM 6) will be very hard here due to the density, steepness. And lack of access. Timber management is not a priority here due to the lack of access, lack of timber quality and amount of exotic invasive species.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ATiDe habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	Central Hardwoods | | | | | Total 74 | | | | | 74 8 | | | | | 8 2.310 | | | | | 2.310 $4524 | | | | | $4524 $9667 | | | | | $9667 $14191 | | | | | $14191
Forest Health (Insects, disease, invasive species, timber productivity)	Heavy buckthorn and light Japanese barberry, oriental bittersweet and honeysuckle infestations. American elm site index is 50
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	A well-stocked even aged central hardwood stand with either none or a very low presence of tree mortality. The primary goals for this stand are 1. Control invasive species, and 2. Do periodic sanitation/salvage thinnings to remove trees per standard order of removal.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Invasive species removal. Remove heavy buckthorn and light infestations of honeysuckle and Japanese barberry. Harvest groups of aspen and oak afflicted with oak wilt.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal 12/2024 –sanitation/salvage thinning
Best Management Practices for Soil and Water	BMP: Spill Response – Maintain a spill containment and clean up kit appropriate for the site as well as all materials on the operation, and report all spills. BMP: Mixing and loading operations – Mix and load pesticides outside of riparian management zones and where practical, in upland areas, BMP: Timing and weather conditions – Apply chemicals only under favorable weather conditions. BMP: Applying pesticides – Prevent chemical leaks from equipment. Check all equipment for leaking hoses, connections, and nozzles. Calibrate spray equipment to apply chemicals uniformly and in the correct quantities.
Aesthetic and Recreation Considerations	A trail could be built from the lower Hixon parking lot through stand 27,into this stand and connect to an existing overgrown trail that would need to be rehabilitated, but already has a quality ravine crossing and connects to a trail in stand 29. This would allow these areas to be managed for invasive species and possibly timber (and have the trail used for recreation).
Financial Management (yearly breakdown)	12/2019 - Invasive species removal: buckthorn cost estimate: $13399 12/2024 –Sanitation/salvage thinning income estimate: $4257

Stand 29	Primary Forest Type: Aspen Small Sawtimber medium stocked (A1115[2]) Secondary timber type: Miscellaneous deciduous Poletimber medium stocked (MD0511[1]) Understory: Northern Hardwoods	13.71 acres

A. CURRENT CONDITIONS NARRATIVE

This stand extends from the property boundary to a ravine and up to the shoulder of the hill. The northern boundary of the stand is a ravine. This area has a trail (Bluff Pass) run through It parallel to the ravine, that could either be improved or closed- the lower exit/entrance point is uncertain. Some black locust trees were girdled in this stand which indicates prior management. Burr oak was seen in this stand. Harvesting mature aspen (RE 1) and scattered poor-formed trees {T 1) is recommended. Invasive species work (HM 6) is of moderate priority and can be started from the top of the hill going down.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.					
Water (lakes, ponds, streams, etc)	n/a					
Wetlands	n/a					
Biological Diversity	ATiDe(Pr) habitat type					
Forest Type/Species	Aspen	Miscellaneous Deciduous				Total
Basal area	54	46				100
Volume – cords	2	3				5
Volume – thousand board feet (mbf)	3.335	1.915				5.250
Estimated Value – cords	$686	$1028				$1714
Estimated Value - mbf	$8459	$3237				$11696
Total	$9145	$4265				$13410
Forest Health (Insects, disease, invasive species, timber productivity)	Heavy buckthorn, light honeysuckle, light Japanese barberry infestations. White ash site index is 55.					
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.					
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.					
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.					
Carbon cycle/climate change						
Fire Risk Management	low					

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged aspen stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Improve even aged aspen stand structure to improve forest health. This should be accomplished via a Commercial Timber Sale. The machinery type to be used will be dependent on resource needs, landowner goals and Timber Purchaser capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Treatment to eradicate buckthorn. 2. Establish wildlife and pollinator habitat for game and non-game (neo-tropical migratory songbird) habitat diversity. 3. Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.4. Post-harvest stocking level goal is fully stocked aspen sapling stand.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn and honeysuckle (ongoing) 12/2024 - Coppice cut harvest that establishes even aged aspen sapling stand. 12/2025– Woody residue treatment
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	This area has a trail (Bluff Pass) run through It parallel to the ravine that could either be improved or closed- the lower exit/entrance point is uncertain.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal: buckthorn and Japanese barberry cost estimate: $8121 12/2024 – Coppice cut harvest that establishes even aged aspen sapling stand. income estimate: $13410 12/2025 – Woody residue treatment cost estimate: $1708

Stand 30	Primary Forest Type: Oak Large Sawtimber lightly stocked (O1115[1] Secondary timber type: Miscellaneous deciduous Poletimber medium stocked (CH0511[2]) Understory: Central Hardwoods	14.34 acres

A. CURRENT CONDITIONS NARRATIVE

This stand surrounds a goat prairie (stand 3). It has a lot of burr oak and larger honeysuckle. Black locusts have been girdled near the prairie. A good trail exists from the end of Rim of the City Road to the goat prairie. The goat prairie can be expanded as time and resources allow. Invasive plant management (HM 6) should concentrate on bushes that are seed producing size. A 9-inch aspen was aged at 26 years old.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ArCi-Ph habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	Oak / C Hdwds / / / Total 45 / 35 / / / 80 4 / 3 / / / 7 1.594 / .106 / / / 1.700 $1434 / $1076 / / / $2510 $4229 / $281 / / / $4510 $5663 / $1357 / / / $7020
Forest Health (Insects, disease, invasive species, timber productivity)	Some potential oak wilt. Heavy honeysuckle and light buckthorn and Japanese barberry and honeysuckle infestations. Oak site index is 45.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Remove heavy infestations of honeysuckle and light infestations of buckthorn and Japanese barberry. Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: :honeysuckle, buckthorn and Japanese barberry (ongoing) 12/2024– Two stage shelterwood harvest 12/2029 - Site preparation for natural regeneration 12/2034 - Tree establishment by planting if natural regeneration fails 12/2039 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	. A good trail exists from the end of Rim of the City Road to the goat prairie.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $8494 12/2024 - Two stage shelterwood harvest income estimate: $4212 12/2029- Site preparation for natural regeneration cost estimate: $2936 12/2034 - Tree establishment by planting @400 trees/acre cost estimate: $4359 12/2039 – Overstory removal harvest after seedlings are established income estimate:$2808

Stand 31	Primary Forest Type: Oak Large Sawtimber medium stocked (O1115[2]) Secondary timber type: Northern Hardwood Poletimber lightly stocked (NH0511[1]) Understory: Northern Hardwoods	11.23 acres

A. CURRENT CONDITIONS NARRATIVE

This stand extends from the ridge down to the property boundary, which is near power lines. Invasive species removal (HM 6) and cutting/girdling of ironwood and suppressed American elm {SP 1) should take place before a timber harvest that creates group-openings (RA 6) occurs. Access may be needed from the lower boundary if management is to proceed.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ArCi-Ph habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	Oak / C Hdwds / / / Total 45 / 35 / / / 80 1 / 7 / / / 8 3.532 / 1.038 / / / 4.570 $1434 / $1076 / / / $2510 $4229 / $281 / / / $4510 $5663 / $1357 / / / $7020
Forest Health (Insects, disease, invasive species, timber productivity)	Honeysuckle and Japanese barberry infestations. Oak site index is 47.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Remove infestations of honeysuckle and Japanese barberry. Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: :honeysuckle, buckthorn and Japanese barberry (ongoing) 12/2024– Two stage shelterwood harvest 12/2029 - Site preparation for natural regeneration 12/2034 - Tree establishment by planting if natural regeneration fails 12/2039 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	. Access may be needed from the lower boundary if management is to proceed.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $6652 12/2024 - Two stage shelterwood harvest income estimate: $4212 12/2029- Site preparation for natural regeneration cost estimate: $2305 12/2034 - Tree establishment by planting @400 trees/acre cost estimate: $3441 12/2039 – Overstory removal harvest after seedlings are established income estimate:$2808

Stand 32	Primary Type: Tower Prairie
	12.44 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is the relatively open area by the utility enclosure adjacent to Rim of the City Road. It has clover, grasses. Reed canary grass. Honeysuckle. Boxelder. elm. and other herbaceous vegetation growing in it. It would be a good demonstration area for children to remove honeysuckle (HM 6) and for general public volunteer opportunities. This area could be managed as an open savanna area. but boxelder and elm would need to be removed and prescribed fire and mowing could be used {HM 7) to keep it open. Oak trees could be planted (Pll) in a scattered approach to make it a savanna instead of a prairie/grassland setting.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	unk
Forest Type/Species	n/a
Forest Health (Insects, disease, invasive species, timber productivity)	Moderate honeysuckle and reed canary grass infestations.
Fish & Wildlife Habitat Management	Maintain opening for birds and small mammal's edge effect.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is to maintain and expand this dry prairie that is unique to the bluffs of this area and provide special habitat to animals and plants. The primary Resource Concern is Inadequate Habitat for Fish and Wildlife – Habitat degradation. – Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife or invertebrate species. The primary goals for this stand are 1. Control invasive species, and 2. Maintain and expand prairie openings. Options to accomplish include force account staff work, volunteers and partnership arrangements. Equipment to be used will be dependent on resource needs, landowner goals and workforce capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Control invasive species, 2. Maintain and expand prairie openings. and 3. Establish wildlife and pollinator Habitat for game and non-game (neo-tropical migratory songbird) habitat diversity.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species honeysuckle and reed canary grass (ongoing) 12/2019 – Develop and establish a 50 year Cooperative Volunteer and Partnerships Prairie Maintenance Agreement with organized financial and human support. Consider special interest groups and work for school credit programs. 12/2020 – Establish Stewardship Program in cooperation with timber sale program of work. 12/2020 - Develop Brush Disposal Plan (BD Plan).
Best Management Practices for Soil and Water	BMPs: Protecting Resources – 1. Operate mechanical equipment on the contour where necessary to minimize erosion.2. Minimize raking in areas, or under conditions, in which soil could erode and enter waterbodies. Two preferred practices are: a. shearing and raking when soil is frozen and b. raking lightly to remove slash only. 3. Suspend operations during wet periods if equipment begins to cause excessive soil disturbance. 4. Use patch scarification or low intensity prescribed burns on sites that have steep slopes, erodible or saturated soils, and on sites that drain to surface water.
Aesthetic and Recreation Considerations	Establish perimeter design and layout criteria to encourage a natural irregular edge appearance.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $7369 12/2019 -: Develop and establish a 10 year Cooperative Volunteer and Partnerships Goat Prairie Maintenance Agreement: internal force account 12/2020 -: Establish Stewardship Program in cooperation with timber sale program of work. Internal force account 12/2020 - Develop Brush Disposal Plan (BD Plan). Internal force account

Stand 33	Primary Type: HPT Prairie	12.95 acres

A. CURRENT CONDITIONS NARRATIVE

Grass, dogwood. and honeysuckle grow next to the woods. Honeysuckle is not a priority here but should be removed (HM 6), eventually. Trees could be planted on the west section (Pll) to create a forest setting and connect two large blocks of forest. which benefits many wildlife species including migratory birds. HPT stands for Human Power Trails a not for profit organization that established and maintained the off road bike trails in Upper Hixon. HPT reorganized to form Outdoor Recreation Alliance (ORA) in 2013.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	unk
Forest Type/Species	n/a
Forest Health (Insects, disease, invasive species, timber productivity)	Moderate honeysuckle infestation.
Fish & Wildlife Habitat Management	Maintain opening for birds and small mammal's edge effect.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is to maintain and expand this dry prairie that is unique to the bluffs of this area and provide special habitat to animals and plants. The primary Resource Concern is Inadequate Habitat for Fish and Wildlife – Habitat degradation. – Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife or invertebrate species. The primary goals for this stand are 1. Control invasive species, and 2. Maintain and expand prairie openings. Options to accomplish include force account staff work, volunteers and partnership arrangements. Equipment to be used will be dependent on resource needs, landowner goals and workforce capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Control invasive species, 2. Maintain and expand prairie openings. and 3. Establish wildlife and pollinator Habitat for game and non-game (neo-tropical migratory songbird) habitat diversity.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species honeysuckle control (ongoing) 12/2019 – Develop and establish a 50 year Cooperative Volunteer and Partnerships Prairie Maintenance Agreement with organized financial and human support. Consider special interest groups and work for school credit programs. 12/2020 – Establish Stewardship Program in cooperation with timber sale program of work. 12/2020 - Develop Brush Disposal Plan (BD Plan).
Best Management Practices for Soil and Water	BMPs: Protecting Resources – 1. Operate mechanical equipment on the contour where necessary to minimize erosion.2. Minimize raking in areas, or under conditions, in which soil could erode and enter waterbodies. Two preferred practices are: a. shearing and raking when soil is frozen and b. raking lightly to remove slash only. 3. Suspend operations during wet periods if equipment begins to cause excessive soil disturbance. 4. Use patch scarification or low intensity prescribed burns on sites that have steep slopes, erodible or saturated soils, and on sites that drain to surface water.
Aesthetic and Recreation Considerations	Establish perimeter design and layout criteria to encourage a natural irregular edge appearance.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $7671 12/2019 -: Develop and establish a 10 year Cooperative Volunteer and Partnerships Goat Prairie Maintenance Agreement: internal force account 12/2020 -: Establish Stewardship Program in cooperation with timber sale program of work. Internal force account 12/2020 - Develop Brush Disposal Plan (BD Plan). Internal force account

Stand 34	Primary Type: Bicentennial Prairie
	14.27 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is south of the weather station across County Highway FA. It has grasses, goldenrod, mulberry, sumac, thistle, Reed canary grass, and rows of red pine and Norway spruce. This area could be kept open in with grasses by mowing or use of prescribed fire (HM 7) and connected to the open area across County Highway FA. A more developed recreational area could be developed since this area is next to a good parking area. Rows of pine and spruce can be kept or cut depending on future plans.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	unk
Forest Type/Species	n/a
Forest Health (Insects, disease, invasive species, timber productivity)	Limited reed canary grass infestation.
Fish & Wildlife Habitat Management	Maintain opening for birds and small mammal's edge effect.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is to maintain and expand this dry prairie that is unique to the bluffs of this area and provide special habitat to animals and plants. The primary Resource Concern is Inadequate Habitat for Fish and Wildlife – Habitat degradation. – Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife or invertebrate species. The primary goals for this stand are 1. Control invasive species, and 2. Maintain and expand prairie openings. Options to accomplish include force account staff work, volunteers and partnership arrangements. Equipment to be used will be dependent on resource needs, landowner goals and workforce capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Control invasive species, 2. Maintain and expand prairie openings. and 3. Establish wildlife and pollinator Habitat for game and non-game (neo-tropical migratory songbird) habitat diversity.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species reed canary grass control (ongoing) 12/2019 – Develop and establish a 50 year Cooperative Volunteer and Partnerships Prairie Maintenance Agreement with organized financial and human support. Consider special interest groups and work for school credit programs. 12/2020 – Establish Stewardship Program in cooperation with timber sale program of work. 12/2020 - Develop Brush Disposal Plan (BD Plan).
Best Management Practices for Soil and Water	BMPs: Protecting Resources – 1. Operate mechanical equipment on the contour where necessary to minimize erosion.2. Minimize raking in areas, or under conditions, in which soil could erode and enter waterbodies. Two preferred practices are: a. shearing and raking when soil is frozen and b. raking lightly to remove slash only. 3. Suspend operations during wet periods if equipment begins to cause excessive soil disturbance. 4. Use patch scarification or low intensity prescribed burns on sites that have steep slopes, erodible or saturated soils, and on sites that drain to surface water.
Aesthetic and Recreation Considerations	Establish perimeter design and layout criteria to encourage a natural irregular edge appearance. A more developed recreational area could be developed since this area is next to a good parking area.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $8453 12/2019 -: Develop and establish a 10 year Cooperative Volunteer and Partnerships Goat Prairie Maintenance Agreement: internal force account 12/2020 -: Establish Stewardship Program in cooperation with timber sale program of work. Internal force account 12/2020 - Develop Brush Disposal Plan (BD Plan). Internal force account

Stand 35	Primary Forest Type: Oak Large Sawtimber medium stocked (O15+ [2])
	Secondary timber type: Central Hardwood Poletimber lightly stocked (NH0511[1])
	Understory: Bottomland Hardwoods 17.75 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is east of the weather station parking lot and extends from a ravine to the south and has the property boundary in the east. People on bikes and people walking dogs on trails were seen often during the inventory. Valuable walnut trees {24 inches and tall) grow in this stand along with oak, red pine, and white pine. White pine and walnuts can be managed for the long-term. Invasive species management (HM 6) is of moderate priority in this stand. An improvement thinning (T2), where the worst trees are removed first, is recommended.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ArCi-Ph habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	Oak / C Hdwds / / / Total 51 / 41 / / / 92 2 / 2 / / / 4 2.413 / 4.097 / / / 6.510 $888 / $888 / / / $1776 $7924 / $13454 / / / $21378 $8812 / $14342 / / / $23154
Forest Health (Insects, disease, invasive species, timber productivity)	Honeysuckle, Japanese barberry, multiflora rose, and garlic mustard infestations. Oak site index is 64.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Remove infestations of honeysuckle and Japanese barberry. Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: :honeysuckle, buckthorn and Japanese barberry (ongoing) 12/2025 – Sanitation/salvage thinning 12/2039– Two stage shelterwood harvest 12/2045 - Site preparation for natural regeneration 12/2050 - Tree establishment by planting if natural regeneration fails 12/2055 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	. Access may be needed from the lower boundary if management is to proceed.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $10514 12/2025 – Sanitation/salvage thinning: income estimate: $4631 12/2039 - Two stage shelterwood harvest income estimate: $13892 12/2045- Site preparation for natural regeneration cost estimate: $3644 12/2050 - Tree establishment by planting @400 trees/acre cost estimate: $5396 12/2055 – Overstory removal harvest after seedlings are established income estimate:$9262

Stand 36	Primary Forest Type: Oak Small Sawtimber medium stocked (O1115 [2])	
	Secondary timber type: Aspen Poletimber lightly stocked (A0511[1])	
	Understory: Central Hardwoods	12.78 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is east of the weather station parking lot and runs from the ravine up to the field. The property boundary is to the east. There is red pine and large 'wolf red oaks in the stand. 'Wolf oaks are large- diameter trees that have low limbs and are best left for wildlife. There is a high density of bike trails in this stand. Harvesting groups of aspen and ash trees (RA 6) is recommended, along with possibly the red pine. Invasive species management (HM 6} in areas that are going to be harvested is a high priority. There are groves of black locust in this stand. A good use for small-diameter black locust is fence posts, due to its rot resistance. There are quality walnut trees in this stand, but not as many as stand 35. A 13-inch red pine was aged at 37years old.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ArCi-Ph habitat type
Forest Type/Species	

	Oak	Aspen			Total
Basal area	67	18			85
Volume – cords	4	4			8
Volume – thousand board feet (mbf)	3.124	.286			3.410
Estimated Value – cords	$1278	$1278			$2556
Estimated Value - mbf	$7386	$676			$8062
Total	$8664	$1954			$10618

Forest Health (Insects, disease, invasive species, timber productivity)	Honeysuckle, Japanese barberry, multiflora rose, and garlic mustard infestations. Oak site index is 58.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Remove infestations of honeysuckle, buckthorn, oriental bittersweet and Japanese barberry. Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: :honeysuckle, buckthorn and Japanese barberry (ongoing) 12/2025 – Patch cuts of aspen and ash inclusions 12/2039– Two stage shelterwood harvest 12/2045 - Site preparation for natural regeneration 12/2050 - Tree establishment by planting if natural regeneration fails 12/2055 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	. There is a high density of bike trails in this stand.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $7570 12/2025 – Patch cuts of aspen and ash income estimate: $1062 12/2039 - Two stage shelterwood harvest income estimate: $6371 12/2045- Site preparation for natural regeneration cost estimate: $2623 12/2050 - Tree establishment by planting @400 trees/acre cost estimate: $3885 12/2055 – Overstory removal harvest after seedlings are established income estimate:$4247

Stand 37	Primary Type: Thompson Prairie	34.40 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is northeast of the weather station along County Highway FA. It is mostly in grass and goldenrod with locust and other woody vegetation encroaching. Some warm season grasses and prairie plants were seen, along with Reed canary grass. This stand could be planted with trees; both by direct seeding and by planting seedlings; to connect and expand the forest habitat for wildlife. especially migratory birds- that rely on large blocks of forest. Trails could be established beforehand to connect to the extensive bike trail system that exists in the adjacent stands.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	unk
Forest Type/Species	n/a
Forest Health (Insects, disease, invasive species, timber productivity)	Limited reed canary grass infestation.
Fish & Wildlife Habitat Management	Maintain opening for birds and small mammal's edge effect.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is to maintain and expand this dry prairie that is unique to the bluffs of this area and provide special habitat to animals and plants. The primary Resource Concern is Inadequate Habitat for Fish and Wildlife – Habitat degradation. – Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife or invertebrate species. The primary goals for this stand are 1. Control invasive species, and 2. Maintain and expand prairie openings. Options to accomplish include force account staff work, volunteers and partnership arrangements. Equipment to be used will be dependent on resource needs, landowner goals and workforce capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Control invasive species, 2. Maintain and expand prairie openings. and 3. Establish wildlife and pollinator Habitat for game and non-game (neo-tropical migratory songbird) habitat diversity.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species reed canary grass control (ongoing) 12/2019 – Develop and establish a 50 year Cooperative Volunteer and Partnerships Prairie Maintenance Agreement with organized financial and human support. Consider special interest groups and work for school credit programs. 12/2020 – Establish Stewardship Program in cooperation with timber sale program of work. 12/2020 - Develop Brush Disposal Plan (BD Plan).
Best Management Practices for Soil and Water	BMPs: Protecting Resources – 1. Operate mechanical equipment on the contour where necessary to minimize erosion.2. Minimize raking in areas, or under conditions, in which soil could erode and enter waterbodies. Two preferred practices are: a. shearing and raking when soil is frozen and b. raking lightly to remove slash only. 3. Suspend operations during wet periods if equipment begins to cause excessive soil disturbance. 4. Use patch scarification or low intensity prescribed burns on sites that have steep slopes, erodible or saturated soils, and on sites that drain to surface water.
Aesthetic and Recreation Considerations	Establish perimeter design and layout criteria to encourage a natural irregular edge appearance. Trails could be established beforehand to connect to the extensive bike trail system that exists in the adjacent stands.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $20377 12/2019 -: Develop and establish a 10 year Cooperative Volunteer and Partnerships Goat Prairie Maintenance Agreement: internal force account 12/2020 -: Establish Stewardship Program in cooperation with timber sale program of work. Internal force account 12/2020 - Develop Brush Disposal Plan (BD Plan). Internal force account

Stand 38	Primary Forest Type: Oak Large Sawtimber well stocked (O15+ [3])	
	Secondary timber type: Central Hardwood Poletimber lightly stocked (CH0511[1])	
	Understory: Central Hardwoods	43.49 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is north of the weather station parking lot off of Hwy FA. It has multiple ravines dissecting this area. A high density of bike trails run throughout the stand. A small plantation of Norway spruce is at the southern edge of the stand near the highway. The timber quality here is higher than in other parts of the property. A timber harvest that removes individual mature trees (T2) and creates some group-openings (RA 6) is recommended. Some large mature white oaks can be left un-harvested for wildlife and aesthetic reasons. Invasive species management (HM 6) is critical in any area that group-openings are created. A 19-inch black walnut was aged at 71years old, and another red oak, 20-inches in diameter, was aged at 118 years old.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ArCi-Ph habitat type
Forest Type/Species	

	Oak	C Hdwds			Total
Basal area	92	34			126
Volume – cords	3	2			5
Volume – thousand board feet (mbf)	6.778	2.592			9.370
Estimated Value – cords	$3262	$2175			$5437
Estimated Value - mbf	$54533	$20854			$75387
Total	$57795	$23029			$80824

Forest Health (Insects, disease, invasive species, timber productivity)	Honeysuckle, Japanese barberry, multiflora rose, and garlic mustard infestations. Oak site index is 58.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged oak stand with no invasive species present. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure and Composition. The primary goals for this stand are 1. Control invasive species, and 2. Regenerate a new younger and healthier oak stand.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	Remove infestations of honeysuckle and Japanese barberry. Woody residue treatment to remove as much logging slash from forest floor as practical to reduce insect and disease potential and improve natural regeneration success.. Wildlife and Pollinator Habitat Game and non-game (neo-tropical migratory songbird) habitat diversity. Post-harvest stocking level goal is 40 – 60% crown closure.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: :honeysuckle, buckthorn and Japanese barberry (ongoing) 12/2025– Two stage shelterwood harvest 12/2030 - Site preparation for natural regeneration 12/2035 - Tree establishment by planting if natural regeneration fails 12/2040 – Overstory removal harvest after seedlings are established
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	A high density of bike trails run throughout the stand.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal cost estimate: $25761 12/2025 - Two stage shelterwood harvest income estimate: $48494 12/2030- Site preparation for natural regeneration cost estimate: $8927 12/2035 - Tree establishment by planting @400 trees/acre cost estimate: $13221 12/2040 – Overstory removal harvest after seedlings are established income estimate:$32330

Stand 39	Primary Forest Type: Bottomland hardwood Large Sawtimber medium stocked (BH15+[2])
	Secondary timber type: Central Hardwood Poletimber lightly stocked (CH0511[1])
	Understory: Lowland Brush 2.80 acres

A. CURRENT CONDITIONS NARRATIVE

This stand is next to the parking lot and Girl Scout headquarters. It has a ravine running through it and is highly visible from Highway 16 coming into the City. It is between Highway 16 and the railroad, with houses bordering in the south. There is a hiking trail with nice walking bridge through the stand. Buckthorn has already been cut in this stand. One excellent walnut tree was seen- indicates ability to grow good trees here. There were large downed cottonwood trees. It is recommended that walnut seed be spread throughout this stand or seedlings such as walnut, swamp white oak, or tamarack be planted. The view of this area could be opened up (box elder trees cut} near Highway 16 to give a pleasant view of the creek as people enter the city.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ArCi(Ph) habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	Bottomland hardwood / C Hdwd / / / / Total 30 / 65 / / / / 95 3 / 4 / / / / 7 2.838 / 1.882 / / / / 4.720 $210 / $280 / / / / $490 $1470 / $975 / / / / $2445 $1680 / $1255 / / / / $2935
Forest Health (Insects, disease, invasive species, timber productivity)	Light buckthorn infestation. Honey locust site index is 76.
Fish & Wildlife Habitat Management	Leave 3 – 5 cavity/den trees per acre for birds and small mammals.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	low

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged bottom hardwood stand. The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	The primary goals for this stand are 1. Control invasive species, and 2. Improve forest health by site preparation and planting seedlings such as walnut, swamp white oak, or tamarack.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species removal: buckthorn (ongoing) 12/2020 – Site preparation and planting
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	There is a hiking trail with nice walking bridge through the stand. The view of this area could be opened up (box elder trees cut} near Highway 16 to give a pleasant view of the creek as people enter the city.
Financial Management (yearly breakdown)	12/2019 - Invasive species removal: buckthorn (ongoing) cost estimate: $1659 12/2020 – Site preparation and planting cost estimate: $1426

Stand 40	Primary Forest Type: White Pine Large Sawtimber well stocked (PW15+[2]) Secondary timber type: Central Hardwood Poletimber lightly stocked (CH0511[1]) Understory: Bottomland hardwood	1.04 acres

A. CURRENT CONDITIONS NARRATIVE

No data

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No data
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	ATiDe habitat type
Forest Type/Species Basal area Volume – cords Volume – thousand board feet (mbf) Estimated Value – cords Estimated Value - mbf Total	No data | | | | | Total | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
Forest Health (Insects, disease, invasive species, timber productivity)	No data
Fish & Wildlife Habitat Management	No data
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	No data

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is a healthy even aged white pine stand The primary Resource Concern is DEGRADED PLANT CONDITION – Plant Productivity and Health, Inadequate Structure.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	The primary goals for this stand are 1. Control invasive species, and 2. Improve forest health for this white pine stand.
Strategy and Timeline for Implementation (Yearly Breakdown)	No data
Best Management Practices for Soil and Water	BMP: Planning and Design – limit the length and number of skid trails, and the number of landings and stream crossings, to the minimum necessary to conduct the harvest operation and meet the landowners objectives.
Aesthetic and Recreation Considerations	No data
Financial Management (yearly breakdown)	No data

Stand 41	Primary Type: Log Prairie
	2.63 acres

A. CURRENT CONDITIONS NARRATIVE

Overgrown native prairie.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	unk
Forest Type/Species	n/a
Forest Health (Insects, disease, invasive species, timber productivity)	Limited buckthorn infestation.
Fish & Wildlife Habitat Management	Maintain opening for birds and small mammal's edge effect.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is to maintain and expand this dry prairie that is unique to the bluffs of this area and provide special habitat to animals and plants. The primary Resource Concern is Inadequate Habitat for Fish and Wildlife – Habitat degradation. – Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife or invertebrate species. The primary goals for this stand are 1. Control invasive species, and 2. Maintain and expand prairie openings. Options to accomplish include force account staff work, volunteers and partnership arrangements. Equipment to be used will be dependent on resource needs, landowner goals and workforce capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Control invasive species, 2. Maintain and expand prairie openings. and 3. Establish wildlife and pollinator Habitat for game and non-game (neo-tropical migratory songbird) habitat diversity.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species buckthorn control (ongoing) 12/2019 – Develop and establish a 50 year Cooperative Volunteer and Partnerships Prairie Maintenance Agreement with organized financial and human support. Consider special interest groups and work for school credit programs. 12/2020 – Establish Stewardship Program in cooperation with timber sale program of work. 12/2020 - Develop Brush Disposal Plan (BD Plan).
Best Management Practices for Soil and Water	BMPs: Protecting Resources – 1. Operate mechanical equipment on the contour where necessary to minimize erosion.2. Minimize raking in areas, or under conditions, in which soil could erode and enter waterbodies. Two preferred practices are: a. shearing and raking when soil is frozen and b. raking lightly to remove slash only. 3. Suspend operations during wet periods if equipment begins to cause excessive soil disturbance. 4. Use patch scarification or low intensity prescribed burns on sites that have steep slopes, erodible or saturated soils, and on sites that drain to surface water.
Aesthetic and Recreation Considerations	Establish perimeter design and layout criteria to encourage a natural irregular edge appearance.
Financial Management (yearly breakdown)	12/2019 - Invasive species buckthorn removal cost estimate: $1558 12/2019 -: Develop and establish a 10 year Cooperative Volunteer and Partnerships Goat Prairie Maintenance Agreement: internal force account 12/2020 -: Establish Stewardship Program in cooperation with timber sale program of work. Internal force account 12/2020 - Develop Brush Disposal Plan (BD Plan). Internal force account

Stand 42	Primary Type: Birch Point Prairie
	2.03 acres

A. CURRENT CONDITIONS NARRATIVE

Overgrown native prairie.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	unk
Forest Type/Species	n/a
Forest Health (Insects, disease, invasive species, timber productivity)	Limited buckthorn infestation.
Fish & Wildlife Habitat Management	Maintain opening for birds and small mammal's edge effect.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is to maintain and expand this dry prairie that is unique to the bluffs of this area and provide special habitat to animals and plants. The primary Resource Concern is Inadequate Habitat for Fish and Wildlife – Habitat degradation. – Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife or invertebrate species. The primary goals for this stand are 1. Control invasive species, and 2. Maintain and expand prairie openings. Options to accomplish include force account staff work, volunteers and partnership arrangements. Equipment to be used will be dependent on resource needs, landowner goals and workforce capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Control invasive species, 2. Maintain and expand prairie openings. and 3. Establish wildlife and pollinator Habitat for game and non-game (neo-tropical migratory songbird) habitat diversity.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species buckthorn control (ongoing) 12/2019 – Develop and establish a 50 year Cooperative Volunteer and Partnerships Prairie Maintenance Agreement with organized financial and human support. Consider special interest groups and work for school credit programs. 12/2020 – Establish Stewardship Program in cooperation with timber sale program of work. 12/2020 - Develop Brush Disposal Plan (BD Plan).
Best Management Practices for Soil and Water	BMPs: Protecting Resources – 1. Operate mechanical equipment on the contour where necessary to minimize erosion.2. Minimize raking in areas, or under conditions, in which soil could erode and enter waterbodies. Two preferred practices are: a. shearing and raking when soil is frozen and b. raking lightly to remove slash only. 3. Suspend operations during wet periods if equipment begins to cause excessive soil disturbance. 4. Use patch scarification or low intensity prescribed burns on sites that have steep slopes, erodible or saturated soils, and on sites that drain to surface water.
Aesthetic and Recreation Considerations	Establish perimeter design and layout criteria to encourage a natural irregular edge appearance.
Financial Management (yearly breakdown)	12/2019 - Invasive species buckthorn removal cost estimate: $1202 12/2019 -: Develop and establish a 10 year Cooperative Volunteer and Partnerships Goat Prairie Maintenance Agreement: internal force account 12/2020 -: Establish Stewardship Program in cooperation with timber sale program of work. Internal force account 12/2020 - Develop Brush Disposal Plan (BD Plan). Internal force account

Stand 43	Primary Type: Zoerb Prairie
	2.78 acres

A. CURRENT CONDITIONS NARRATIVE

Zoerb prairie

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	unk
Forest Type/Species	n/a
Forest Health (Insects, disease, invasive species, timber productivity)	Limited buckthorn infestation.
Fish & Wildlife Habitat Management	Maintain opening for birds and small mammal's edge effect.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is to maintain and expand this dry prairie that is unique to the bluffs of this area and provide special habitat to animals and plants. The primary Resource Concern is Inadequate Habitat for Fish and Wildlife – Habitat degradation. – Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife or invertebrate species. The primary goals for this stand are 1. Control invasive species, and 2. Maintain and expand prairie openings. Options to accomplish include force account staff work, volunteers and partnership arrangements. Equipment to be used will be dependent on resource needs, landowner goals and workforce capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Control invasive species, 2. Maintain and expand prairie openings. and 3. Establish wildlife and pollinator Habitat for game and non-game (neo-tropical migratory songbird) habitat diversity.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species buckthorn control (ongoing) 12/2019 – Develop and establish a 50 year Cooperative Volunteer and Partnerships Prairie Maintenance Agreement with organized financial and human support. Consider special interest groups and work for school credit programs. 12/2020 – Establish Stewardship Program in cooperation with timber sale program of work. 12/2020 - Develop Brush Disposal Plan (BD Plan).
Best Management Practices for Soil and Water	BMPs: Protecting Resources – 1. Operate mechanical equipment on the contour where necessary to minimize erosion.2. Minimize raking in areas, or under conditions, in which soil could erode and enter waterbodies. Two preferred practices are: a. shearing and raking when soil is frozen and b. raking lightly to remove slash only. 3. Suspend operations during wet periods if equipment begins to cause excessive soil disturbance. 4. Use patch scarification or low intensity prescribed burns on sites that have steep slopes, erodible or saturated soils, and on sites that drain to surface water.
Aesthetic and Recreation Considerations	Establish perimeter design and layout criteria to encourage a natural irregular edge appearance.
Financial Management (yearly breakdown)	12/2019 - Invasive species buckthorn removal cost estimate: $1647 12/2019 -: Develop and establish a 10 year Cooperative Volunteer and Partnerships Goat Prairie Maintenance Agreement: internal force account 12/2020 -: Establish Stewardship Program in cooperation with timber sale program of work. Internal force account 12/2020 - Develop Brush Disposal Plan (BD Plan). Internal force account

Stand 44	Primary Type: Lookout Prairie
	2.82 acres

A. CURRENT CONDITIONS NARRATIVE

Lookout prairie

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	unk
Forest Type/Species	n/a
Forest Health (Insects, disease, invasive species, timber productivity)	Limited buckthorn infestation.
Fish & Wildlife Habitat Management	Maintain opening for birds and small mammal's edge effect.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is to maintain and expand this dry prairie that is unique to the bluffs of this area and provide special habitat to animals and plants. The primary Resource Concern is Inadequate Habitat for Fish and Wildlife – Habitat degradation. – Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife or invertebrate species. The primary goals for this stand are 1. Control invasive species, and 2. Maintain and expand prairie openings. Options to accomplish include force account staff work, volunteers and partnership arrangements. Equipment to be used will be dependent on resource needs, landowner goals and workforce capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Control invasive species, 2. Maintain and expand prairie openings. and 3. Establish wildlife and pollinator Habitat for game and non-game (neo-tropical migratory songbird) habitat diversity.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species buckthorn control (ongoing) 12/2019 – Develop and establish a 50 year Cooperative Volunteer and Partnerships Prairie Maintenance Agreement with organized financial and human support. Consider special interest groups and work for school credit programs. 12/2020 – Establish Stewardship Program in cooperation with timber sale program of work. 12/2020 - Develop Brush Disposal Plan (BD Plan).
Best Management Practices for Soil and Water	BMPs: Protecting Resources – 1. Operate mechanical equipment on the contour where necessary to minimize erosion.2. Minimize raking in areas, or under conditions, in which soil could erode and enter waterbodies. Two preferred practices are: a. shearing and raking when soil is frozen and b. raking lightly to remove slash only. 3. Suspend operations during wet periods if equipment begins to cause excessive soil disturbance. 4. Use patch scarification or low intensity prescribed burns on sites that have steep slopes, erodible or saturated soils, and on sites that drain to surface water.
Aesthetic and Recreation Considerations	Establish perimeter design and layout criteria to encourage a natural irregular edge appearance.
Financial Management (yearly breakdown)	12/2019 - Invasive species buckthorn removal cost estimate: $1670 12/2019 -: Develop and establish a 10 year Cooperative Volunteer and Partnerships Goat Prairie Maintenance Agreement: internal force account 12/2020 -: Establish Stewardship Program in cooperation with timber sale program of work. Internal force account 12/2020 - Develop Brush Disposal Plan (BD Plan). Internal force account

Stand 45	Primary Type: Vista Prairie
	1.72 acres

A. CURRENT CONDITIONS NARRATIVE

Overgrown native prairie

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	unk
Forest Type/Species	n/a
Forest Health (Insects, disease, invasive species, timber productivity)	Limited buckthorn infestation.
Fish & Wildlife Habitat Management	Maintain opening for birds and small mammal's edge effect.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is to maintain and expand this dry prairie that is unique to the bluffs of this area and provide special habitat to animals and plants. The primary Resource Concern is Inadequate Habitat for Fish and Wildlife – Habitat degradation. – Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife or invertebrate species. The primary goals for this stand are 1. Control invasive species, and 2. Maintain and expand prairie openings. Options to accomplish include force account staff work, volunteers and partnership arrangements. Equipment to be used will be dependent on resource needs, landowner goals and workforce capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Control invasive species, 2. Maintain and expand prairie openings. and 3. Establish wildlife and pollinator Habitat for game and non-game (neo-tropical migratory songbird) habitat diversity.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species control (ongoing) 12/2019 – Develop and establish a 50 year Cooperative Volunteer and Partnerships Prairie Maintenance Agreement with organized financial and human support. Consider special interest groups and work for school credit programs. 12/2020 – Establish Stewardship Program in cooperation with timber sale program of work. 12/2020 - Develop Brush Disposal Plan (BD Plan).
Best Management Practices for Soil and Water	BMPs: Protecting Resources – 1. Operate mechanical equipment on the contour where necessary to minimize erosion.2. Minimize raking in areas, or under conditions, in which soil could erode and enter waterbodies. Two preferred practices are: a. shearing and raking when soil is frozen and b. raking lightly to remove slash only. 3. Suspend operations during wet periods if equipment begins to cause excessive soil disturbance. 4. Use patch scarification or low intensity prescribed burns on sites that have steep slopes, erodible or saturated soils, and on sites that drain to surface water.
Aesthetic and Recreation Considerations	Establish perimeter design and layout criteria to encourage a natural irregular edge appearance.
Financial Management (yearly breakdown)	12/2019 - Invasive species control cost estimate: $1019 12/2019 -: Develop and establish a 10 year Cooperative Volunteer and Partnerships Goat Prairie Maintenance Agreement: internal force account 12/2020 -: Establish Stewardship Program in cooperation with timber sale program of work. Internal force account 12/2020 - Develop Brush Disposal Plan (BD Plan). Internal force account

Stand 46	Primary Type: Milson Prairie
	3.44 acres

A. CURRENT CONDITIONS NARRATIVE

Overgrown native prairie

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	unk
Forest Type/Species	n/a
Forest Health (Insects, disease, invasive species, timber productivity)	n/a
Fish & Wildlife Habitat Management	Maintain opening for birds and small mammal's edge effect.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is to maintain and expand this dry prairie that is unique to the bluffs of this area and provide special habitat to animals and plants. The primary Resource Concern is Inadequate Habitat for Fish and Wildlife – Habitat degradation. – Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife or invertebrate species. The primary goals for this stand are 1. Control invasive species, and 2. Maintain and expand prairie openings. Options to accomplish include force account staff work, volunteers and partnership arrangements. Equipment to be used will be dependent on resource needs, landowner goals and workforce capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Control invasive species, 2. Maintain and expand prairie openings. and 3. Establish wildlife and pollinator Habitat for game and non-game (neo-tropical migratory songbird) habitat diversity.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species control (ongoing) 12/2019 – Develop and establish a 50 year Cooperative Volunteer and Partnerships Prairie Maintenance Agreement with organized financial and human support. Consider special interest groups and work for school credit programs. 12/2020 – Establish Stewardship Program in cooperation with timber sale program of work. 12/2020 - Develop Brush Disposal Plan (BD Plan).
Best Management Practices for Soil and Water	BMPs: Protecting Resources – 1. Operate mechanical equipment on the contour where necessary to minimize erosion.2. Minimize raking in areas, or under conditions, in which soil could erode and enter waterbodies. Two preferred practices are: a. shearing and raking when soil is frozen and b. raking lightly to remove slash only. 3. Suspend operations during wet periods if equipment begins to cause excessive soil disturbance. 4. Use patch scarification or low intensity prescribed burns on sites that have steep slopes, erodible or saturated soils, and on sites that drain to surface water.
Aesthetic and Recreation Considerations	Establish perimeter design and layout criteria to encourage a natural irregular edge appearance. Very scenic overlook.
Financial Management (yearly breakdown)	12/2019 - Invasive species control cost estimate: $2038 12/2019 -: Develop and establish a 10 year Cooperative Volunteer and Partnerships Goat Prairie Maintenance Agreement: internal force account 12/2020 -: Establish Stewardship Program in cooperation with timber sale program of work. Internal force account 12/2020 - Develop Brush Disposal Plan (BD Plan). Internal force account

Stand 47	Primary Type: Miller Bluff Prairie	5.27 acres

A. CURRENT CONDITIONS NARRATIVE

Miller Bluff prairie

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	unk
Forest Type/Species	n/a
Forest Health (Insects, disease, invasive species, timber productivity)	n/a
Fish & Wildlife Habitat Management	Maintain opening for birds and small mammal's edge effect.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is to maintain and expand this dry prairie that is unique to the bluffs of this area and provide special habitat to animals and plants. The primary Resource Concern is Inadequate Habitat for Fish and Wildlife – Habitat degradation. – Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife or invertebrate species. The primary goals for this stand are 1. Control invasive species, and 2. Maintain and expand prairie openings. Options to accomplish include force account staff work, volunteers and partnership arrangements. Equipment to be used will be dependent on resource needs, landowner goals and workforce capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Control invasive species, 2. Maintain and expand prairie openings. and 3. Establish wildlife and pollinator Habitat for game and non-game (neo-tropical migratory songbird) habitat diversity.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species control (ongoing) 12/2019 – Develop and establish a 50 year Cooperative Volunteer and Partnerships Prairie Maintenance Agreement with organized financial and human support. Consider special interest groups and work for school credit programs. 12/2020 – Establish Stewardship Program in cooperation with timber sale program of work. 12/2020 - Develop Brush Disposal Plan (BD Plan).
Best Management Practices for Soil and Water	BMPs: Protecting Resources – 1. Operate mechanical equipment on the contour where necessary to minimize erosion.2. Minimize raking in areas, or under conditions, in which soil could erode and enter waterbodies. Two preferred practices are: a. shearing and raking when soil is frozen and b. raking lightly to remove slash only. 3. Suspend operations during wet periods if equipment begins to cause excessive soil disturbance. 4. Use patch scarification or low intensity prescribed burns on sites that have steep slopes, erodible or saturated soils, and on sites that drain to surface water.
Aesthetic and Recreation Considerations	Establish perimeter design and layout criteria to encourage a natural irregular edge appearance.
Financial Management (yearly breakdown)	12/2019 - Invasive species control cost estimate: $3122 12/2019 -: Develop and establish a 10 year Cooperative Volunteer and Partnerships Goat Prairie Maintenance Agreement: internal force account 12/2020 -: Establish Stewardship Program in cooperation with timber sale program of work. Internal force account 12/2020 - Develop Brush Disposal Plan (BD Plan). Internal force account

Stand 48	Primary Type: Hixon Prairie
	7.99 acres

A. CURRENT CONDITIONS NARRATIVE

More trees can sparsely be planted, but it can be kept open in a savanna setting by mowing or prescribed fire (HM 7) and connected to the open area across County Highway FA.

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	unk
Forest Type/Species	n/a
Forest Health (Insects, disease, invasive species, timber productivity)	Limited honeysuckle infestation.
Fish & Wildlife Habitat Management	Maintain opening for birds and small mammal's edge effect.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is to maintain and expand this dry prairie that is unique to the bluffs of this area and provide special habitat to animals and plants. The primary Resource Concern is Inadequate Habitat for Fish and Wildlife – Habitat degradation. – Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife or invertebrate species. The primary goals for this stand are 1. Control invasive species, and 2. Maintain and expand prairie openings. Options to accomplish include force account staff work, volunteers and partnership arrangements. Equipment to be used will be dependent on resource needs, landowner goals and workforce capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Control invasive species, 2. Maintain and expand prairie openings. and 3. Establish wildlife and pollinator Habitat for game and non-game (neo-tropical migratory songbird) habitat diversity.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species control honeysuckle (ongoing) 12/2019 – Develop and establish a 50 year Cooperative Volunteer and Partnerships Prairie Maintenance Agreement with organized financial and human support. Consider special interest groups and work for school credit programs. 12/2020 – Establish Stewardship Program in cooperation with timber sale program of work. 12/2020 - Develop Brush Disposal Plan (BD Plan).
Best Management Practices for Soil and Water	BMPs: Protecting Resources – 1. Operate mechanical equipment on the contour where necessary to minimize erosion.2. Minimize raking in areas, or under conditions, in which soil could erode and enter waterbodies. Two preferred practices are: a. shearing and raking when soil is frozen and b. raking lightly to remove slash only. 3. Suspend operations during wet periods if equipment begins to cause excessive soil disturbance. 4. Use patch scarification or low intensity prescribed burns on sites that have steep slopes, erodible or saturated soils, and on sites that drain to surface water.
Aesthetic and Recreation Considerations	Establish perimeter design and layout criteria to encourage a natural irregular edge appearance.
Financial Management (yearly breakdown)	12/2019 - Invasive species control honeysuckle cost estimate: $4733 12/2019 -: Develop and establish a 10 year Cooperative Volunteer and Partnerships Goat Prairie Maintenance Agreement: internal force account 12/2020 -: Establish Stewardship Program in cooperation with timber sale program of work. Internal force account 12/2020 - Develop Brush Disposal Plan (BD Plan). Internal force account

Stand 49	Primary Type: Oak Savannah Prairie
	3.78 acres

A. CURRENT CONDITIONS NARRATIVE

This is a re-established prairie oak savanna. Prairie grasses and forbs were artificially planted. Then sapling sized Bur Oak were hand planted. These trees were staked and protected from deer browse and mice by six foot tree tubes. The tree tubes where removed in 2010. Other management activities used to establish the prairie and Bur Oak saplings include:1. Mowing of weeds, and 2. prescribed burn in 2010.

There are approximately 36 Bur Oak scattered throughout the prairie, with an average height of 10 feet, average diameter of 1.5 inches. These Oak are healthy but are still subject to wind and ice damage. The site quality is 60 (based on a range of o-100, 0 being the worst site for Oak and 100 being the best).There is a Black Locust infestation to the east. Some Locust trees are slowly spreading into the prairie and will need to be controlled. The area has a long history of agricultural tillage before the parcel was acquired by the City of La Crosse. The objective of this cover is to maintain the area as an Oak Savanna to increase the biological diversity of the Hixon Forest.

Recommended Management Activities:
1. Maintain the reestablished prairie with occasional prescribed fire (burn every 2-3 years). These fires will keep the woody vegetation from growing into the site, and strengthen native vegetation vigor. The Bur Oak trees will need special treatments before conducting prescribe burning by removing combustible vegetation growing around each tree.
2. In years of drought, irrigation may be necessary around the young Oak.
3. Control the Black Locust trees invading the area. Cut the Locust and treat the stump immediately with clopyralid herbicide (trade name Transline herbicide).

B. FOREST STAND DESCRIPTION

Soils and seasonal harvest restrictions	No seasonal restrictions. See Soil Map and Soil Report for more detailed information on Management Concerns/ Ratings.
Water (lakes, ponds, streams, etc)	n/a
Wetlands	n/a
Biological Diversity	unk
Forest Type/Species	n/a
Forest Health (Insects, disease, invasive species, timber productivity)	Black locust infestation.
Fish & Wildlife Habitat Management	Maintain opening for birds and small mammal's edge effect.
Threatened and Endangered Species	Natural History Inventory (NHI) review required in project planning.
Archaeological/Cultural/Historic sites	Arch/Cultural/Historic Inventory review required in project planning.
Carbon cycle/climate change	
Fire Risk Management	medium

C. RECOMMENDATIONS –

Desired Future Condition (DFC) Narrative	The DFC for this stand is to maintain and expand this dry prairie that is unique to the bluffs of this area and provide special habitat to animals and plants. The primary Resource Concern is Inadequate Habitat for Fish and Wildlife – Habitat degradation. – Quantity, quality or connectivity of food, cover, space, shelter and/or water is inadequate to meet requirements of identified fish, wildlife or invertebrate species. The primary goals for this stand are 1. Control invasive species, and 2. Maintain and expand prairie openings. Options to accomplish include force account staff work, volunteers and partnership arrangements. Equipment to be used will be dependent on resource needs, landowner goals and workforce capabilities.
Stand Recommendations; insects, disease, invasive species, timber productivity, etc	1. Control invasive species, 2. Maintain and expand prairie openings. and 3. Establish wildlife and pollinator Habitat for game and non-game (neo-tropical migratory songbird) habitat diversity.
Strategy and Timeline for Implementation (Yearly Breakdown)	12/2019 - Invasive species control black locust (ongoing) 12/2019 – Develop Prescribed Fire Burn Plan for Oak Savannah 12/2019 – Develop and establish a 50 year Cooperative Volunteer and Partnerships Prairie Maintenance Agreement with organized financial and human support. Consider special interest groups and work for school credit programs. 12/2020 – Conduct Prescribed Burn on Oak Savannah in accordance with Burn Plan 12/2020 – Establish Stewardship Program in cooperation with timber sale program of work. 12/2020 - Develop Brush Disposal Plan (BD Plan).
Best Management Practices for Soil and Water	BMPs: Protecting Resources – 1. Operate mechanical equipment on the contour where necessary to minimize erosion.2. Minimize raking in areas, or under conditions, in which soil

	could erode and enter waterbodies. Two preferred practices are: a. shearing and raking when soil is frozen and b. raking lightly to remove slash only. 3. Suspend operations during wet periods if equipment begins to cause excessive soil disturbance. 4. Use patch scarification or low intensity prescribed burns on sites that have steep slopes, erodible or saturated soils, and on sites that drain to surface water.
Aesthetic and Recreation Considerations	Establish perimeter design and layout criteria to encourage a natural irregular edge appearance.
Financial Management (yearly breakdown)	12/2019 - Invasive species control black locust cost estimate: $2239 12/2019 – Develop Prescribed Fire Burn Plan for Oak Savannah cost estimate $2000 12/2019 -: Develop and establish a 10 year Cooperative Volunteer and Partnerships Goat Prairie Maintenance Agreement: internal force account 12/2020 – Conduct Prescribed Burn on Oak Savannah in accordance with Burn Plan. Cost estimate: $5000 12/2020 -: Establish Stewardship Program in cooperation with timber sale program of work. Internal force account 12/2020 - Develop Brush Disposal Plan (BD Plan). Internal force account

Stand 50 **Primary Type: FA Road**

6.55 acres

A. CURRENT CONDITIONS NARRATIVE

FA County Road right of way.

Stand 51 **Primary Type: A**

2.49 acres

A. CURRENT CONDITIONS NARRATIVE

There are multiple buildings, the Boy Scout office, Girl Scout office, WisCorps office {the old Myrick Hixon Nature Center and US Forest Service Experimental office.

Stand 52 **Primary Type: R**

2.49 acres

A. CURRENT CONDITIONS NARRATIVE

.This is the mowed recreational area along the road on top of the ridge and includes the parking lots, buildings. and viewing areas of Grandad's Bluff. All trees grown here are for aesthetics. There are burr oak, shagbark hickory, red oak, white oak, ash, and a few other varieties growing in the grass. Some ash were marked for cutting (due to emerald ash borer) at the time of this inventory. Acorns and hickory nuts could be collected if desired and it is advised that only oak, hickory, and white pine be planted on the ridge; along with ornamental plantings around the buildings and walkways. Power lines run along the road and travel down the bluff. Openings cut through the woodlands for views of the city are very popular, as was this whole area during the inventory. This area offers significant recreational opportunities to La Crosse residents and visitors.

III. Implementation

The following "tools" are tried and true effective processes available to implement the Hixon Forest Management Plan. ROS, VQO and WHI are all available to guide an integrated approach to developing Programs of Work. By "blending" diverse resource and social management objectives in a Program of Work the Hixon Plan can implement the Hixon Forest Goals with broad support. Focus groups and interdisciplinary teams working through partnership, volunteer and stewardship arrangements would produce the dialogue, discussions, decisions and outcomes with the highest likelihood of success and durability.

1. Recreation Opportunity Spectrum (ROS)

The Recreation Opportunity Spectrum (ROS) is an inventory process that categorizes recreation opportunities by physical and social conditions. It is a process whereby expectations by both visitors and managers alike can have realistic goals and objectives for their respective recreation experiences that are reasonable within the conditions they choose to recreate in. The six (6) recognized ROS categories are: urban; rural; roaded, natural; semi –primitive, motorized; semi-primitive, non-motorized; and primitive.

2. Visual Quality Objectives (VQO) See Appendix D for visual quality objectives descriptions.

Visual Quality Objectives (VQO) are categories of visual expectations when designing projects that may alter landscape views. When considering visual impacts it is key to identify realistic expectations and plan the project in concert with the existing or planned landscape. For example, a VQO of partial retention may be consistent with planning a trail for a semi-primitive motorized recreation experience. Likewise, a VQO of modification would likely be consistent with planning a forest thinning that provides a roaded, natural recreation experience.

3. Wildlife Habitat Suitability Index (WHI)

The Wildlife Habitat Suitability Index (WHI) is an indexing system that provides the opportunity for a qualitative comparison of vegetation patterns that make up habitat for different types of wildlife. Early successional habitat species such as golden winged warbler, woodcock, grouse and deer benefit from more diverse age and species vegetation patterns while other species prefer undisturbed old growth habitat. WHI is a tool which will assist Managers in more effective proactive wildlife habitat planning and creation.

4. Vegetation Management Five (5) Year Action Plan

The Vegetation Management Five (5) Year Action Plan includes (separate tables) both forested and prairie stands. Management actions with cost/income estimates are displayed for the first five year period of 2020 - 2024. Planning for that five year period was commenced in 2018. The next five year period is 2025 – 2029 and planning for that period should commence in 2019. Likewise, for the remaining five year periods, planning should commence in following years, e.g. 2020. It is wise to begin planning two years in advance of the five year period being planned for. The Hixon Plan planning horizon is 50 years and is from 2018 to 2068.

Forest Stands

Five Year Period	Forest Type	Stand Numbers	Acres	Estimated Gross Timber Value	Estimated Implementation Cost	Estimated Net Timber Value	Estimated Invasive Species Control Cost	ROS	VQO	WHI Goal
2020 – 2024										
2020	***Oak***	**1, 2, 7, 8**	**107**	$49963			**$63197**			
	N Hdwd	**4**	**15**	$1922			**$8795**			
	White Birch	**5**	**19**	$8004			**$11657**			
			141 – total	**$59889 – total**	**$14972**	**$44917**	**$83649-total**	**Semi-Primitive, motorized**	**Partial Retention**	**TBD**
2021	***Oak***	**9, 10, 14,**	**112**	$134895			**$66373**			
	Aspen	**12**	**16**	$2783			**$9418**			
	B Hdwd	**13**	**27**	$2709			**$16219**			
			155 – total	**$140387 – total**	**$35097**	**$105290**	**$92010-total**		**Modification**	**TBD**
2022	***Oak***	**16, 17, 21**	**45**	$22076			**$26839**	**Roaded, natural**		
	M Decid	**19**	**14**	$4083			**$8228**			
	C Hdwd	**20**	**14**	$3155			**$8631**			
			73 – total	**$29514 – total**	**$7379**	**$22135**	**$43698-total**		**Modification**	**TBD**
2023	***Oak***	**22, 23, 24, 25**	**91 - total**	**$48403 – total**	**$12101**	**$36302**	**$54058-total**	**Roaded, natural**	**Modification**	**TBD**
2024	***Oak***	**27, 30, 31**	**58**	**$**21860			**$34628**			
	C Hdwd	**28**	**22**	$4257			**$13399**			
	Aspen	**29**	**13**	$13410			**$8121**			
			93 – total	**$39527 – total**	**$9882**	**$29645**	**$56148**	**Semi-Primitive, motorized**	**Partial Retention**	**TBD**
Estimated Total Five Year Plan			**553**	**$317720 $63544 average**	**$79431 $15886 average**	**$238289 $47658 average**	**$329653 $65913 average**			

Prairie Stands

Five Year Period	Prairie Name	Stand Numbers	Acres	Estimated Invasive Species Control Cost	Estimated Prescribed Fire cost	Partnerships/ Volunteers planning and development estimated cost	ROS	VQO	WHI Goal
2020 – 2024	Grandad Bluff	3	1.52	$900	$3040	$1520	Semi-Primitive, non-motorized	Retention	TBD
	Tower	32	12.44	$7369	$24880	$12440	Same	Same	TBD
	HPT	33	12.95	$7671	$25900	$12950	Same	Same	TBD
	Bicentennial	34	14.27	$8453	$28540	$14270	Same	Same	TBD
	Thompson	37	34.4	$20377	$68800	$37000	Same	Same	TBD
	Log	41	2.63	$1558	$5260	$2630	Same	Same	TBD
	Birch Point	42	2.03	$1202	$4060	$2030	Same	Same	TBD
	Zoerb	43	2.78	$1647	$5560	$2780	Same	Same	TBD
	Lookout	44	2.82	$1670	$5640	$2820	Same	Same	TBD
	Vista	45	1.72	$1019	$3440	$1720	Same	Same	TBD
	Milson	46	3.44	$2038	$6880	$3440	Same	Same	TBD
	Miller Bluff	47	5.27	$3122	$10540	$5270	Same	Same	TBD
	Upper Hixon	48	7.99	$4733	$15980	$7990	Same	Same	TBD
	Oak Savannah	49	3.78	$2239	$7560	$3780	Same	Same	TBD
Estimated Total Five Year Plan				$63998 $12780 annual average	$216080 $43216 annual average	$110640 $22128 annual average			

IV. Monitoring

A. Process(s) and Activities available to monitor Forest and Prairie conditions during Hixon Forest Plan Implementation.

1. Limits of Acceptable Change (LAC) Process utilized to monitor change in resource(s) conditions.

The Limits of Acceptable Change (LAC) process functions as a framework for establishing acceptable and appropriate resource and social conditions. LAC was established in response to a need for a means of coping with increasing demands on public lands in a visible, logical fashion. LAC also represents a reformulation of the recreational carrying capacity concept with the primary emphasis now on the desired future conditions in the area rather than on how much use an area can tolerate.

In order to fully comprehend the Management Objectives it is necessary to understand and relate to the following core steps of the LAC process::

1. Opportunity Class descriptions,
2. Opportunity Class Indicators and Standards,
3. Opportunity Class Allocation Map,
4. Management Actions Implementation Schedule.

By focusing on steps 1 – 4 above, a person can gain a basic understanding of how LAC can provide a logical framework to analyze the Hixton Forest, determine Management Objectives, and establish a schedule to implement management actions by specific Opportunity Classes that have been established.

The Hixon Forest initial Limits of Acceptable Change Monitoring Plan, as an example, could start out as the following:

1. Opportunity Class Descriptions

   a. Primary Oak Cover Types with Roaded, Natural Recreation opportunities
   b. Primary Oak Cover Types with Semi-Primitive non-motorized Recreation opportunities
   c. Primary Other Hardwood Cover Types with Roaded, Natural Recreation opportunities
   d. Primary Other Hardwood Cover Types with Semi-Primitive non-motorized Recreation opportunities
   e. Primary Savannah Cover Types with Roaded, Natural Recreation opportunities
   f. Primary Savannah Cover Types with Semi-Primitive non-motorized Recreation opportunities

2. Opportunity Class Indicators and Standards

   a. Trail Conditions, e.g. changes in trail depth and width from use.
   b. Vegetative Conditions, e.g. type and rate of change over time and increase or decrease in invasive species.
   c. Soil Conditions, e.g. degree of increase in erosion or compaction.

3. Opportunity Class Map would be developed by visually displaying the different stands allocated to Opportunity Classes described above.

4. The Management Actions Implementation Schedule would be structured so as to schedule Management Actions to react to a need identified by an Indicator that provided evidence that a relevant standard was being exceeded.

The Hixon Monitoring Plan would be a contributing factor in the development of annual and multi-year Programs of Work and Budgets.

VI. Appendix

A. Financial Assistance Programs
B. Cutting Prescription Descriptions
C. Limits of Acceptable Change Process Power Point
D. Visual Quality Objectives Descriptions
E. References Utilized

A. Financial Assistance Programs

1. Environmental Quality Incentive Program (EQIP) (USDA Natural Resources Conservation Service)

2. Conservation Stewardship Program (CSP) (USDA Natural Resources Conservation Service

Environmental Quality Incentives Program (EQIP) in Wisconsin

The Environmental Quality Incentives Program (EQIP) is a voluntary conservation program that helps agricultural producers in a manner that promotes agricultural production and environmental quality as compatible goals. Through EQIP, agricultural producers receive financial and technical assistance to implement structural and management conservation practices that optimize environmental benefits on working agricultural land. Applications for EQIP can be submitted to NRCS at any time. Dates are set periodically to rank applications for available funding. All EQIP applications in Wisconsin will be prioritized using a screening tool. Applications will receive a high, medium, or low priority as of the application deadline. High priority applications will be ranked and funded first, followed by medium and low, as funding allows.

Applying for the Environmental Quality Incentives Program

EQIP applications are accepted on a continuous basis, however, NRCS establishes application "cut-off" or submission deadline dates for evaluation, ranking and approval of eligible applications. EQIP is open to all eligible agricultural producers and submitted applications may be considered or evaluated in multiple funding pool opportunities. The following document describes how to apply for Farm Bill programs or visit the following website: www.nrcs.usda.gov/getstarted. Agricultural producers and owners of non-industrial private forestland and Tribes are eligible to apply for EQIP. Eligible land includes cropland, rangeland, pastureland, non-industrial private forestland and other farm or ranch lands. Applicants must control or own eligible land, comply with adjusted gross income limitation provisions, be in compliance with the highly erodible land and wetland conservation requirements, and develop an NRCS EQIP plan of operations. Additional restrictions and program requirements may apply. To apply for EQIP, contact your local service center. For Program Process & Ranking Criteria by County Local Work Groups click here.

Conservation Stewardship Program

Your Stewardship Goals. Our Assistance.

Have you ever looked across your property and thought about some land management goals you would like to take to the next level? Maybe we can help.

No one knows more about your land than you do, and no one knows more about conservation than we do. Together we can develop a plan tailored to your land and your goals to help you increase productivity and protect the value of your land.

Our Conservation Stewardship Program (CSP) helps you build on your existing conservation efforts while strengthening your operation. Whether you are looking to improve grazing conditions, increase crop yields, or develop wildlife habitat, we can custom design a CSP plan to help you meet those goals. We can help you schedule timely planting of cover crops, develop a grazing plan that will improve your forage base, implement no-till to reduce erosion or manage forested areas in a way that benefits wildlife habitat. If you are already taking steps to improve the condition of the land, chances are CSP can help you find new ways to meet your goals.

B. Cutting Prescription Descriptions

Cutting Prescription Descriptions

COPPICE REGENERATION HARVEST

Naturally regenerate this stand to vegetatively reproduce new trees (root and/or stump sprouts) using the coppice regeneration method. This involves cutting all trees (except reserve trees) to allow the trees to regenerate vigorously after the harvest. Variations of coppice regeneration include: simple and compound.

CLEARCUT REGENERATION HARVEST

Naturally regenerate this stand using the clearcut regeneration method. This involves cutting all trees (except reserve trees) to allow the trees to regenerate from seed produced by adjacent timber stands or trees cut in the harvest operation. Time regeneration practice including site preparation to take advantage of good seed years. Variations include: uniform, alternate strip or patch, progressive strip or patch, and without reserves.

SEED TREE REGENERATION HARVEST

Seeding Cut. Naturally regenerate this stand using the seed tree regeneration method. This involves cutting all trees except seed trees and reserve trees. These desirable trees that are retained will produce seed to reforest the stand. Time regeneration practice including site preparation to take advantage of good seed years. Seed trees may be cut after new trees are established or reserved indefinitely. Variations include: single, group, and without reserves.

SHELTERWOOD REGENERATION HARVEST

Preparatory Cut. A preparatory cut is needed to naturally regenerate this stand using the shelterwood regeneration method. This involves crown thinning the stand to promote larger crowns of desired trees and thus greater seed-bearing capacity.

SHELTERWOOD REGENERATION HARVEST

Seeding Cut. Naturally regenerate this stand using the shelterwood regeneration method. This involves cutting of trees in the overstory and understory to create sunlight conditions favorable for natural regeneration and survival of desirable tree species. Cut trees that are less vigorous, of poorer quality, or are undesirable species. Retain well-spaced, desirable, vigorous overstory trees to produce seed to reforest the stand. Seed bed preparation may be required by scarification, use of herbicides, prescribed burning, and/or non-commercial cutting. Time regeneration practices including site preparation to take advantage of good seed years. Overstory trees will need to be harvested (except for reserve trees) after tree seedlings are established. Variations include: uniform, strip, patch, and without reserves.

SHELTERWOOD REGENERATION HARVEST

Final Cut. Conduct a field survey to determine success of regeneration in this stand. If adequate regeneration is not established, repeat the seeding cut treatment or plant to bring stocking up to minimum- medium stocking levels; additional follow-up treatments may be required. If adequate regeneration is established, conduct the final harvest to remove all overstory trees except for reserve trees. Variations include: without reserves.

OVERSTORY REMOVAL HARVEST

Harvest all overstory trees in this stand (except reserve trees) to release established seedlings and saplings to full sunlight. Evaluation of adequate established advanced regeneration depends on the number and size of desirable seedlings and saplings present. Variation: without reserves.

SINGLE TREE SELECTION HARVEST

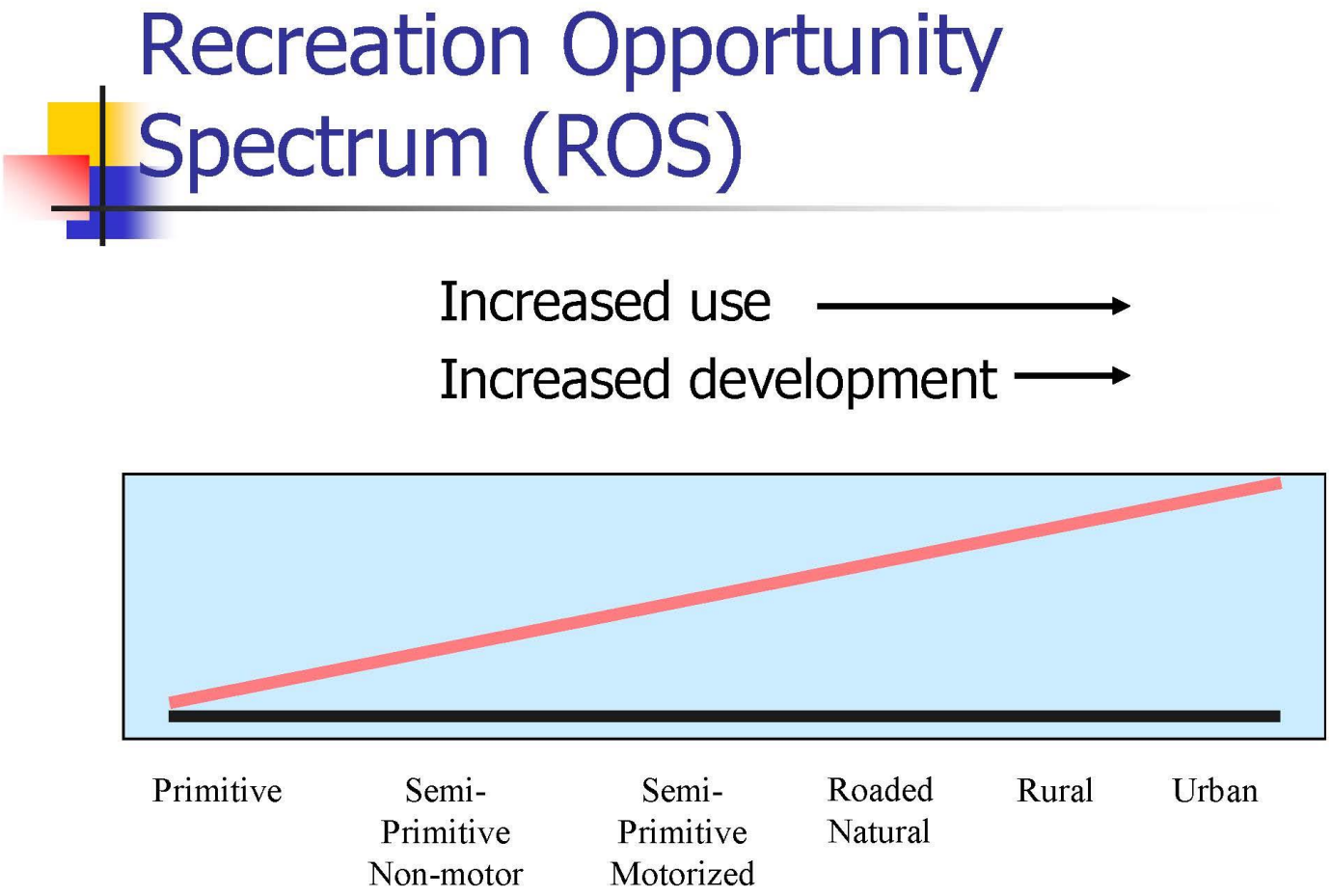
Naturally regenerate this stand using the single tree selection regeneration method. This involves harvesting individual trees of various size and age classes to provide space for regeneration and promote the growth of remaining trees. Select individual trees for removal from all overstocked size classes to achieve desired residual

density levels by following the order of removal and tree retention guidelines. Create canopy regeneration gaps on approximately 10% of the stand to provide adequate sunlight to establish vigorous tree seedlings.

THINNING

Remove trees to reduce stand density to improve tree growth, enhance forest health or utilize trees that are at risk of mortality. Thinning is done to reduce stocking and concentrate growth on more desirable trees by following the order of removal and tree retention guidelines.

C. Limits of Acceptable Change Process



Why is monitoring important?

- Identify existing and desired position on ROS
- Promote accountability by park and resource managers
- Foster user support for agencies
- Identify increased demand
- Provide feedback for better planning and management
- Identify all impacts, not just economic

What is carrying capacity?

Definition:

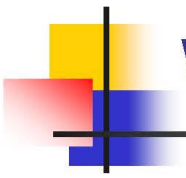
- The maximum level of use that an area or resource can sustain before deterioration occurs.

Types of Carrying Capacity

1. Ecological or biological
2. Social and psychological
3. Physical (facility)
4. Managerial

What do we measure?

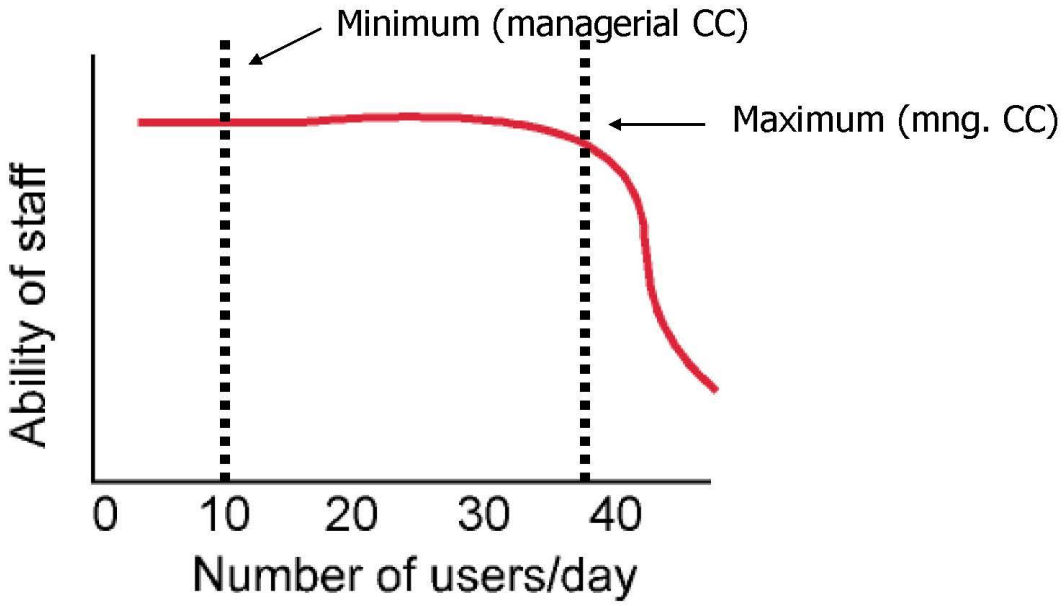
- Minimum numbers (at which a park is viable)
- Maximum numbers



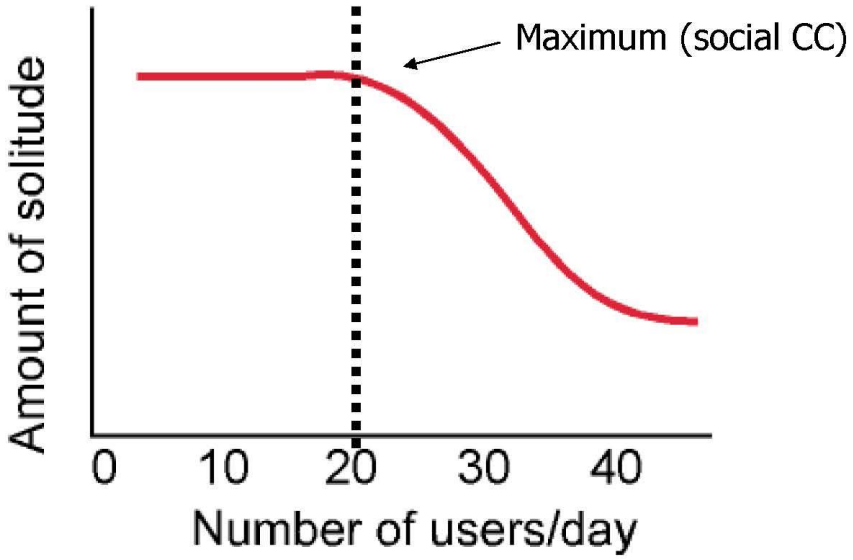
What do we manage for?

- Optimum range

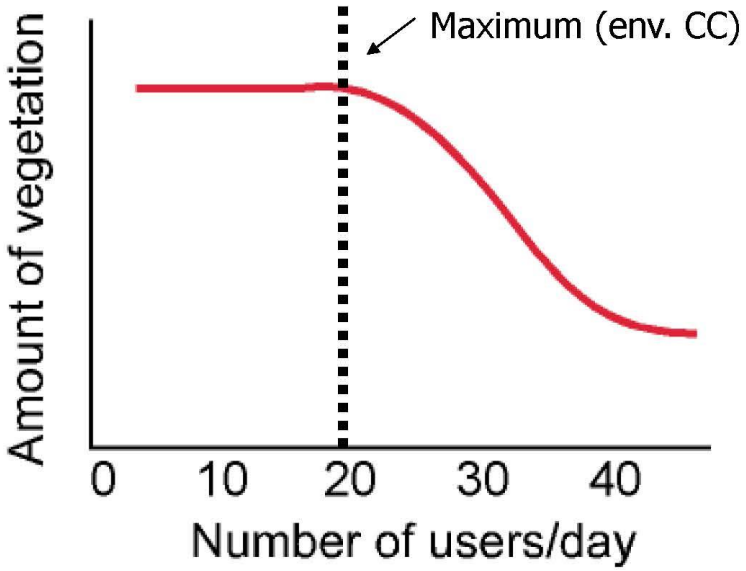
What do we manage for?



What do we manage for?

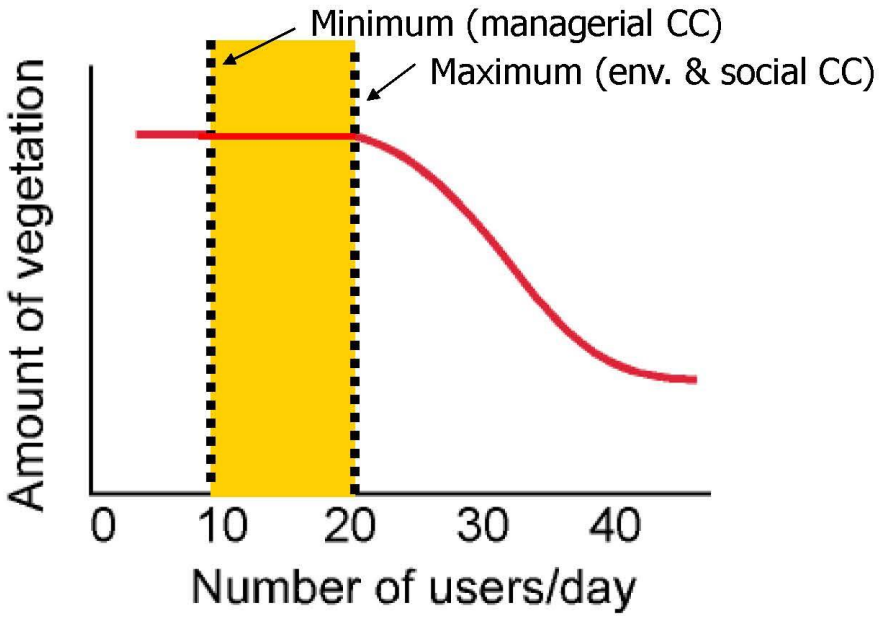


What do we manage for?



What do we manage for?

- Optimum range



Four Major Components of LAC

3. Identify management actions necessary to achieve the desired conditions.

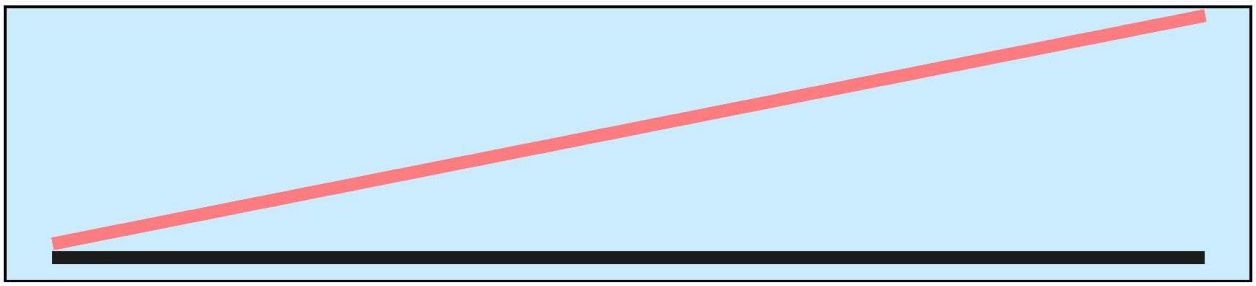
4. Monitor and evaluate the effectiveness of management actions.

Step 1 - Identify area issues and concerns

- Identify public issues and managerial concerns that relate to:
  - Distinctive features and characteristics of the area.
  - Use of the area by people.
  - The relationship of the area to other similar units and to other local areas

Step 2--Define & describe opportunity classes

- Identify ROS Opportunity Classes that generally describe the area
- Each park area can have multiple classes



Primitive	Semi-Primitive Non-motor	Semi-Primitive Motorized	Roaded Natural	Rural	Urban

Step 2--Define & describe opportunity classes

- Describe the kinds of *resource*, *social*, and *management* conditions acceptable for the class

- Example: Primitive ROS class:
  - Resource: Minimal impacts on resource
  - Social: Solitude
  - Management: Minimal facility development
  - Management: No motorized vehicle use

Step 3—Select indicators of resource & social conditions

- Indicators: Specific variables that indicate the condition of the opportunity class

- Example: solitude - number of people encountered

Step 3—Select indicators of resource & social conditions

- Indicators must be:
  - accurate
  - capable of being measured in a cost effective way
  - related to the use occurring
  - responsive to management control.

Why are indicators important?

- Allow managers to:
  - Unambiguously define desired conditions
  - Assess the effectiveness of various management practices

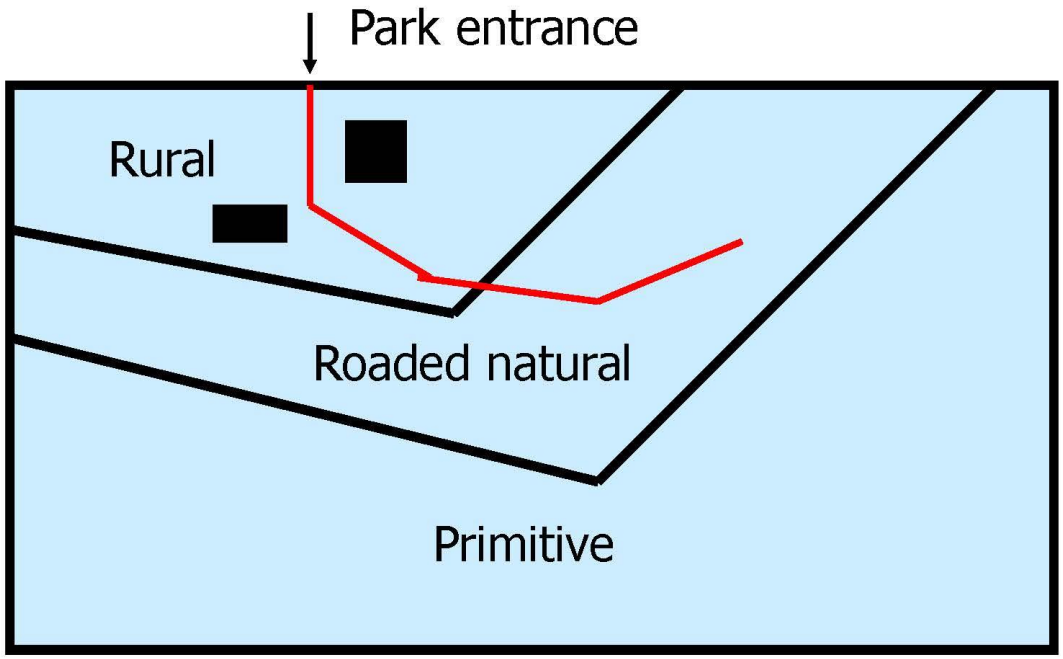
Indicators for primitive ROS class

- Minimal impacts on resource:
  - Loss of vegetation along trails
- Solitude:
  - Few encounters with other people

Step 4 — Inventory existing conditions

- Use indicators from Step 3 to inventory existing conditions.
- This is a critical step in determining what and where management is needed.

Inventory



Step 5—Specify standards for indicators

- Assign standards (i.e., quantitative measures) to indicators (from Step 3)
- Standards provide a BASELINE against which conditions can be judged
- Judgmental process, but logical, traceable, and subject to public review

Standards for primitive ROS class

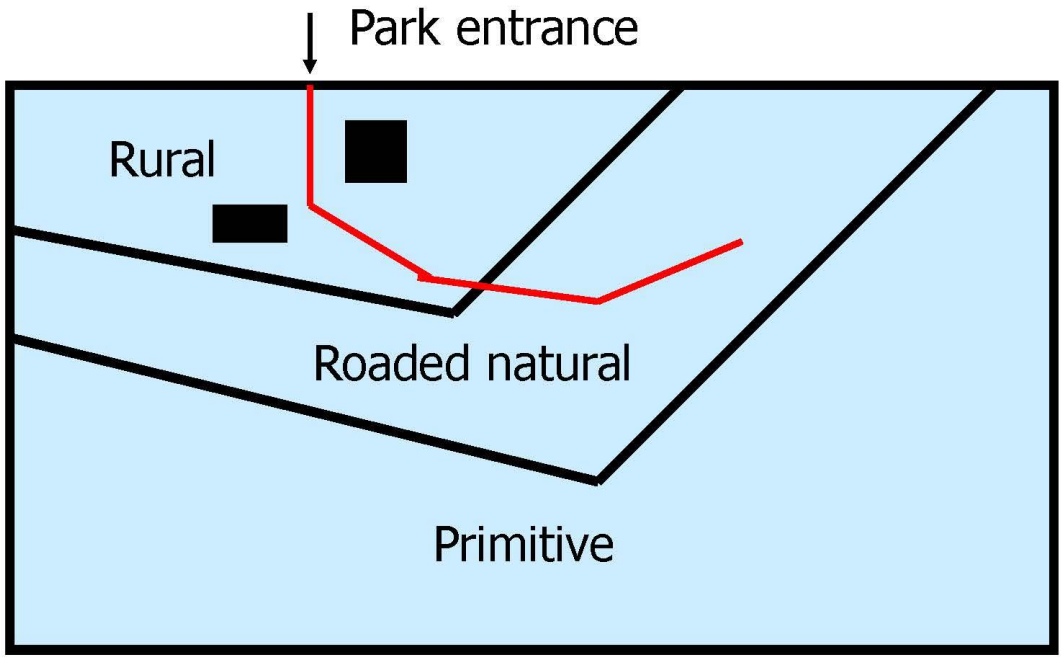
- Minimal impacts on resource:
  - Indicator: Loss of vegetation along trails
  - Standard: Trail width no more than 2 feet

- Solitude:
  - Indicator: Few encounters with others
  - Standard: 0 - 1 encounters/day

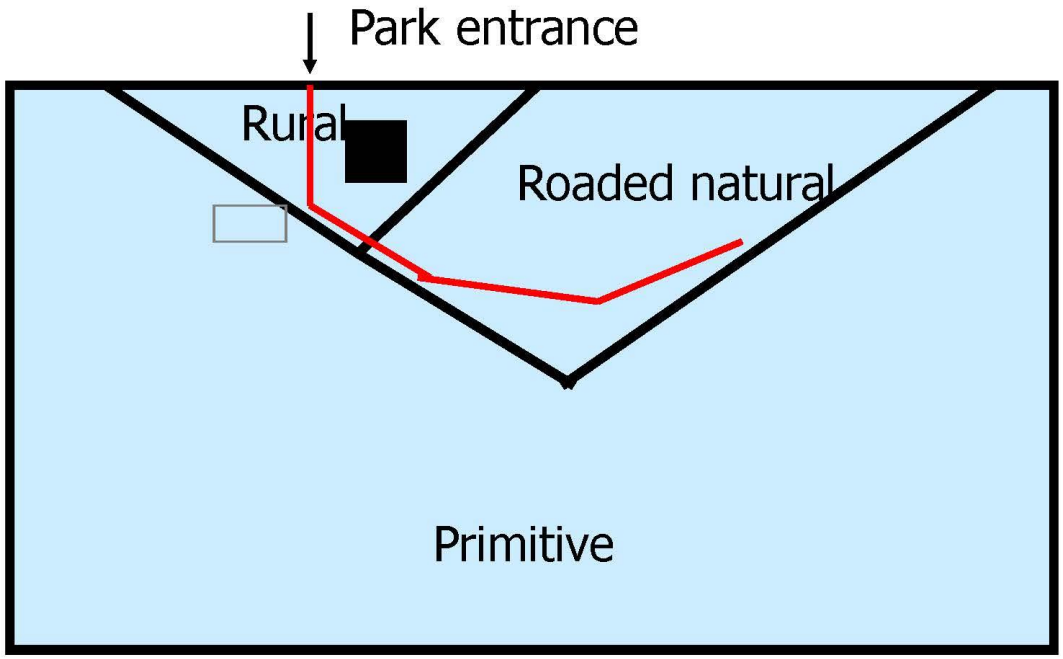
Step 6—Identify alternative opportunity class allocations

- Decide what our ROS alternatives are
  - A diversity of opportunity classes may be represented in one park.
- Balance desired conditions with reality
  - Need input from both managers & users

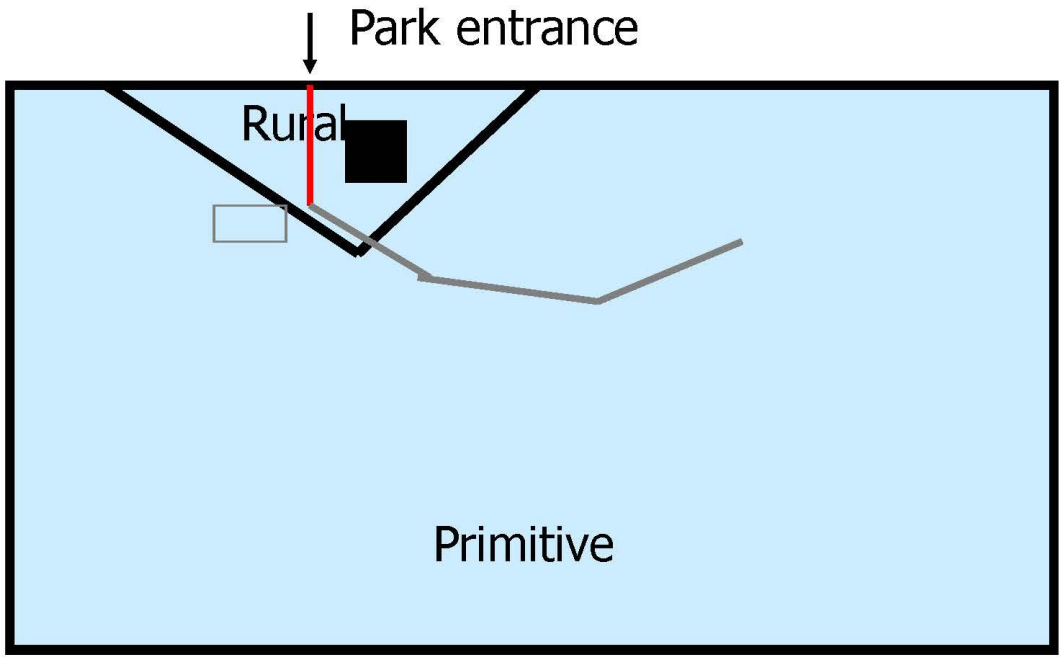
What we have...



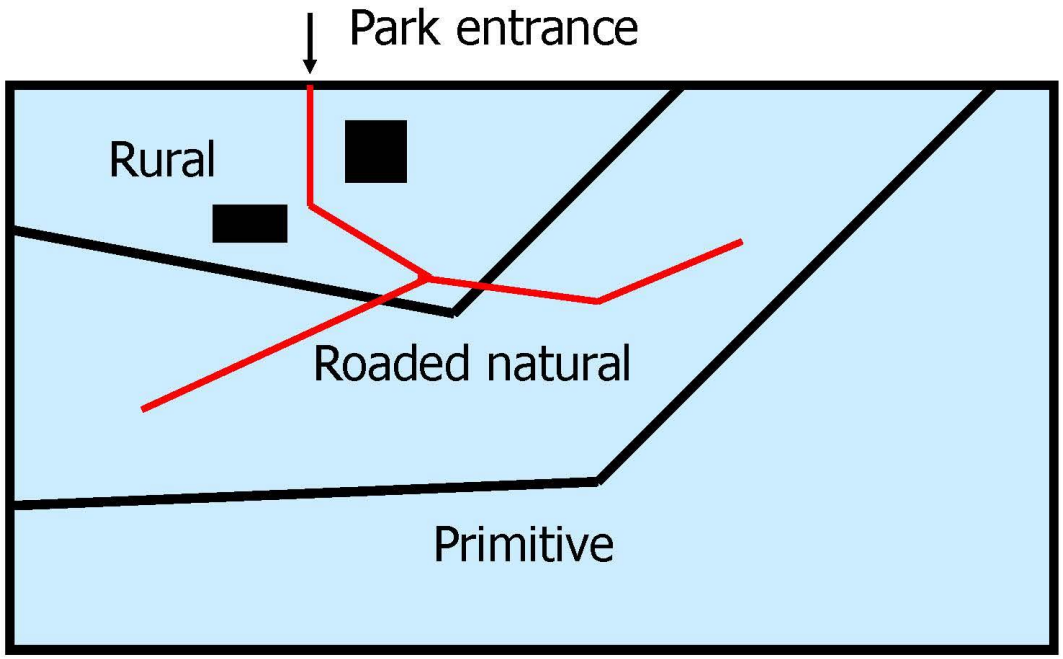
Alternative 1: What we want...



Alternative 2: What we want...



Alternative 3: What we want...



Step 7—Identify management actions for each alternative

- For each alternative, identify differences between current conditions (step 4) and the standards (step 5)
  - When conditions exceed standards, there is no need for management
  - When conditions are close to or worse than standards, management is necessary
- Design management strategies for each alternative.

Compare standards...

- Minimal impacts on resource:
  - Indicator: Loss of vegetation along trails
  - Standard: Trail width no more than 2 feet
  - What we have: Trail width of 1 foot
  - Management strategy?
- Solitude:
  - Indicator: Few encounters with others
  - Standard: 0 - 1 encounters/day
  - What we have: 5 encounters/day
  - Management strategy?

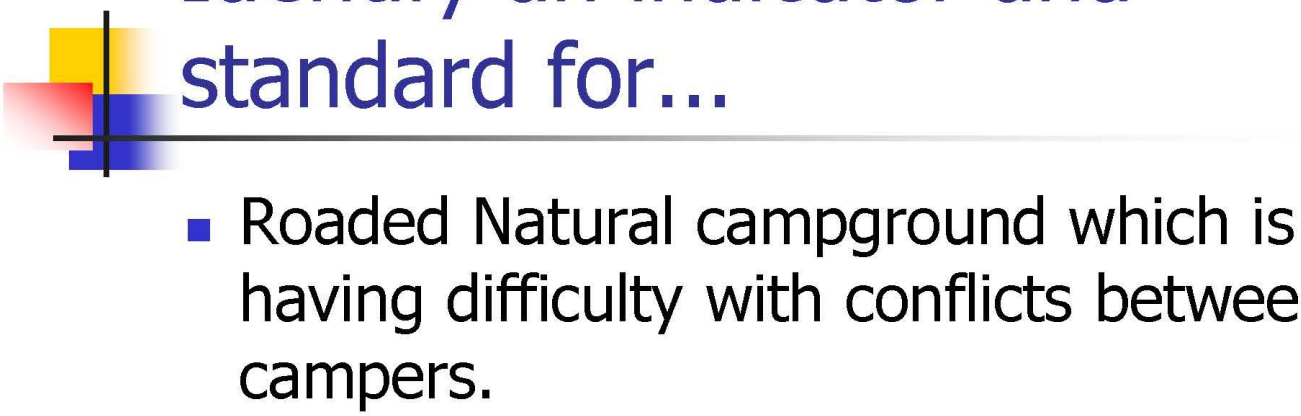
Step 8—Evaluate and select a preferred alternative

- Selections is made by managers and local residents…no formula

- Considerations:
  - What user groups are affected and how?
  - What values are promoted or diminished?
  - Does the alternative contribute to park/wilderness system diversity?
  - What is feasible (personnel, budget…)?

Step 9—Implement actions & monitor conditions

- Systematic feedback on how well management actions are working
- Identify trends in conditions that require new actions
- Show what type of management actions solve what type of problems



D. Visual Quality Objectives Descriptions

1. Preservation, 2. Retention, 3. Partial Retention, 4. Modification, 5. Maximum Modification

E. References Utilized

1. Hixon Forest 2014-2020 Management Alternatives and Vegetation Inventory Summary (HiMAVIS)
2. Wisconsin Forest Management Guidelines (WDNR)
3. Resource Concerns and Planning Criteria for Forest Land Use Conservation Planning (USDA Natural Resources Conservation Service)
4. Eligible Practices, Payment Rates and Guidance FY2017 Wisconsin (USDA Natural Resources Conservation Service)
5. Limits of Acceptable Change (LAC) Process (USDA Forest Service)
6. Sturgeon River Gorge Wilderness: Opportunity Area Analysis and Implementation Schedule (USDA Forest Service)